SIX MONTHLY COMPLIANCE REPORT OF

ENVIRONMENTAL CLEARANCE

FOR THE PERIOD OCTOBER 2018 TO MARCH 2019
5MTPA

SUBMITTED BY

Lafarge Umiam Mining Pvt Ltd

FOR
NONGTRAI LIMESTONE MINE
VILLAGE NONGTRAI,
DISTRICT EAST KHASI HILLS, MEGHALAYA

May 2019

LafargeHolcim

May 30, 2019

Ministry of Environment, Forest and Climate Change
Government of India
North Eastern Regional Office,
Law-u-Sib, Lumbatngen
Shillong – 793021,
Meghalaya

Kind attention: Dr. V.Saio, Scientist 'C'

Subject: Implementation of conditions stipulated in the Ministry's Environmental Clearance letter No.J-11015/17/2013 IA.II (M) dated 28 November 2016 and regarding Limestone Opencast Mining Project at Phlangkaruh, Nongtrai, Tehsil-Sohra, Distt. East Khasi Hills, Meghalaya of Lafarge Umiam Mining Pvt. Ltd.

Madam,

With reference to the Environmental Clearance letter stated above, we are pleased to submit following reports as detailed below. This is as per EIA notification 14 September 2006.

Half yearly Environmental Monitoring Report for the month of October 2018 to March 2019 along with Compliance status as on 31 March 2019 and the Conditions of Environmental Clearance No.J-11015/17/2013 IA.II (M) dated 28 November 2016.

The above report is also displayed on our official website "http://www.lumpl.com"

We are fully committed to comply with environmental safeguards.

Thanking You,

Yours faithfully,
For Lafarge Umiam Mining Pvt.Ltd

LAFARGE UMIAM MINING PRIVATE LIMITED SHILLONG

Narayan Sharma
Operations Director

Enclosure: As stated above

Copy to:
1. The Member Secretary, Meghalaya State Pollution Control Board, Shillong
2. Zonal Officer, Central Pollution Control Board, Shillong, Meghalaya
3. Director (S), Impact Assessment Division Ministry of Environment, Forests and Climate Change, Indira Paryavaran Bhavan Jorbagh Road, New Delhi.

CONTENTS

List of Annexure

1. (A) Compliance Status of Conditions of Environmental Clearance (no. J-11015/17/2013-IA.II (M) dated 28th November 2016) for the period October 1, 2018 to March 30, 2019

The Ministry of Environment Forests and Climate Change (MoEFCC), New Delhi through their letter no. J-11015/17/2013-IA.II/M dated 28 November 2016 issued Environmental Clearance for enhancement of Nongtrai Limestone Mine with production capacity from 2.0 million TPA to 5.0 million TPA of limestone by Lafarge Umiam Mining Pvt Ltd, located at village Nongtrai, District East Khasi Hills, Meghalaya (MLA; 100.00 Ha). The compliance status of Conditions of the Environmental Clearance for the period October 1, 2018 to March 30, 2019 of Nongtrai Limestone Mine is as following:

Table 1.1: Compliance Status of Conditions of Environmental Clearance dated 28 November 2016

SN	Condition	Compliance Status
A	**Specific Conditions**	
1	Environmental Clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court of Meghalaya, Hon'ble NGT and any other Court of Law, if any, as may be applicable to this project.	Noted
2	This Environmental Clearance is subject to obtaining requisite NBWL Clearance from the Standing Committee of National Board for Wildlife, if any, as applicable for this Mining project.	Not Applicable. The area for 5.0 million TPA Project will continue to remain the same as was being available for 2.0 million TPA opencast limestone mine with total land area of 139.026 Ha including 116.589 Ha of forestland (with mine lease area of 100 Ha). No additional land acquisition is required for 5.0 MTPA limestone mining expansion. No Schedule-I faunal species and threatened floral species have been encountered in the core zone of the existing land.
3	The Project Proponent shall obtain Consent to Operate from the State Pollution Control Board, Meghalaya and effectively implement all the conditions stipulated therein.	LUMPL obtained Consent to Operate from Meghalaya State Pollution Control Board on 09 December 2016 and the amendment to the Consent to Operate on 16 June 2017 valid up to 30 November 2020 LUMPL is complying with the Conditions of the CTO.

SN	Condition	Compliance Status
4	Project Proponent reported that Six Schedule-I species have been reported in the buffer area. An Addendum to Conservation Plan for Schedule I Faunal Species encountered in the Study Area has been prepared by North East Hill University (NEHU). An Addendum Conservation Plan with budgetary provisions of Rs 41 lakhs has been approved by the Additional Chief Conservator of Forests, Wildlife & Wildlife Warden, vide letter no. FWC/G/117/Pt/1058, dated 1st August 2016. Project Implementation of species specific conservation plan for Schedule I species. The project proponent shall take all precautionary measures for conservation and protection of flora and fauna spotted in the study area.	For implementation of Addendum Conservation Plans, LUMPL deposited amount of INR 41 Lakhs and INR 11 Lakhs in the corporation Bank New Delhi through letter dated No.15.01.2018 and a return receipt through letter No.MFG.3/2014/CAMPA/Vol-1/18646 from the Chief Conservator of Forest (FC Act).
5	Project Proponent shall plant only native species for green belt development. Plantation of local species should be carried out during the Monsoon Season.	Native plant species, as confirmed by the Department of Forests and Environment, Office of the Principal Chief Conservator of Forests, Government of Meghalaya, Shillong (vide letter no. MFG. 16/18/PCCF(T)/Vol.II/71727 dated 12 September 2016 have been considered for greenbelt development i.e. plantation in and around the mine: LUMPL has carried out plantations of 37,734 as on 31st March 2019 in and around the mine site area with survival rate of ~76%. LUMPL will ensure plantation of only the Forest Department specified plant species during monsoon seasons.

SN	Condition	Compliance Status
6	Average ground water level based on Piezometer reading in three locations indicates that there is a decrease in ground water level from 52.24 m during 2012 to 51.05 m during 2015. Project Proponent should implement the ground water recharge system at several locations in and around the lease area to augment the ground water resource.	No groundwater abstraction is practiced or proposed for the mining Project. Mining will be restricted to ultimate pit depth up to 90 m RL. Depth of water table as monitored through piezometers is much below 90 m RL hence there will be no intersection of groundwater regime. LUMPL has also established rainwater harvesting system at two locations by collecting rainwater from roof top of transit camp area and mine office buildings. The rainwater harvested is used for domestic purposes and for recharging of ground water regime. LUMPL is in the process of upgrading the existing Rain Water Harvesting System. The status will be updated in the next reporting period. LUMPL has identified three recharging sumps to augment recharging of rainwater into groundwater regime by collecting rainwater through haul roads and open area towards south of the mine at the following locations: I. Sump no. 1 of 8mx6m at 110m RL adjacent to haul road near topsoil storage shed; II. Sump no. 2 of 10m x 8m at 68 m RL near conveyor take off point; and III. Sump no. 3 of 6 m x 4 m at 125 m RL near workshop area. The above of recharging pits are being developed as per design guidance of “Manual on artificial recharge of ground water” published by CGWA. Overall, it is expected that above mentioned mitigation measures would help augment the groundwater resource. The design of all the three sumps has been approved by the Central Ground Water Board, NER Guwahati as per letter No-CGWA/Lafarge/AR/2017/1058 dated October 18, 2017. LUMPL is in process of developing sumps as per the approved design. Overall, it is expected that the above mentioned recharging pits would help augment the groundwater resource.  **Pictures of Sumps**

SN	Condition	Compliance Status
7	The Proponent shall install online Ambient Air Quality Monitoring System and there should be system for display of digital AAQ data within 03 months at least at three locations as per wind direction. Online provisions of pH and turbidity meters at discharge points of STP and ETP and also at water storage ponds in the mining area may be made. Project Proponent should display the result digitally in front of the main Gate of the mine site.	The online Ambient Air Quality Monitoring System have been installed and operational at three locations to monitor particulate matter (PM_{10} & $PM_{2.5}$), SO2 and NOx as follows; Station No.1 – Near Light Sections Station No.2 – Near Old Nursery (magazine area) at Quarry Station No.3 – Near Transit House Online pH and turbidity meters have been installed and operational at discharge points of STP, ETP and also at water storage ponds. Monitoring results are being displayed digitally in front of the main Gate of the mine.

SN	Condition	Compliance Status
8	The project proponent shall implement the Catchment Area Treatment Plan in consultation with the State Government should also implement Community Development and Welfare program in the area of Health, Education and Environmental Protection.	Report on Upper Catchment Area Treatment Plan as prepared by CIMFR, Nagpur and NEERI, Nagpur was submitted to MoEF, New Delhi and its Regional Office, Shillong through a covering letter dated 30 June 2010. MoEF vide letter no. F.No.8-64/2007-FC dated 29 December 2011, advised LUMPL to deposit the funds required to implement the Catchment Area Treatment (CAT) Plan amounting to Rs.50, 00,000/- (Rupees Fifty Lakh Only).The requisite amount was deposited by LUMPL in CAMPA Fund in account No. SB01025217 with Corporation Bank on 5 January, 2012 for implementation of CAT Plan. As part of the recommendations of Catchment Area Treatment Plan, eight check dams have been constructed in the gullies and area surrounding the mine. Drains have been constructed along the active mine benches linking it with siltation ponds. However, most of the rainwater gets percolated down from the mine surface (having crevices and fractured rocks due to karst topography). Greenbelt of 100 m all along the mine is being maintained. LUMPL has been implementing community development activities in the surrounding Nongtrai and Shella Villages. The community development activities are focused on the areas of Health Services; Educational Support; Infrastructure Improvement; Income generation programs – development of skill sets, training and awareness programs etc.; and sponsoring, environmental and cultural events. As directed by Hon'ble Supreme Court, LUMPL has been contributing a sum of INR 90/- per tonne of the limestone mined from the date on which mining commenced on monthly basis to Special Purpose Vehicles (SPV) notified under the Chairmanship of Chief Secretary, Meghalaya for welfare projects mandated upon it including the development of health, education, economy, irrigation and agriculture in the project area of 50 kms solely for local community and welfare of tribals. As on 31st March 2019, LUMPL made payments to SPV of INR ~18, 422.43 Lakhs.

SN	Condition	Compliance Status
9	Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and maintain records accordingly; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smoking, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly. The Recommendations of National Institute for ensuring good occupational environment for mine workers shall be implemented; The prevention measure for burns, malaria and provision of anti-snake venom including all other paramedical safeguards may be ensured before initiating the mining activities.	Two qualified doctors based at the site have been providing medical support to the employees and community in the surrounding villages. Qualified Occupational Health Specialist available at site for Regular and Periodical medical examination of the workers engaged in the project. Records of periodical medical examinations done in the recent past are being maintained for all employees (including contractor workers) as per the requirement of Mines Rules, 1955: Treatment for the identified ailments is being provided to the workers having ailments BP, diabetes, etc. Preventive measures for burns, malaria and anti-snake venom are in place under direct control and supervision of onsite Occupational Health Specialist.
10	Sewage treatment plant for treating residential and waste from industrial area should be provided. ETP shall also be provided for the workshop and wastewater generated during the mining operation.	Five package STPs are operational for treatment of domestic wastewater. An ETP is operational for treatment of wastewater generated during washing of HMMEs at the workshop. LUMPL is in the process of upgrading the existing STPs and ETP. The status will be updated in the next reporting period.
11	The project proponent shall carry out scientific investigation in respect of "Blast induced ground vibration, fly rock & air blast". Based on this study, Project Proponent should design an effective blast design to curb blast induced menace & public annoyance.	LUMPL conducted the scientific investigation in respect of blast induced ground vibration, fly rock & air blast, by engaging Central Institute of Mining and Fuel Research (CIMFR), Nagpur in the year 2015 and the recommendations of the study are being implemented. Further LUMPL has engaged Central Institute of Mining and Fuel Research (CIMFR), Nagpur in the year 2017- 2018 to carry out scientific investigation in respect of “blast induced ground vibration, fly rock and air blast”. Based on the recommendations of the study, LUMPL has further modified the blast design to curb blast induced menace & public annoyance. The study report was submitted during the last reporting period April to September 2018.

SN	Condition	Compliance Status
12	Implementation of Action Plan on the issues raised during the Public Hearing. The Proponent shall complete all the tasks as per the Action Plan submitted with the budgetary provisions during the Public Hearing.	Implementation of action plan of the issues raised in the public hearing is ongoing. Refer to **Annexure- I** for the current status of implementation of the action plan.
13	The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUCC only will be allowed to ply. The mineral transportation shall be carried out through covered trucks only and the vehicles carrying the mineral shall not be overloaded. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing center.	Pollution due to transportation within the mine is controlled through mitigation measures including water sprinkling on the haul road and ensuring that all vehicles (including HEMM) hold PUC certificates (valid up to March 2019) as issued by MSPCB. A sample of the report is enclosed as **Annexure- II**. Mineral transportation is carried out through covered long belt conveyor. No road transportation outside the mine is done through trucks.
B	Standard Conditions	
1	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forest and Climate Change 5 years in advance of final mine closure for approval	Noted. Final Mine Closure Plan with Corpus Fund as approved by IBM shall be submitted to MoEFCC five years in advance of final mine closure for approval.
2	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment, Forest and Climate Change.	Noted.
3	No change in the calendar plan including excavation, quantum of limestone and waste should be made.	Noted.

SN	Condition	Compliance Status
4	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water) for the project.	No groundwater withdrawal is practiced. Approval for withdrawal of surface water from Phlangkaruh stream has been taken from Nongtrai Village Durbar. The Ministry of Environment Forest and Climate Change (MoEFCC), Regional Office, vide letter No.RO-NE/E/IA/ML/MI/3,16/2773-74 dated 31st October 2018 directed LUMPL to obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water) for the project. Accordingly, LUMPL has submitted application to the Chief Engineer, Water Resource Department, Government of Meghalaya, seeking necessary permission for drawl of Surface Water of the project. The response of Water Resource Department is awaited.
5	Mining shall be carried out as per the provisions outlined in mining plan approved by Indian Bureau of Mines (IBM)/State Mines and Geology Department as well as by abiding to the guidelines of Directorate General Mines Safety (DGMS).	Mining will continue to be carried out as per the IBM approved mining plan and scheme of mining.
6	The lands which are not owned by Proponent, mining will be carried out only after obtaining the consents from all the concerned land owners as per the provisions of the Mineral Concession Rules, 1960 and MMDR Act, 1957.	Mining being carried out within 100 hectare mining lease area.
7	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment, Forest and Climate Change its Regional Office.	The digital processing of the entire lease area using remote sensing technique was carried out for the period of 2014-16 and the report was submitted to MoEFCC along with the six monthly compliance report of April to September 2017. We have initiated digital processing of the lease area using remote sensing technique for the period of 2017- 2019 and the report will be submitted to the MoEFCC, Regional Office in the next reporting period October to March 2020.

SN	Condition	Compliance Status
8	Five ambient air quality-monitoring stations shall be established in the core zone as well as in the buffer zone for PM10, PM2.5, SO2 and NOx monitoring. Location of the station be decided based on the meteorological data topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the state Pollution Control Board.	Ambient Air Quality (AAQ) is being monitored with respect to PM10, PM2.5, SO2 and NOx at five locations within and surrounding areas (covering core and buffer zones) as selected by MSPCB through their letter dated 24 February 2012. The locations are 1) HEMM Workshop 2) Near Magazine 3) Near Phlangkaruh Village 4) Pyrkan Village; and 5) Shella Bazar The observed results of ambient air quality parameters (as monitored from 1st October 2018 to 31st March 2019) remained within the prescribed limits and have been included in **Tables 2 to 11** in the six monthly monitoring report.

SN	Condition	Compliance Status
9	The critical parameters as per the Notification 2009 such as PM10, PM2.5, SO2 and NOx etc. in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, pH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board digitally at the project site at a suitable location near the main gate of the Company in public domain. The circular No. 3- 20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.	The ambient air quality (AAQ) is being monitored with respect to PM10, PM2.5, SO2 and NOx at five locations within the core and buffer zones as recommended by Meghalaya State Pollution Control Board. All parameters that were monitored during the period 1st October 2018 to 31st March 2019 remained within the permissible limits. Peak particle velocity (i.e. ground vibrations) is being measured with every blast. All the measured values remained less than 5 mm/sec at the distance of 200 m to 300 m, which is well within the standard of 10 mm/sec (for dominant frequency range of 8 to 25 Hz) as prescribed by Directorate General of Mines Safety – DGMS (Tech.) Circular No.7 dated 29 September 1997). Discharged waste water quality for TDS, DO, TSS and pH are being monitored by Meghalaya State Pollution Control Board on monthly basis and analyzed in their laboratory. The monitored values remained within the prescribed limits. Monitoring report enclosed as **Annexure- III.** The monthly monitored results are being displayed (on public domain) as per the requirement of MoEFCC Circular dated 27 May 2009 on: ▪ LED screen for digital display of critical pollutants near the main gate entry of the Nongtrai Limestone Mine; and ▪ Six monthly compliance reports are available on Company's website ".www.lumpl.com".

SN	Condition	Compliance Status
10	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul road, loading and unloading point and transfer points. Fugitive dust emissions from all the sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard. Monitoring of Ambient Air Quality to be carried out based on the Notification 2009, as amended from time to time by the Central Pollution Control Board.	Effective safeguard measures to control dust and PM10, PM2.5 generation include the following: ▪ Provision of dry drilling with dust extraction system in place or wet drilling of holes; ▪ Use of good quality explosives, implementing CIMFR recommended measures during blasting i.e. provision of proper stemming after charging of explosives and use of delay detonators minimizing dust throw and its spread in ambient air; ▪ Ensuring blasting is done only in the daytime when no strong winds are blowing or there is no overcast or lightening event. ▪ Loading /unloading of limestone from an optimum height and use of sharp teeth for shovel to reduce dust blow; ▪ Avoiding overloading of haul trucks to eliminate spillage during transit on haul road; ▪ Water sprinkling on unpaved areas and haul road during dry wind periods through fixed sprinklers supplemented with water tankers in active mine pit area; ▪ Ensuring speed controls as already practiced to the limit of 20 km/hour on vehicle movements on haul roads; ▪ Preventive maintenance of mine machinery and regular fine-tuning of engines of HEMMs in use to ensure that the emission levels remain within the stipulated norms and maintaining Pollution Under Control (PUC) Certificates for HEMMs; ▪ Provision of water sprinkling, rain gun and fogger system to minimize dust generation while unloading of dumper into the crusher hopper; ▪ Provision of dust extraction system with bag filters in crushing and transfer operations. High efficiency dust collection system will continue to operate to achieve particulate emission to less than 50 mg/Nm^3 through crushers, TB-1 and TB-2 stacks; ▪ Provision of water sprinkling for transfer of crushed limestone through hoods/chutes before unloading on long belt conveyor to prevent dust emissions; ▪ Provision of close conduit type long belt conveyor provided with water sprinkling for transportation of crushed limestone; ▪ Personnel working in dusty area to be provided protective gears such as dust masks.

SN	Condition	Compliance Status
11	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations. The monitoring shall be carried out four times in a year pre- monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Director, Central Ground Water Board.	Three piezometers installed outside at (i) PWD Road (to the Southwest of the mine), (ii) Near Mine Entry Gate (to the South of the mine); and (iii) Near Transit House (to the Southeast of the mine). The groundwater levels and ground water quality are being monitored covering all the four seasons. The month wise piezometers monitored ground water levels and ground water quality are included in **Annexure- IV** of this six monthly compliance report (as enclosed). The monitored results are being submitted to CGWA/CGWB on six monthly basis. It is being ensured that no natural water course and water resources are obstructed due to mining operations.
12	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintain. The natural water bodies and or streams which are flowing in an around the village, should not be disturbed. The Water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the Project Proponent has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug wall located in village should be incorporated to ascertain the impact of mining over ground water table.	Flow rates of the water springs, Phlangkaruh and Umiam Rivers are being monitored on monthly basis. The monitored flow rates are being reported to MoEFCC on six monthly basis. Mining will be restricted to ultimate pit depth up to 90 m RL. Depth of water table as monitored through piezometers is much below 90 m RL hence there will be no intersection of groundwater regime. No natural water bodies and or steams are being disturbed due to mining operations. Water table monitoring is done through month wise recording of water levels in three piezometers as described in response on condition # 11. Rainwater recharging efforts are as described in response to condition no. 6.

SN	Condition	Compliance Status
13	Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	Monitoring of water quality of Phlangkaruh springs (upstream and downstream), and Umiam River (upstream and down streams) is being carried out by Meghalaya State Pollution Control Board on monthly basis in their laboratory. The water quality results are included in the **Annexure- V** of this six-monthly compliance report (1st October 2018 to 31st March 2019) being submitted to MoEFCC, New Delhi, MoEFCC Regional Office, Shillong, MSPCB and CGWA, CGWB and CPCB RO, Shillong.
14	Transportation of the minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The project proponent shall bear the cost towards the widening and strengthening of existing public road network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.	Not applicable. No mineral transportation through road is involved. The transportation of limestone to Bangladesh is being done through Long Belt Conveyor fully covered from top.
15	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours.	Measures have been adopted to minimize disturbance to human settlements due to illumination and noise levels. Noise levels are being monitored on regular basis in the surrounding settlements. The noise levels observed at all the settlements remained well within the prescribed equivalent noise limits of 55 dB(A) for day time and 45dB(A) for night time.

SN	Condition	Compliance Status
16	Main haulage road in the mine should be provided with permanent water sprinklers and other roads should be regularly wetted with water tankers fitted with sprinklers. Crusher and material transfer points should invariably be provided with Bag filters and or dry fogging system. Belt-conveyors should be fully covered to avoid air borne dust.	Permanent water sprinklers have been provided on the median of the haul road within the mine site. Water sprinkling is also being done through water tankers at other locations with potential dust emissions. Mitigation measures to control dust emission including provision of water sprinkling, bag filters, fogging system and rain-gun are in place on crushing operations and transfer points. Belt conveyor is covered to avoid air borne dust.
17	Main haulage road in the mine should be provided with permanent water sprinklers and other roads should be regularly wetted with water tankers fitted with sprinklers. Crusher and material transfer points should invariably be provided with Bag filters and or dry fogging system. Belt-conveyors should be fully covered to avoid air borne dust. Main haulage road in the mine should be provided with permanent water sprinklers and other roads should be regularly wetted with water tankers fitted with sprinklers. The material transfer points should invariably be provided with Bag filters and or dry fogging system. In case of Belt- conveyors facilities the system should be fully covered to avoid air borne dust; Use of effective sprinkler system to suppress fugitive dust on haul roads and other transport roads shall be ensured.	Permanent water sprinklers have been provided on the median of the haul road within the mine site. Water sprinkling is also being done through water tankers at other locations with potential dust emissions. Mitigation measures to control dust emission including provision of water sprinkling, bag filters, fogging system and rain-gun are in place on crushing operations and transfer points. Belt conveyor is covered to avoid air borne dust. Other dust control systems as described in response to condition no. 10 are in place.
18	Sufficient number of Gullies to be provided for better management of water. Regular Monitoring of pH shall be included in the monitoring plan and report shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.	The mining operations include provision of bunds along the benches to guide water flow. Proper slope is being maintained towards the lowest elevation. Silt traps have been provided before water merges into sumps and cavities down to the south of the mine lease area. Regular cleaning of silt traps and check dams is in place. Monitoring of pH of the water discharging from the sumps during monsoon season being conducted regularly.

SN	Condition	Compliance Status
19	There shall be planning, developing and implementing facility of rainwater harvesting measures on long term basis and implementation of conservation measures to augment ground water resources in the area in consultation with Central Ground Water Board.	Rainwater harvesting and measures to augment ground water resources are as described in response to Condition no. 6.Three water sumps for recharging of ground water are being set up as per design approved by Central Ground Water Board Guwahati as described in response to condition no.6.
20	The Project Proponent has to take care of gullies formed on slopes. Dump mass should be consolidated with proper filling/ levelling with the help of dozer/compactors.	No overburden dumps involved as the mine is devoid of overburden. Hence, no overburden dumps are involved for mining from Nongtrai Limestone Mine. Rain water flow along the limestone mine is guided along the benches through bunds. Silt traps have been provided before water enters the sumps for discharge/ groundwater recharge.
21	The reclamation at waste dump sites shall be ecologically sustainable. Scientific reclamation shall be followed. The local species may be encouraged and species are so chosen that the slope, bottom of the dumps and top of the dumps are able to sustain these species. The aspect of the dump is also a factor which regulates some climatic parameters and allows only species adopted to that micro climate.	Not Applicable. The limestone mine is devoid of any overburden. Hence, no overburden dumps are involved for mining from Nongtrai Limestone Mine.

<table>
<tr><th>SN</th><th>Condition</th><th>Compliance Status</th></tr>
<tr><td>22</td><td>The top soil, if any, shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation. The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time. The maximum height of the dumps shall not exceed 8m and width 20 m and overall slope of the dumps shall be maintained to 45°. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. The entire excavated area shall be backfilled and afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.</td><td>Availability of top soil in the mining lease area is almost negligible as the area within the mine lease is devoid of any overburden. Any trapped soil, encountered from the crevices or fractured rocks (due to Karst topography) is being collected and properly stacked.

As the limestone is exposed on the surface and the mining area is practically devoid of any overburden or topsoil, no overburden waste dumping is involved.

Records of topsoil recovered during the last three years is presented as following:

<table>
<tr><th>Status as on</th><th>Clay/ Top Soil Recovered in tonne</th><th>Clay/ Top Soil Used in Greenbelt/Plantation in tonne</th><th>Balance Clay Available in tonne</th><th>Remarks</th></tr>
<tr><td>December 2017</td><td>6.790</td><td>6.500</td><td>3.990</td><td>Plantation at Light Section, Magazine & Haul Road, Greenbelt & Safety zone, block A,B & C.</td></tr>
<tr><td>December 2018</td><td>8.540</td><td>5.500</td><td>7.030</td><td>Plantation at Green belt ,Safety Zone, Light Section and Block A</td></tr>
<tr><td>March 2019</td><td>1.300</td><td>1.500</td><td>6.830</td><td>Use at nursery</td></tr>
</table>

Measures for rehabilitation of mined out areas will be done as per progressive mine closure plan and five years prior to decommissioning of mines as per prior approval of IBM and Mining and Geology Department Government of Meghalaya.</td></tr>
</table>

SN	Condition	Compliance Status
23	Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, mineral and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. The drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dumps to prevent run off of water and flow of sediments directly into the river and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.	As part of the recommendations of Catchment Area Treatment Plan, eight check dams have been constructed in the gullies and area surrounding the mine. Drains have been constructed along the active mine benches linking it with siltation pond. Deposited silt from the drains and siltation pond is being desilted periodically. However, most of the rainwater gets percolated down from the mine surface (having crevices and fractured rocks due to karst topography). Greenbelt of 100 m all along the mine is being maintained. No overburden dumps involved as the mine is devoid of overburden. LUMPL has identified three recharging sumps to augment recharging of rainwater into groundwater regime by collecting rainwater through haul roads and open area towards south of the mine at the following locations: o Sump no. 1 of 8mx6m at 110m RL adjacent to haul road near topsoil storage shed; o Sump no. 2 of 10m x 8m at 68 m RL near conveyor take off point; and o Sump no. 3 of 6 m x 4 m at 125 m RL near workshop area. The above of recharging pits are being developed as per design approved by CGWA, Guwahati. Overall, it is expected that above mentioned mitigation measures would help augment the groundwater resource.

SN	Condition	Compliance Status
24	Plantation shall be raised in a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around water body, along the roads etc. by planting the native species in consultation with the local DFO/Agriculture Department and as per CPCB Guidelines. The density of the trees should be around 2500 plants per ha. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	• An area of 7.5 m width has been earmarked as the safety zone as per approved mining scheme and reclamation has been started as per Progressive Mining closure Plan in the year 2017-18. • LUMPL has also been carrying out plantation by maintaining a green belt of 100 m width as per the condition of EC no. J-11015/10/2000-IA.II. (M) dated 9 August 2001 and Transferred to LUMPL dated 30 July 2002 modified by MoEFCC on 19 April 2010 for 2.0 MTPA limestone mining. Total plantations carried out in the greenbelt area and along the roads are 37,734 as on 31^{s} March 2019 with survival rate of ~76%.
25	Project Proponent shall follow the mitigation measures provided in Office Memorandum No. Z-11013/57/2014-IA.II (M), dated 29th October, 2014, titled "Impact of mining activities on Habitations-Issues related to the mining Projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area".	• No National Parks/ Wildlife Sanctuaries / Biosphere Reserves/ Wildlife Corridors/ Tiger/ Elephant Reserves are located within the 10 km study area of the mine lease. • No village settlement is located within 1 km from the mine site.
26	The Project Proponent shall make necessary alternative arrangements, where required, in consultation with the State Government to provide alternate areas for livestock grazing, if any. In this context, Project Proponent should implement the directions of the Hon'ble Supreme Court with regard to acquiring grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded against felling and plantation of such trees should be promoted.	No livestock grazing land is involved for the existing limestone mine lease area of 100 Ha. No area of Project component is involved in hindering cattle grazing.

SN	Condition	Compliance Status
27	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.	Noted
28	As per the Company Act, the CSR cost should be 2% of average net profit of last three years. Hence CSR expenses should be as per the Company Act/ Rule for the Socio Economic Development of the neighborhood Habitats which could be planned and executed by the Project Proponent more systematically based on the 'Need based door to door survey' by established Social Institutes/ Workers. The report shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.	The CSR budget of INR 140.75 Lakhs has been earmarked for the year 2019 based on last three years net profit. LUMPL has been implementing community development activities since 2006 and the company is continuously focusing for improvements and enhancements of the services over time. The community development activities are focused on the areas of Health Services; Educational Support; Infrastructure Improvement; Income generation programs – development of skill sets, training and awareness programs etc.; and Sponsoring social and cultural events. The CSR activities from 2006 to present have been taken up in 12 villages with an approximate population of about 4,000 in the Shella Village Durbar and over 1,000 in Nongtrai Village Durbar. From the year 2006 up to 31st March 2019, LUMPL has contributed INR 1,177.88 Lakhs for community development activities in the villages of Nongtrai and Shella Durbars. As directed by Hon'ble Supreme Court, LUMPL has also been contributing to SPV a sum of INR 90/- per tonne of the limestone mined from the date on which mining commenced on monthly basis for welfare projects mandated upon it including the development of health, education, economy, irrigation and agriculture in the project area of 50 kms solely for local community and welfare of tribals. As on 31st March 2019, LUMPL made payment to SPV of ~INR 18,422.43 Lakhs.

SN	Condition	Compliance Status
29	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Any construction labour to be deployed will be provided with necessary infrastructure within the existing project footprint and facilities including cooking, toilets, package STP, safe drinking water, health care facility etc.
30	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs	Mitigations measures are in place to minimize noise levels. All working areas will be maintained within 85 dB(A) of noise levels in the work environment area. Workers engaged in operations of HEMM have been provided with ear plugs/ muffs.
31	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Waste water generated from mine workshop is collected in effluent treatment plant (ETP) for with physico-chemical treatment including oil and grease trap installed before discharge at workshop is operational.
32	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.	Personnel working in mine area are provided with personal protective equipment (PPE). Use of PPEs including dust masks, ear plugs, safety shoes, illuminating jacket, hard hat are compulsory for all workers working in the mine. Life Saving talk is held daily. Refresher training on safety and information on health aspects is provided on monthly basis to all the workers.
33	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	An Environmental Management Cell has been established and operational. The department is headed by a Manager who reports to Head of the Mining Operation. The Manager is supported by environment Senior Executive Officer.
34	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office.	Funds earmarked for environment protection are being maintained in the separate bank account. Expenditure incurred on environment protection and monitoring measures during the period 1st Oct 2018 to 31st March 2019 was INR 25.69 Lakhs.

SN	Condition	Compliance Status
35	The project authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	It is an expansion Project of limestone mining from 2.0 MTPA to 5.0 MTPA. No new land development work is involved as the area of the mine lease will remain unchanged to the existing 100 Ha.
36	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Noted
37	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Central Pollution Control Board and State Pollution Control Board.	Noted
38	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	Copies were circulated through letters dated 2 December 2016 to ▪ Village Dorbar U Sandi Nongtrai; and ▪ Dorbar Shnong Shella.
39	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.	Complied with
40	The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment, Forest and Climate Change at www.environmentclearance.nic.inand a copy of the same should be forwarded to the Regional Office.	Advertised in the following widely circulated newspapers: ▪ English Daily Newspaper The Shillong Times dated 5th December 2016 ▪ Khasi Daily Newspaper Mawphor dated 5th December 2016. Copies of advertisements in the above mentioned newspapers were submitted to MoEFCC RO Shillong through letter dated 27th December 2016.

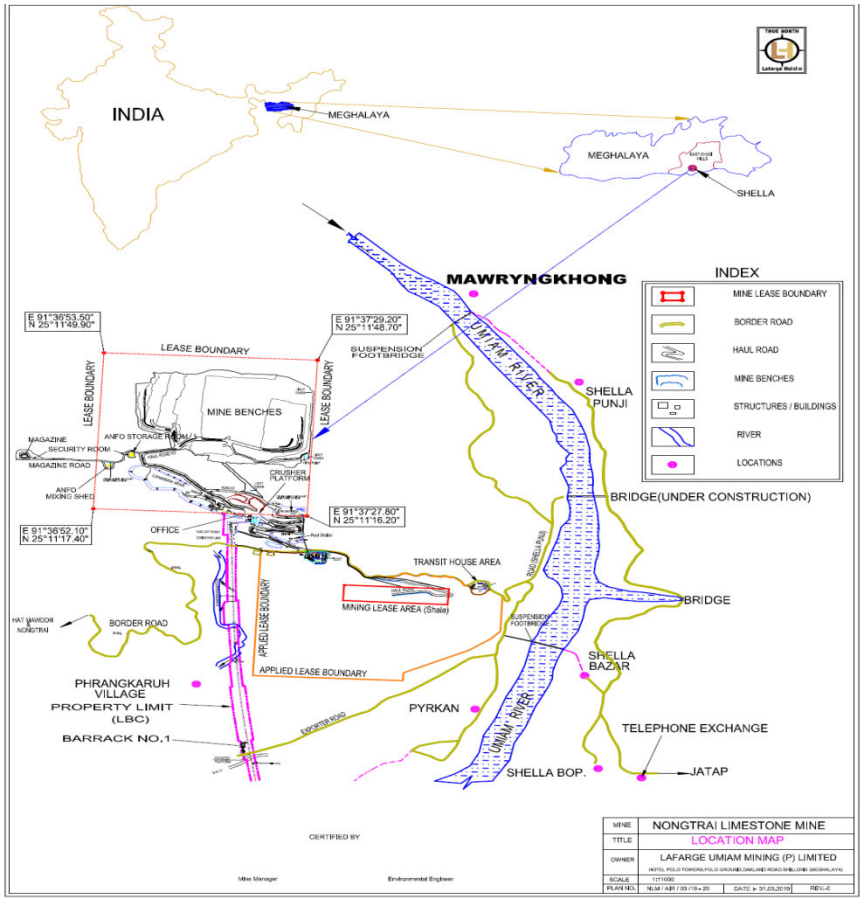
2 ENVIRONMENTAL MONITORING CONDUCTED FROM 1 OCTOBER 2018 TO 31 MARCH 2019

2.1 INTRODUCTION

Lafarge Umiam Mining Pvt. Ltd. (LUMPL), a company incorporated in India as a 100% subsidiary of LafargeHolcim Bangladesh Ltd., (formerly Lafarge Surma Cement Ltd.) has been operating Nongtrai Limestone Mine located at village Nongtrai, District East Khasi Hills in Meghalaya, India for the purpose of extraction and export of limestone via long belt conveyor to its parent company in Bangladesh for the manufacture of clinker and cement. This report on environmental monitoring for the period from 01 October 2018 to 31 March 2019 covers compliance status of conditions of Environmental Clearances (i) no. J-11015/17/2013-IA.II (M) dated 28th November 2016.

The location of Nongtrai Limestone Mine is shown in **Figure 2.1.**

Figure 2.1: Location of Nongtrai Limestone Mine



2.2 ENVIRONMENTAL MONITORING

This six monthly report covers the environmental monitoring done for the period from 1 October 2018 to 31 March 2019 covering the following environmental monitoring results:

i) Micrometeorology
ii) Ambient Air Quality
iii) Water Quality
iv) Water Flow
v) Noise level
vi) Cave Protection

2.3 Micrometeorology

A weather monitoring station has been installed on rooftop of the mine office building of Nongtrai Limestone Mine for recording of hourly temperature, humidity, wind speed, wind direction and rainfall data. The observed meteorology is described in the following subsections.

a) Wind speed and wind direction

The predominant wind direction recorded was N-NNW with wind speed varying from 0.0 to 9.8 km per hour during Oct to Dec 2018 and 0.0 to 9.0 km per hour during Jan to Mar 2019. The details wind direction is given in Table 1.

b) Temperature

The maximum and minimum temperature recorded during Oct - Dec 2018 was 36.6ºC and 13.2ºC respectively while during Jan to Mar 2019 the maximum and minimum temperature recorded was 34.4ºC and 12.2ºC respectively (Table No.1). The diurnal variation of temperature is shown in Exhibit No.1 for the month of Oct to Dec 2018 and Exhibit No.2 for the month of Jan to Mar 2019.

c) Humidity:

The maximum and minimum Humidity during Oct to Dec 2018 was 93.5% and 21.2% respectively while during Jan to Mar 2019 the maximum and minimum humidity recorded was 92.5% and 19.2% respectively (Table No.1) The diurnal variation of humidity is shown in Exhibit No.3 for the month of Oct to Dec 2018 and Exhibit No.4 for the month of Jan to Mar 2019.

d) Rainfall:

The total rainfall observed during the period 1 Oct 2018 to 31 Mar 2019 was 444.0 mm.

2.4 Ambient Air Quality Monitoring Locations

Ambient air quality monitoring is carried out twice a week at five stations selected as per recommendation of Meghalaya State Pollution Control Board as per their letter no. MPCB/TB-CON-227(Pt-II)/2011-2012/19 24 February 2012. Two monitoring stations are located in the core zone and three in the buffer zone for monitoring of Particulate Matter of size less than 10 micron (PM10), Particulate Matter of size less than 2.5 micron (PM2.5),

Sulphur Dioxide (SO2) and Nitrogen Oxide (NOx) for the study period using Respirable Dust Sampler of Envirotech make. The distance and direction of the ambient air quality monitoring stations are summarized in Table 2.1:

Table 2.1: AAQ Monitoring Locations

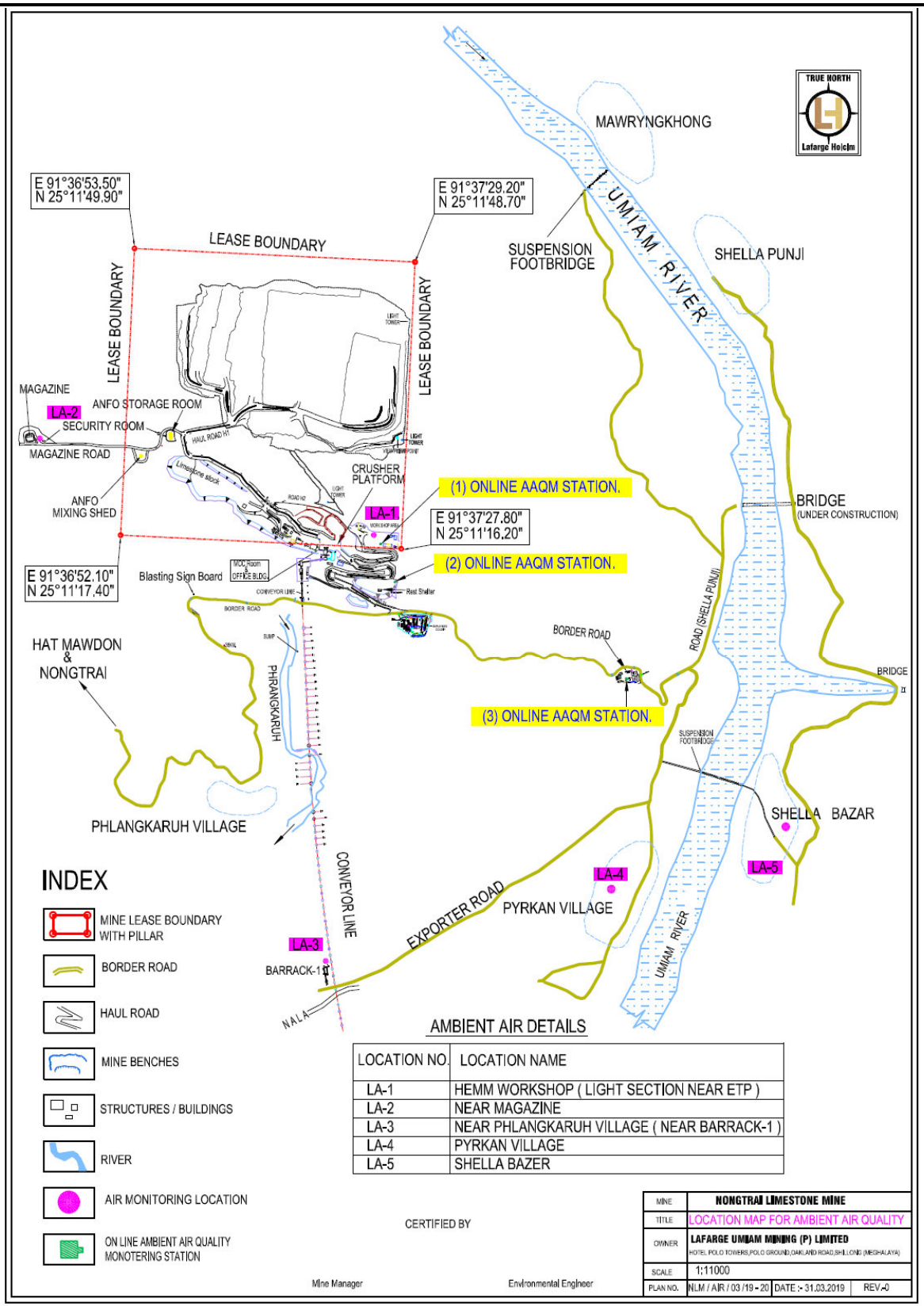
AAQ Monitoring Station Code	Distance and Bearing from Centre of the Mine	AAQ Description
LA–1: HEMM Workshop (Light section near ETP)	0.7 km to Southeast	Respirable Dust Sampler was placed near HEMM Workshop (Light section near ETP) in the quarry to assess the present pollution level in the core zone.
LA –2: Magazine Area	0.40 km to West	Respirable Dust Sampler was placed near Magazine area in the core zone.
LA–3: Phlangkaruh Village (near Security Barrack-I)	1.40 km to South	Respirable Dust Sampler was placed near Phlangkaruh Village (near Security Barrack-I) in the buffer zone.
LA – 4: Pyrkan Village	2.60 km to South Southeast	Respirable Dust Sampler was placed near Pyrkan Village in the buffer zone.
LA –5: Shella Bazaar	3.40 km to Southeast	Respirable Dust Sampler was placed near Shella Bazaar in the buffer zone on the roof top of a House.

The location of five ambient air quality stations is shown in **Figure 2.2.**

Concentrations of PM_{10}, $PM_{2.5}$, SO_2 and NOx recorded at all the five locations are described in **Tables 2 to 11**. All the observed values were found to be below the prescribed NAAQS.

Graphical representation of Ambient Air Quality is shown in **Exhibit Nos. 5 & 6** on the Industrial and mixed areas for the months of Apr to Jun 2018 and Jul to Sep 2018 and **Exhibit Nos. 7 & 8** on the Residential areas for the months Apr to Jun 2018 and Jul to Sep 2018 respectively.

Figure 2.2: Locations of Ambient Air Quality Stations



2.5 Surface Water Quality Monitoring Locations

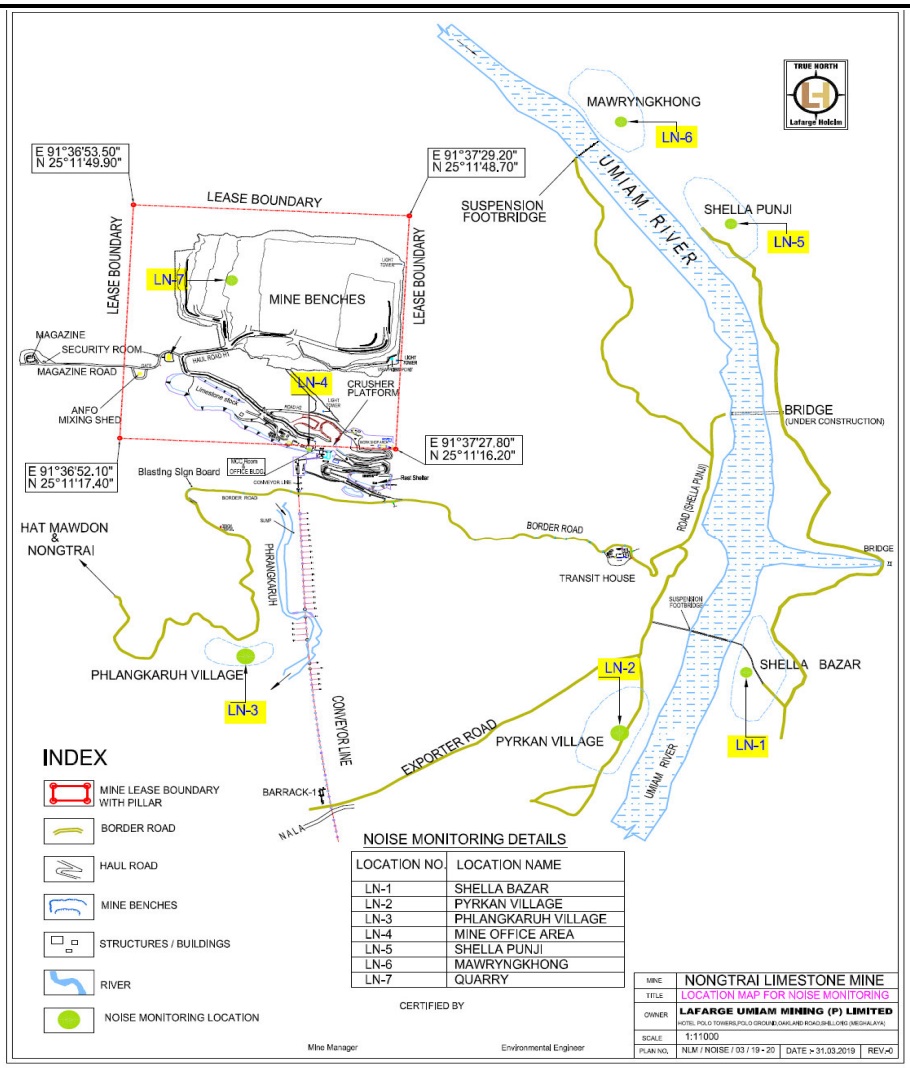
Surface water quality was assessed by collecting once a month water samples from four locations as per the recommendations of Meghalaya State Pollution Control Board vide letter no. MPCB/TB-CON-227(Pt-II)/2011-2012/19. The locations of surface water sampling are described as following:

Table 2.2: Surface Water Quality Monitoring Locations

Surface Water Sampling Location Code	Surface Water Sampling Description
LWQ - 1:	Upstream of Umiam River
LWQ - 2:	Downstream of Umiam River
LWQ - 3:	Upstream of Phlangkaruh River
LWQ - 4:	Downstream of Phlangkaruh River

The surface water quality sampling locations are shown in **Figure 2.**

Figure 2.3: Surface Water Quality and Flow Measurement Locations



The observed surface water quality is described as following:

LWQ-1 Upstream of Umiam River:

The sample represents the quality of surface water Upstream of Umiam River. The results of samples collected during October 2018 to March 2019 are shown in **Table No. 12.**

The range of analyzed water quality parameters were pH 7.5-7.8; Sulphates 3.8-7.8 mg/l; Total hardness 32.0-50.0mg/l; Fluorides 0.04-0.07 mg/l; TDS 58.0-79.0mg/l; Chlorides 6.0-7.0mg/l; Nitrates 0.28-0.40g/l; and Total Coliform were 110.0-150.0 MPN/100ml. Heavy metals (As, Cu, Pb, Cd, Ni, & Mn) remained below detectable limits.

LWQ-2 Downstream of Umiam River:

The results of samples collected during October 2018 to March 2019 are shown in **Table No. 13.** The concentrations were within the prescribed limit.

The range of analyzed water quality parameters were pH 7.5-7.8; Chlorides 6.0-7.0 mg/l; Sulphates 3.6-7.6 mg/l; Nitrates 0.3-0.4 mg/l; Total hardness 32.0-68.0mg/l; TDS 60.0-108.0mg/l and Fluorides were 0.05-0.07 mg/l and total coliform were 70.0-150.0 MPN/100ml. Heavy metals (As, Cu, Pb, Cd, Ni, & Mn) remained below detectable limits.

LWQ-3 Upstream of Phlangkaruh River:

This sample represents the quality of surface water. The results of samples collected during October 2018 to March 2019 are shown in **Table No. 14.**

The range of analyzed water quality parameters were pH 7.7-8.2; Chlorides 5.0-8.0 mg/l; Sulphates 4.0-10.5 mg/l; Nitrates 0.3-0.5mg/l; Total hardness 66.0- 122.0 mg/l; Fluorides 0.04-0.08 mg/l; TDS were 82.0-122.0 mg/l and total coliform were 79.0-120.0 MPN/100ml. Heavy metals (As, Cu, Pb, Cd, Ni, & Mn) remained below detectable limits..

LWQ-4 Downstream of Phlangkaruh River:

This sample represents the quality of surface water. The results of October 2018 to March 2019 are shown in **Table No. 15.**

The range of analyzed water quality parameters were pH 7.7-8.2; Chlorides 6.0-8.0 mg/l; Sulphates 3.8 – 10.1 mg/l; Nitrates 0.4- 11.40mg/l; Total hardness 72.0-126.0 mg/l; Fluorides 0.04-0.07mg/l; TDS100.0-125.0 mg/l; and Total coliform were 74.0- 94.0 MPN/100 ml. Heavy metals (As, Cu, Pb, Cd, Ni, & Mn) remained below detectable limits.

2.6 Surface Water Flow Measurement Locations

Surface water flow measurements were carried out once a month at two locations to assess the surface water quantity of the nearby water bodies. The sampling locations are described in Table 2.3 and shown in Figure 2.3.

Table 2.3: Surface Water Flow Measurement Locations

Surface Water Sampling Location Code	Surface Water Sampling Description
LWF - 1:	Downstream of Umiam River (near Shella Bazar)
LWF - 2:	Downstream of Phlangkaruh River near Phlangkaruh Village

Water Flow Measurements were carried out at two locations using water current meter using Bureau of Indian Standards method IS: 1192 (1959). The results and cross section of the water flow measurements are given in **Tables 16-17 e.** From the table, it can be seen that the water flow downstream of Umiam River near temporary bridge (during fair weather) (LWF-1) was highest followed by Downstream of Phlangkaruh River (LWF2). The results are given below:

SL.No	Location	Discharge in m3/hour					
		Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19
1	LWF - 1 UMIAM RIVER	70943.04	40672.8	21874.86	18986.94	17539.2	15864.66
2	LWF - 2 PHLANGKARUH RIVER	3034.8	1983.6	1843.2	1857.6	2350.8	3045.6

2.7 Noise Levels Monitoring

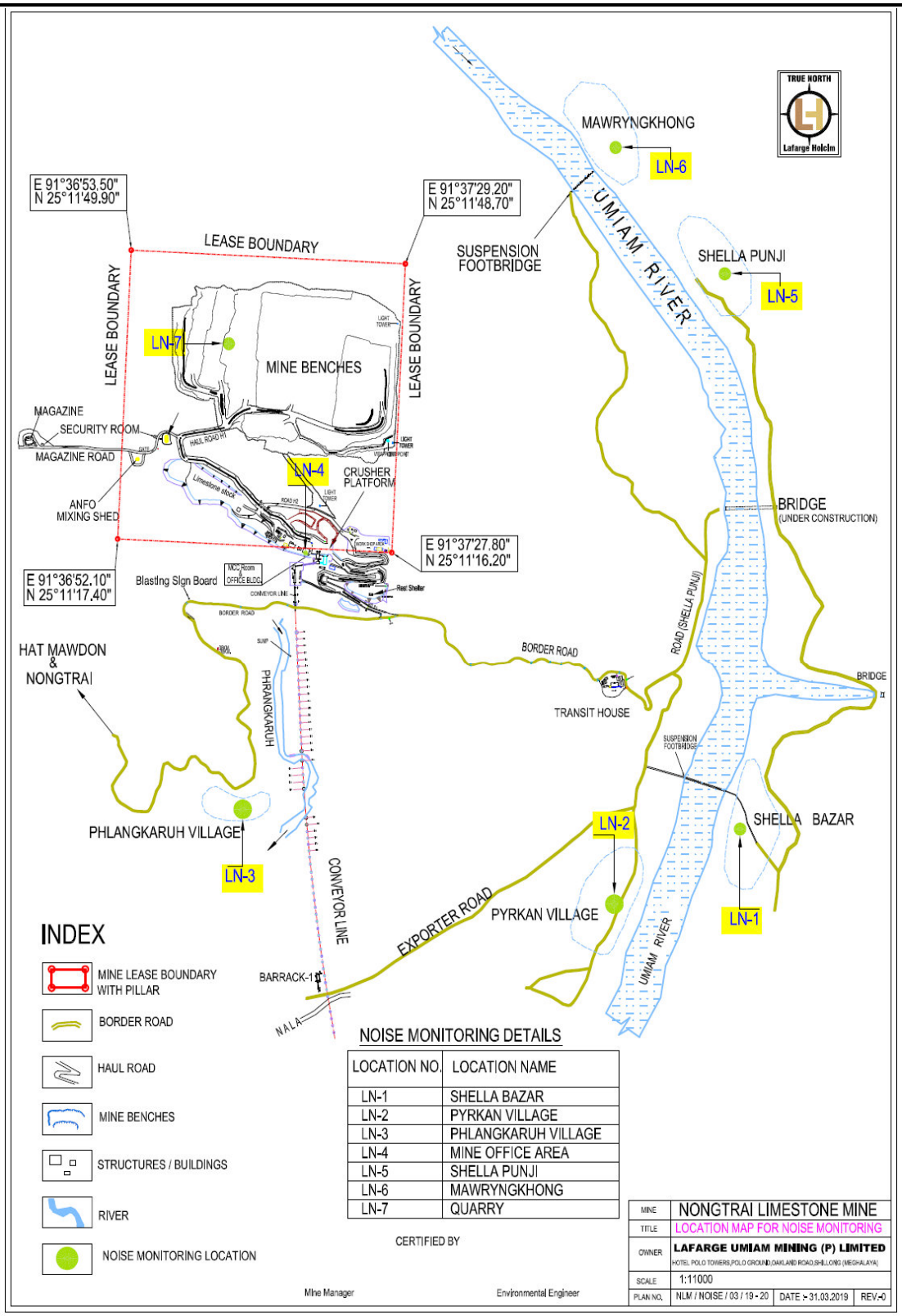
Monitoring of Noise levels was done at six locations during the period October 2018 to March 2019 by using an integrating sound level meter (Type II Envirotech). Out-door noise level measurements were made at a height of 1.5 meter above the ground, and away from the sound reflecting sources like walls, buildings. Noise levels were measured at six locations once per month as per description given in **Table 2.4**.

Table 2.4: Noise Levels Monitoring Locations

Noise Levels Monitoring Location Code	Noise Monitoring Location Description
LN-1: Shella Bazar (non-market day)	Noise monitoring was done at Shella Bazaar on non-market day in front of PWD guest house
LN - 2: Pyrkan Village	Noise monitoring was done in Pyrkan Village near Ram Krishna Mission School
LN-3: Phlangkaruh Village	Noise monitoring was done at Phalangkaruh Village
LN- 4: Mine lease area (office area)	Noise monitoring was done to assess the noise levels within the core zone.
LN-5: Shellapunji Village	Noise monitoring was done at Shellapunji village to assess the noise levels.
LN-6: Mawryngkhong Village	Noise monitoring was done at Mawryngkhong Village

The noise levels monitoring locations are shown in **Figure 2.4**.

Figure 2.4: Noise Levels Monitoring Locations



Noise monitoring was carried out at 6 locations during the period Oct to Dec 2018 and Jan to Mar 2019**.** The Leq (day and night), Lmax and Lmin were analyzed from the recorded sound level meter (SLM). **Refer to Tables 18 - 29.**

OCTOBER TO DECEMBER 2018					
NOISE LEVEL AT THE VILLAGES					
Location	**Range in dB(A)**	**Leq.Value in dB(A) Day time**	**Leq.Value in dB(A) Night time**	**Permissible limit Day time**	**Permissible limit Night**
LN 1	41.8 - 58.7	55.3 - 56.0	45.9 - 47.0	65	55
LN 2	39.4 - 56.5	52.6 - 53.3	43.3 - 43.4	55	45
LN 3	39.2 - 56.2	52.0 - 53.0	43.0 - 43.7	55	45
LN 5	39.8 - 56.4	52.3 - 53.5	43.1 - 43.5	55	45
LN 6	39.4 - 56.5	51.9 - 53.2	43.3 - 44.0	55	45
AMBIENT NOISE INSIDE THE QUARRY					
LN 4	50.5 - 69.7	65.6 - 67.4	56.1 - 57.4	75	70
JANUARY TO MARCH 2019					
NOISE LEVEL AT THE VILLAGES					
Location	**Range in dB(A)**	**Leq.Value in dB(A) Day time**	**Leq.Value in dB(A) Night time**	**Permissible limit Day time**	**Permissible limit Night**
LN 1	42.5 - 57.2	54.4 - 54.7	45.5 - 45.6	65	55
LN 2	39.6 - 56.2	52.6 - 53.0	43.0 - 43.8	55	45
LN 3	39.5 - 56.2	52.0 - 52.9	42.8 - 43.8	55	45
LN 5	39.5 - 56.8	52.4 - 53.3	43.0 - 43.3	55	45
LN 6	39.5 - 57.2	52.2 - 53.1	43.1 - 43.2	55	45
AMBIENT NOISE INSIDE THE QUARRY					
LN 4	51.6 - 69.2	65.8 - 67.3	56.0 - 57.5	75	70

2.8 Vehicular emission:

Vehicular emission monitored was done once during the study period of October 2018 to March 2019 for all the Heavy Earth Moving Machines (HEMM) operating in the mine by Meghalaya State Pollution Control Board using Smoke Density Meter.

2.9 Cave Protection

Monitoring of cave was conducted by physical inspection. The entry to the cave has been protected by providing fencing and gate which is locked to prevent unauthorized entry as shown in figure (Refer Plate No.1). Photographs of twin sink holes during the study period also shown in plate No.1 of page No.79.

3 CONCLUSION

AIR ENVIRONMENT:

The ambient air quality monitored at the five locations in the core and buffer zones from 1 October 2018 to 31 March 2019 remained well within the permissible limits.

WATER QUALITY:

The surface water quality results indicate that all parameters were well within the permissible limits as prescribed for surface water (IS-2296 Class C).

NOISE ENVIRONMENT:

Noise monitoring results show that noise levels remained were well within the prescribed limits.

CAVE PROTECTION:

Based on visual observation, no change in physical appearance was observed on twin sink holes and cave. Cave openings have been protected as shown in (Plate No.1).

4. Tables, Exhibits and Plates

Table No.1

Sl.No	Parameters	Oct to Dec 2018	Jan to Mar 2019
1	**Predominant Wind with direction from**	N-NE	N-NW
2	**Temperature º C**		
	I)Minimum	13.2 º C	12.2 º C
	ii)Maximum	36.6 º C	34.4 º C
	Average Temperature	23.7 º C	22.2 º C
3	**Humidity %**		
	I)Minimum	21.2 %	19.2 %
	ii)Maximum	93.5 %	92.5 %
	Average humidity	56.2 %	49.0 %
4	**Rainfall(mm)**	306.0 mm	138.0 mm

LAFARGE UMIAM MINING PVT. LTD.

AMBIENT AIR QUALITY DATA

HEMM Workshop (Light Section Near ETP)

STATION : LA-1

Table :2

DATE	24 HOURLY			
	PM_{10}	$PM_{2.5}$	SO_2	NOx
1-Oct-2018	59.5	24.8	7.8	11.2
5-Oct-2018	57.6	23.5	7.5	10.2
8-Oct-2018	56.5	22.8	6.9	9.5
11-Oct-2018	53.6	21.2	5.8	8.5
14-Oct-2018	55.4	22.5	6.4	8.9
18-Oct-2018	58.5	24.2	6.5	10.5
22-Oct-2018	60.5	25.8	7.6	11.5
25-Oct-2018	57.9	23.8	6.2	9.5
29-Oct-2018	55.8	22.4	5.9	8.4
1-Nov-2018	58.6	23.2	7.6	10.2
5-Nov-2018	60.2	25.4	8.2	10.9
8-Nov-2018	58.7	24.2	7.4	10.4
11-Nov-2018	56.5	22.8	6.2	8.6
14-Nov-2018	57.8	24.6	6.5	8.8
18-Nov-2018	59.7	24.8	7.5	9.2
22-Nov-2018	60.5	25.6	8.4	10.7
25-Nov-2018	58.7	24.2	7.8	10.5
29-Nov-2018	57.9	23.8	7.5	9.6
1-Dec-2018	57.6	23.4	6.8	8.5
5-Dec-2018	59.7	24.8	7.6	9.2
8-Dec-2018	56.7	22.8	6.5	8.7
11-Dec-2018	58.9	24.5	7.2	10.4
14-Dec-2018	56.2	21.9	6.2	8.4
19-Dec-2018	50.5	21.7	5.5	6.9
22-Dec-2018	54.7	23.5	6.2	7.8
27-Dec-2018	56.5	22.2	6.4	8.6
31-Dec-2018	57.2	23.5	6.8	9.4

Permissible Limit ($\mu g/m^3$)	
PM 10	100 µg/m3
PM 2.5	60 µg/m3
Sox	80 µg/m3
Nox	80 µg/m3

	PM_{10}	$PM_{2.5}$	SO_2	NOx
Number of observation	27	27	27	27
Arithmetic Mean	57.5	23.6	6.9	9.4
Geometric Mean	57.4	23.6	6.9	9.4
STD. GEO. Devn. (24 hrs)	2.2	1.2	0.8	1.1
Max. Concentration	60.5	25.8	8.4	11.5
Min. Concentration	50.5	21.2	5.5	6.9
98 Percentile values	60.5	25.7	8.3	11.3
Detection Limit ($\mu g/m^3$)				
NOTE:	ALL VALUES ARE IN $\mu g/m^3$			

LAFARGE UMIAM MINING PVT. LTD.

AMBIENT AIR QUALITY DATA

Near Magazine

STATION : LA-2

Table:3

DATE	24 HOURLY			
	PM_{10}	$PM_{2.5}$	SO_2	NOx
1-Oct-2018	57.8	24.5	7.2	8.5
5-Oct-2018	55.4	21.5	6.8	8.2
8-Oct-2018	54.3	20.5	6.5	7.5
11-Oct-2018	51.7	20.5	5.8	6.9
14-Oct-2018	53.4	21.2	4.9	6.5
18-Oct-2018	55.7	23.8	5.4	6.7
22-Oct-2018	57.9	24.2	5.8	6.9
25-Oct-2018	55.6	22.8	5.6	6.5
29-Oct-2018	53.5	21.2	5.4	6.2
1-Nov-2018	56.2	22.8	7.5	8.4
5-Nov-2018	57.8	24.5	7.8	8.6
8-Nov-2018	56.4	22.6	7.2	8.6
11-Nov-2018	54.8	21.9	5.8	6.7
14-Nov-2018	55.6	22.4	5.8	6.9
18-Nov-2018	57.4	23.5	6.2	7.5
22-Nov-2018	56.8	23.6	6.4	7.2
25-Nov-2018	56.2	23.2	6.5	7.2
29-Nov-2018	55.8	22.4	6.2	6.9
1-Dec-2018	55.4	21.7	6.5	7.2
5-Dec-2018	57.2	23.6	6.8	7.5
8-Dec-2018	54.2	21.7	5.8	6.9
11-Dec-2018	56.4	22.8	6.2	7.4
14-Dec-2018	54.5	21.8	5.6	6.8
19-Dec-2018	48.7	20.4	5.2	6.5
22-Dec-2018	52.6	21.7	5.8	6.7
27-Dec-2018	54.8	21.7	5.8	6.9
31-Dec-2018	55.8	22.6	6.2	7.4

	PM_{10}	$PM_{2.5}$	SO_2	NOx
Number of observations	27	27	27	27
Arithmetic Mean	55.3	22.4	6.2	7.2
Geometric Mean	55.2	22.4	6.1	7.2
STD. GEO. Devn. (24 hrs)	2.0	1.2	0.7	0.7
Max. Concentration	57.9	24.5	7.8	8.6
Min. Concentration	48.7	20.4	4.9	6.2
98 Percentile values	57.8	24.5	7.6	8.6
Detection Limit ($\mu g/m^3$)				
NOTE:	ALL VALUES ARE IN $\mu g/m^3$			

Permissible Limit ($\mu g/m^3$)	
PM 10	100 µg/m3
PM 2.5	60 µg/m3
Sox	80 µg/m3
Nox	80 µg/m3

LAFARGE UMIAM MINING PVT. LTD.

AMBIENT AIR QUALITY DATA

Near Phlangkaruh village (Near Barrack I)

STATION : LA-3

Table :4

DATE	24 HOURLY			
	PM_{10}	$PM_{2.5}$	SO_2	NOx
1-Oct-2018	55.4	23.6	5.8	7.2
5-Oct-2018	53.2	21.5	5.5	6.8
8-Oct-2018	52.5	22.2	5.8	6.7
11-Oct-2018	49.5	20.2	4.6	5.4
14-Oct-2018	51.2	20.8	4.7	5.8
18-Oct-2018	53.5	22.2	4.8	6.7
22-Oct-2018	55.6	22.8	5.2	6.9
25-Oct-2018	52.4	21.8	4.9	5.8
29-Oct-2018	51.5	21.2	4.5	5.4
1-Nov-2018	54.7	22.5	5.4	6.8
5-Nov-2018	55.4	23.6	5.2	6.9
8-Nov-2018	53.5	23.2	5.6	6.5
11-Nov-2018	52.6	21.5	5.2	6.2
14-Nov-2018	53.5	22.8	5.4	6.5
18-Nov-2018	55.4	22.8	5.6	6.8
22-Nov-2018	54.8	22.2	5.5	6.5
25-Nov-2018	53.9	21.8	5.2	6.4
29-Nov-2018	52.8	21.5	4.9	5.8
1-Dec-2018	53.2	20.5	5.2	6.5
5-Dec-2018	54.8	22.6	5.4	6.2
8-Dec-2018	52.7	21.8	5.1	5.9
11-Dec-2018	54.8	22.4	5.4	6.4
14-Dec-2018	52.5	21.2	4.9	5.7
19-Dec-2018	46.5	19.8	4.2	5.4
22-Dec-2018	50.4	20.2	4.8	5.6
27-Dec-2018	52.7	20.8	4.8	5.9
31-Dec-2018	53.6	21.4	5.2	6.1

Permissible Limit ($\mu g/m^3$)	
PM 10	100 µg/m3
PM 2.5	60 µg/m3
Sox	80 µg/m3
Nox	80 µg/m3

	PM_{10}	$PM_{2.5}$	SO_2	NOx
Number of observations	27	27	27	27
Arithmetic Mean	53.1	21.8	5.1	6.3
Geometric Mean	53.0	21.8	5.1	6.2
STD. GEO. Devn. (24 hrs)	2.0	1.0	0.4	0.5
Max. Concentration	55.6	23.6	5.8	7.2
Min. Concentration	46.5	19.8	4.2	5.4
98 Percentile values	55.5	23.6	5.8	7.0
Detection Limit ($\mu g/m^3$)				

LAFARGE UMIAM MINING PVT. LTD.
AMBIENT AIR QUALITY DATA
Pyrkan village
STATION : LA-4

Table:5

DATE	24 HOURLY			
	PM_{10}	$PM_{2.5}$	SO_2	NOx
1-Oct-2018	52.4	22.8	5.2	6.4
5-Oct-2018	51.4	20.5	4.2	5.8
8-Oct-2018	49.8	20.2	3.9	5.4
11-Oct-2018	47.8	19.5	3.6	5.8
14-Oct-2018	49.6	21.2	3.5	4.6
18-Oct-2018	51.2	21.8	3.8	5.2
22-Oct-2018	52.4	22.8	4.8	5.9
25-Oct-2018	49.7	21.2	4.5	5.6
29-Oct-2018	49.2	20.8	4.2	5.1
1-Nov-2018	52.6	21.9	5.2	6.2
5-Nov-2018	53.2	21.4	4.8	5.7
8-Nov-2018	51.7	21.6	4.9	5.6
11-Nov-2018	50.7	20.9	4.5	5.4
14-Nov-2018	51.4	21.2	4.8	5.7
18-Nov-2018	52.4	22.2	4.9	5.9
22-Nov-2018	51.8	21.9	4.6	5.7
25-Nov-2018	51.4	21.2	4.5	5.8
29-Nov-2018	50.2	20.4	4.2	5.6
1-Dec-2018	51.8	22.4	4.9	5.8
5-Dec-2018	52.5	22.8	5.2	5.8
8-Dec-2018	50.7	20.2	4.8	5.4
11-Dec-2018	52.6	21.8	5.4	5.8
14-Dec-2018	50.2	20.1	4.6	5.6
19-Dec-2018	43.5	18.7	3.5	4.6
22-Dec-2018	48.7	19.8	3.8	4.9
27-Dec-2018	49.8	20.2	4.2	5.1
31-Dec-2018	51.7	21.2	4.5	5.4

Permissible Limit ($\mu g/m^3$)	
PM 10	100 µg/m3
PM 2.5	60 µg/m3
Sox	80 µg/m3
Nox	80 µg/m3

	PM_{10}	$PM_{2.5}$	SO_2	NOx
Number of observations	27	27	27	27
Arithmetic Mean	50.8	21.1	4.5	5.5
Geometric Mean	50.7	21.1	4.4	5.5
STD. GEO. Devn. (24 hrs)	2.0	1.0	0.5	0.4
Max. Concentration	53.2	22.8	5.4	6.4
Min. Concentration	43.5	18.7	3.5	4.6
98 Percentile values	52.9	22.8	5.3	6.3
Detection Limit ($\mu g/m^3$)				
NOTE:	ALL VALUES ARE IN $\mu g/m^3$			

LAFARGE UMIAM MINING PVT. LTD.

AMBIENT AIR QUALITY DATA

Shella Bazar

STATION : LA-5

Table:6

DATE	24 HOURLY			
	PM_{10}	$PM_{2.5}$	SO_2	NOx
1-Oct-2018	53.5	23.2	5.3	5.8
5-Oct-2018	52.5	21.5	4.2	5.2
8-Oct-2018	52.2	20.5	3.8	4.9
11-Oct-2018	50.5	20.2	3.6	4.7
14-Oct-2018	51.2	21.8	3.7	4.6
18-Oct-2018	52.5	21.5	3.6	5.2
22-Oct-2018	53.2	23.5	4.8	5.9
25-Oct-2018	51.2	22.5	4.6	5.8
29-Oct-2018	50.8	20.5	3.9	5.6
1-Nov-2018	51.7	22.4	5.2	5.6
5-Nov-2018	52.8	21.9	4.8	5.4
8-Nov-2018	52.2	21.6	4.2	5.2
11-Nov-2018	51.6	21.8	4.9	5.4
14-Nov-2018	52.4	22.2	4.5	5.8
18-Nov-2018	53.6	23.2	4.8	5.9
22-Nov-2018	52.4	22.8	4.5	5.6
25-Nov-2018	53.2	23.4	4.6	5.8
29-Nov-2018	52.4	21.4	4.5	5.4
1-Dec-2018	52.8	21.5	4.8	5.2
5-Dec-2018	53.5	22.4	5.2	5.6
8-Dec-2018	51.7	21.2	4.5	5.4
11-Dec-2018	53.7	22.6	4.9	5.6
14-Dec-2018	51.5	21.4	4.6	5.7
19-Dec-2018	45.5	19.2	3.8	4.7
22-Dec-2018	50.4	20.5	4.2	5.4
27-Dec-2018	51.2	21.2	4.4	5.6
31-Dec-2018	52.8	21.8	4.8	5.4

	PM_{10}	$PM_{2.5}$	SO_2	NOx
Number of observations	27	27	27	27
Arithmetic Mean	52.0	21.8	4.5	5.4
Geometric Mean	51.9	21.7	4.4	5.4
STD. GEO. Devn. (24 hrs)	1.6	1.0	0.5	0.4
Max. Concentration	53.7	23.5	5.3	5.9
Min. Concentration	45.5	19.2	3.6	4.6
98 Percentile values	53.6	23.4	5.2	5.9
Detection Limit ($\mu g/m^3$)				
NOTE:	ALL VALUES ARE IN $\mu g/m^3$			

Permissible Limit ($\mu g/m^3$)	
PM 10	100 µg/m3
PM 2.5	60 µg/m3
Sox	80 µg/m3
Nox	80 µg/m3

LAFARGE UMIAM MINING PVT. LTD.

AMBIENT AIR QUALITY DATA

HEMM Workshop (Light Section Near ETP)

STATION : LA-1

Table :7

DATE	24 HOURLY			
	PM_{10}	$PM_{2.5}$	SO_2	NOx
2-Jan-2019	58.7	23.5	6.7	10.2
5-Jan-2019	60.2	25.6	6.9	11.5
8-Jan-2019	57.9	24.2	6.5	9.8
11-Jan-2019	56.7	23.4	6.2	8.5
14-Jan-2019	59.2	24.6	6.8	11.5
18-Jan-2019	57.5	23.8	6.2	10.5
22-Jan-2019	58.5	24.2	6.8	10.5
25-Jan-2019	56.9	22.6	6.2	9.6
29-Jan-2019	58.2	24.5	6.7	10.2
1-Feb-2019	57.5	24.2	6.8	10.5
5-Feb-2019	58.5	24.5	6.9	11.2
8-Feb-2019	60.5	25.4	7.2	12.4
11-Feb-2019	57.9	23.8	6.8	10.2
14-Feb-2019	59.2	25.6	7.0	11.2
18-Feb-2019	58.6	24.8	6.8	10.5
22-Feb-2019	61.5	26.8	7.5	11.6
25-Feb-2019	58.5	23.8	6.6	10.4
28-Feb-2019	57.6	22.4	6.2	10.2
1-Mar-2019	55.7	22.6	6.5	9.2
5-Mar-2019	57.8	23.7	6.8	10.5
8-Mar-2019	59.7	25.2	7.5	11.8
11-Mar-2019	56.8	22.4	6.7	10.2
14-Mar-2019	58.2	24.6	7.2	10.8
18-Mar-2019	55.8	22.5	6.4	9.5
22-Mar-2019	56.7	22.2	6.8	10.4
25-Mar-2019	58.5	24.7	7.4	11.2
29-Mar-2019	57.4	23.5	7.2	10.8

Permissible Limit ($\mu g/m^3$)	
PM 10	100 µg/m3
PM 2.5	60 µg/m3
Sox	80 µg/m3
Nox	80 µg/m3

	PM_{10}	$PM_{2.5}$	SO_2	NOx
Number of observation	27	27	27	27
Arithmetic Mean	58.2	24.0	6.8	10.6
Geometric Mean	58.1	24.0	6.8	10.5
STD. GEO. Devn. (24 hrs)	1.4	1.2	0.4	0.8
Max. Concentration	61.5	26.8	7.5	12.4
Min. Concentration	55.7	22.2	6.2	8.5
98 Percentile values	61.0	26.2	7.5	12.1
Detection Limit ($\mu g/m^3$)				
NOTE:	ALL VALUES ARE IN $\mu g/m^3$			

LAFARGE UMIAM MINING PVT. LTD.

AMBIENT AIR QUALITY DATA

Near Magazine

STATION : LA-2

Table:8

DATE	24 HOURLY			
	PM_{10}	$PM_{2.5}$	SO_2	NOx
2-Jan-2019	55.8	21.5	5.8	8.2
5-Jan-2019	57.8	23.2	6.2	10.5
8-Jan-2019	55.6	21.8	5.6	8.5
11-Jan-2019	54.8	21.2	5.2	7.5
14-Jan-2019	57.6	23.5	6.4	10.4
18-Jan-2019	55.4	22.2	5.6	8.4
22-Jan-2019	56.2	23.4	5.8	8.7
25-Jan-2019	54.5	21.8	5.2	7.2
29-Jan-2019	56.5	23.4	5.6	8.6
1-Feb-2019	55.6	22.6	5.6	8.5
5-Feb-2019	56.4	23.6	5.8	9.2
8-Feb-2019	57.9	24.8	6.2	10.5
11-Feb-2019	55.7	22.4	5.6	9.8
14-Feb-2019	57.2	24.5	6.4	10.2
18-Feb-2019	56.4	24.2	5.8	9.5
22-Feb-2019	58.7	24.2	6.8	10.4
25-Feb-2019	56.4	21.7	6.2	9.2
28-Feb-2019	55.4	21.6	5.8	8.6
1-Mar-2019	52.7	21.5	5.5	7.6
5-Mar-2019	55.7	22.4	5.6	8.5
8-Mar-2019	57.4	23.9	6.2	9.8
11-Mar-2019	54.6	21.8	5.4	8.2
14-Mar-2019	56.5	23.4	5.9	9.2
18-Mar-2019	53.7	21.8	5.6	7.5
22-Mar-2019	54.2	21.6	5.4	8.2
25-Mar-2019	56.2	23.2	5.8	9.5
29-Mar-2019	55.8	21.4	5.6	8.4

	PM_{10}	$PM_{2.5}$	SO_2	NOx
Number of observations	27	27	27	27
Arithmetic Mean	56.0	22.7	5.8	8.9
Geometric Mean	55.9	22.7	5.8	8.9
STD. GEO. Devn. (24 hrs)	1.4	1.1	0.4	1.0
Max. Concentration	58.7	24.8	6.8	10.5
Min. Concentration	52.7	21.2	5.2	7.2
98 Percentile values	58.3	24.6	6.6	10.5
Detection Limit ($\mu g/m^3$)				
NOTE:	ALL VALUES ARE IN $\mu g/m^3$			

Permissible Limit ($\mu g/m^3$)	
PM 10	100 µg/m3
PM 2.5	60 µg/m3
Sox	80 µg/m3
Nox	80 µg/m3

LAFARGE UMIAM MINING PVT. LTD.

AMBIENT AIR QUALITY DATA

Near Phlangkaruh village (Near Barrack I)

STATION : LA-3

Table :9

DATE	24 HOURLY			
	PM_{10}	$PM_{2.5}$	SO_2	NOx
2-Jan-2019	53.2	20.8	5.7	6.4
5-Jan-2019	54.8	22.4	5.9	7.4
8-Jan-2019	52.7	21.2	5.4	6.2
11-Jan-2019	51.8	20.4	5.2	6.0
14-Jan-2019	55.4	22.8	5.4	6.5
18-Jan-2019	53.6	21.8	5.6	6.4
22-Jan-2019	54.2	21.8	5.4	6.5
25-Jan-2019	52.4	20.2	5.2	6.2
29-Jan-2019	54.8	22.4	5.6	6.7
1-Feb-2019	54.6	21.8	5.6	6.8
5-Feb-2019	54.2	21.5	5.4	6.7
8-Feb-2019	56.2	23.5	5.8	6.9
11-Feb-2019	53.2	21.4	5.2	6.5
14-Feb-2019	55.8	22.8	5.4	6.5
18-Feb-2019	54.5	21.6	5.6	6.2
22-Feb-2019	56.4	23.2	5.8	7.2
25-Feb-2019	54.4	21.8	5.4	6.5
28-Feb-2019	53.6	21.2	5.2	6.4
1-Mar-2019	50.8	20.4	5.4	6.2
5-Mar-2019	52.7	21.8	5.6	6.8
8-Mar-2019	55.4	22.6	5.9	7.2
11-Mar-2019	52.5	21.2	5.7	6.4
14-Mar-2019	54.6	22.2	5.8	6.9
18-Mar-2019	51.7	20.8	5.2	6.5
22-Mar-2019	52.6	21.4	5.3	6.5
25-Mar-2019	54.3	22.8	5.5	6.7
29-Mar-2019	53.6	21.8	5.4	6.4

Permissible Limit ($\mu g/m^3$)	
PM 10	100 µg/m3
PM 2.5	60 µg/m3
Sox	80 µg/m3
Nox	80 µg/m3

	PM_{10}	$PM_{2.5}$	SO_2	NOx
Number of observations	27	27	27	27
Arithmetic Mean	53.9	21.8	5.5	6.6
Geometric Mean	53.8	21.7	5.5	6.6
STD. GEO. Devn. (24 hrs)	1.4	0.9	0.2	0.3
Max. Concentration	56.4	23.5	5.9	7.4
Min. Concentration	50.8	20.2	5.2	6.0
98 Percentile values	56.3	23.3	5.9	7.3
Detection Limit ($\mu g/m^3$)				

LAFARGE UMIAM MINING PVT. LTD.

AMBIENT AIR QUALITY DATA

Pyrkan village

STATION : LA-4

Table:10

DATE	24 HOURLY			
	PM_{10}	$PM_{2.5}$	SO_2	NOx
2-Jan-2019	51.6	20.2	3.8	5.7
5-Jan-2019	52.6	21.4	4.2	5.9
8-Jan-2019	50.5	19.8	3.6	5.4
11-Jan-2019	49.7	19.2	3.4	5.2
14-Jan-2019	52.4	21.8	3.6	5.6
18-Jan-2019	51.2	20.5	3.8	5.4
22-Jan-2019	52.4	21.6	3.5	5.2
25-Jan-2019	50.5	19.2	3.2	4.8
29-Jan-2019	52.6	20.5	3.4	5.2
1-Feb-2019	52.5	20.8	3.6	5.8
5-Feb-2019	52.8	21.2	3.5	5.6
8-Feb-2019	53.5	23.2	3.8	5.9
11-Feb-2019	51.8	20.5	3.2	5.4
14-Feb-2019	53.2	22.9	3.6	5.8
18-Feb-2019	52.4	21.6	3.5	5.4
22-Feb-2019	54.2	22.6	3.8	5.6
25-Feb-2019	52.6	21.5	3.7	5.4
28-Feb-2019	51.7	20.2	3.5	5.2
1-Mar-2019	48.6	19.2	3.2	4.8
5-Mar-2019	50.4	21.5	3.6	5.4
8-Mar-2019	52.7	22.8	4.2	5.8
11-Mar-2019	49.7	21.6	4.5	5.2
14-Mar-2019	51.8	21.7	4.4	5.6
18-Mar-2019	49.6	19.5	3.5	4.6
22-Mar-2019	50.2	21.2	3.7	4.8
25-Mar-2019	52.5	22.7	3.8	5.4
29-Mar-2019	51.7	20.8	3.8	4.6

Permissible Limit ($\mu g/m^3$)	
PM 10	100 µg/m3
PM 2.5	60 µg/m3
Sox	80 µg/m3
Nox	80 µg/m3

	PM_{10}	$PM_{2.5}$	SO_2	NOx
Number of observations	27	27	27	27
Arithmetic Mean	51.7	21.1	3.7	5.4
Geometric Mean	51.7	21.1	3.7	5.3
STD. GEO. Devn. (24 hrs)	1.4	1.2	0.3	0.4
Max. Concentration	54.2	23.2	4.5	5.9
Min. Concentration	48.6	19.2	3.2	4.6
98 Percentile values	53.8	23.0	4.4	5.9
Detection Limit ($\mu g/m^3$)				
NOTE:	ALL VALUES ARE IN $\mu g/m^3$			

LAFARGE UMIAM MINING PVT. LTD.

AMBIENT AIR QUALITY DATA

Shella Bazar

STATION : LA-5

Table:11

DATE	24 HOURLY			
	PM_{10}	$PM_{2.5}$	SO_2	NOx
2-Jan-2019	52.7	21.5	4.2	6.4
5-Jan-2019	53.5	21.5	4.5	6.8
8-Jan-2019	52.6	20.8	3.9	5.8
11-Jan-2019	50.6	20.5	3.5	4.8
14-Jan-2019	53.8	21.7	5.6	6.7
18-Jan-2019	52.5	21.2	4.6	5.7
22-Jan-2019	53.2	21.6	4.7	5.8
25-Jan-2019	51.7	20.4	4.5	5.4
29-Jan-2019	53.8	21.4	4.8	5.6
1-Feb-2019	53.5	21.2	4.5	6.8
5-Feb-2019	53.2	21.5	4.6	6.2
8-Feb-2019	54.6	22.5	4.8	6.9
11-Feb-2019	52.8	20.2	4.2	5.8
14-Feb-2019	54.2	20.4	4.5	6.2
18-Feb-2019	53.8	21.7	4.5	5.6
22-Feb-2019	55.4	22.8	4.7	5.8
25-Feb-2019	54.2	21.2	4.8	5.6
28-Feb-2019	53.4	21.7	5.2	5.9
1-Mar-2019	50.5	20.8	4.2	5.4
5-Mar-2019	52.4	21.2	4.5	5.8
8-Mar-2019	53.6	22.8	4.7	6.2
11-Mar-2019	51.7	21.2	4.8	5.6
14-Mar-2019	52.6	21.3	4.6	5.8
18-Mar-2019	51.3	20.6	4.5	5.7
22-Mar-2019	52.2	21.4	4.6	5.4
25-Mar-2019	53.6	22.4	4.8	5.7
29-Mar-2019	52.5	21.6	4.8	5.6

	PM_{10}	$PM_{2.5}$	SO_2	NOx
Number of observations	27	27	27	27
Arithmetic Mean	53.0	21.4	4.6	5.9
Geometric Mean	52.9	21.4	4.6	5.9
STD. GEO. Devn. (24 hrs)	1.2	0.7	0.4	0.5
Max. Concentration	55.4	22.8	5.6	6.9
Min. Concentration	50.5	20.2	3.5	4.8
98 Percentile values	55.0	22.8	5.4	6.8
Detection Limit ($\mu g/m^3$)				
NOTE:	ALL VALUES ARE IN $\mu g/m^3$			

Permissible Limit ($\mu g/m^3$)	
PM 10	100 µg/m3
PM 2.5	60 µg/m3
Sox	80 µg/m3
Nox	80 µg/m3

SURFACE WATER QUALITY DATA

Project : Lafarage Umiam Mining Pvt. Ltd.
State : Meghalaya
Code : LWQ-1
Sampling Location :Up Stream of Umiam River

Table:12

Sl. No.	Parameter	Results						Standard IS - 2296 Class C
		Date of Collection	Date of Collection	Date of Collection	Date of Collection	Date of Collection	Date of Collection	
		31-Oct-18	28-Nov-18	14-Dec-18	7-Jan-19	1-Feb-19	5-Mar-19	
1	**Temperature (0°C) Air-Water**	-	-	-	-	-	-	
2	Colour (Hazen Units)	-	-	-	-	-	-	300.00
3	pH	7.5	7.8	7.8	7.8	7.7	7.7	6.5-8.5
4	Electrical Conductivity (µmhos/cm)	74.0	115.0	108.0	98.0	100.0	110.0	
5	Turbidity (NTU)	7.5	4.8	4.5	3.5	3.2	4.8	
6	Dissolve Oxygen(mg/l)	8.0	8.0	8.0	8.0	7.6	7.8	4.00
7	Biochemical Oxygen Demand(mg/l)	1.6	1.2	1.0	1.40	1.20	1.00	3.00
8	Total Dissolve Solids (mg/l)	69.0	79.0	58.0	68.00	70.00	78.00	1500.00
9	Total Suspended Solids	4.0	5.0	5.0	5.00	5.00	6.00	100.00
10	Total hardness (mg/l)	32.0	50.0	42.0	40.00	42.00	40.00	
11	Chlorides as Cl (mg/l)	7.0	7.0	6.0	6.00	7.00	7.00	600.00
12	Alkalinity (mg/l)	28.0	52.0	46.0	40.00	40.00	38.00	
13	Calcium as Ca (mg/l)	20.0	26.0	28.0	26.00	28.00	24.00	
14	Boron as B (mg/l)	-	-	-	-	-	-	
15	Sulphates SO4(mg/l)	3.8	6.0	6.5	7.20	7.80	6.50	400.00
16	Sulphides (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
17	Nitrate (mg/l)	0.40	0.3	0.28	0.40	0.30	0.40	50.00
18	Nitrite (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
19	Nickel (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
20	Ammonia Nitrogen (mg/l)	0.15	0.14	0.10	0.11	0.10	0.11	
21	Arsenic as As (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.20
22	Chromium (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.05
23	Iron as Fe (mg/l)	0.18	0.18	0.16	0.14	0.14	0.18	0.50
24	Fluoride as F (mg/l)	0.06	0.06	0.07	0.04	0.04	0.06	1.50
25	Lead as Pb (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.10
26	Copper as Cu (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	1.50
27	Zinc as Zn (mg/l)	0.010	0.010	0.010	BDL	BDL	BDL	15.00
28	Cadmium (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.01
29	Sodium (mg/l)	5.2	5.0	4.3	3.80	3.40	5.40	
30	Magnessium (mg/l)	12.00	14.00	14.0	10.00	14.00	16.00	
31	Manganese (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
32	Phosphate (mg/l)	0.010	0.010	0.010	0.010	0.010	0.010	
33	Potassium (mg/l)	2.60	2.4	2.0	2.00	2.00	2.50	
	Microbiological Parameters							
1	Total Coliform (MPN/100 ml)	120.00	110.00	140.00	140.00	150.00	140.00	5000.00
2	Faecal coliform (Nos/100ml)	-	-	-	-	-	-	
3	E- Coli (Nos/100 ml)	-	-	-	-	-	-	

Remarks:- Analysis is done by MSPCB, refer to Annexure VI
BDL :- Below Detection Limit
(-) :-Not Analysed by SPCB

SURFACE WATER QUALITY DATA

Project : Lafarage Umiam Mining Pvt. Ltd.
State : Meghalaya
Code : LWQ-2
Sampling Location :Down Stream of Umiam River

Table:13

Sl. No.	Parameter	Results						Standard IS - 2296 Class C
		Date of Collection	Date of Collection	Date of Collection	Date of Collection	Date of Collection	Date of Collection	
		31-Oct-18	28-Nov-19	14-Dec-18	7-Jan-19	1-Feb-19	5-Mar-19	
1	**Temperature (0°C) Air-Water**	-	-	-	-	-	-	
2	Colour (Hazen Units)	-	-	-	-	-	-	300.00
3	pH	7.5	7.8	7.8	7.8	7.8	7.8	6.5-8.5
4	Electrical Conductivity (µmhos/cm)	79.0	115.0	110.0	102.0	104.0	125.0	
5	Turbidity (NTU)	7.7	4.8	5.5	3.3	3.4	5.0	
6	Dissolve Oxygen(mg/l)	7.8	8.0	8.2	7.80	7.80	7.80	4.00
7	Biochemical Oxygen Demand(mg/l)	1.6	1.20	1.00	1.20	1.20	1.20	3.00
8	Total Dissolve Solids (mg/l)	69.0	79.0	60.0	70.00	72.00	108.00	1500.00
9	Total Suspended Solids	5.0	5.0	6.0	6.00	5.00	7.00	100.00
10	Total hardness (mg/l)	32.0	50.0	68.0	42.00	44.00	42.00	
11	Chlorides as Cl (mg/l)	7.0	7.0	6.0	7.00	7.00	7.00	600.00
12	Alkalinity (mg/l)	28.0	52.0	70.0	42.00	42.00	40.00	
13	Calcium as Ca (mg/l)	20.0	26.0	46.0	30.00	30.00	28.00	
14	Boron as B (mg/l)	-	-	-	-	-	-	
15	Sulphate as SO4(mg/l)	3.6	6.0	6.6	7.00	7.60	6.70	400.00
16	Sulphides (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
17	Nitrate (mg/l)	0.4	0.32	0.32	0.30	0.30	0.44	50.00
18	Nitrite (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
19	Nickel (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
20	Ammonia Nitrogen (mg/l)	0.14	0.14	0.11	0.10	0.10	0.12	
21	Arsenic as As (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.20
22	Chromium (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.05
23	Iron as Fe (mg/l)	0.20	0.18	0.18	0.15	0.16	0.10	0.50
24	Fluoride as F (mg/l)	0.05	0.06	0.07	0.05	0.05	0.05	1.50
25	Lead as Pb (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.10
26	Copper as Cu (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	1.50
27	Zinc as Zn (mg/l)	0.01	0.010	0.010	0.010	0.010	0.010	15.00
28	Cadmium (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.01
29	Sodium (mg/l)	5.0	5.0	4.3	3.80	3.60	5.00	
30	Magnesium (mg/l)	10.0	14.00	22.0	12.00	14.00	14.00	
31	Manganese (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
32	Phosphate (mg/l)	0.010	0.010	0.010	0.010	0.010	0.010	
33	Potassium (mg/l)	2.5	2.4	2.00	2.20	2.00	2.20	
	Microbiological Parameters							
1	Total Coliform (MPN/100 ml)	110.0	70.0	110.0	150.0	120.0	110.0	5000.0
2	Faecal coliform (Nos/100m	-	-	-	-	-	-	
3	E- Coli (Nos/100 ml)	-	-	-	-	-	-	

Remarks:- Analysis is done by MSPCB, refer to Annexure VI
BDL :- Below Detection Limit
(-) :-Not Analysed by SPCB

SURFACE WATER QUALITY DATA

Project : Lafarage Umiam Mining Pvt. Ltd.

State : Meghalaya

Code : LWQ-3

Sampling Location :Up Stream of Phlangkaruh River

Table:14

Sl. No.	Parameter	Results						Standard IS - 2296 Class C
		Date of Collection	Date of Collection	Date of Collection	Date of Collection	Date of Collection	Date of Collection	
		31-Oct-18	28-Nov-18	14-Dec-18	7-Jan-19	1-Feb-19	5-Mar-19	
1	**Temperature (0°C) Air-Water**	-	-	-	-	-	-	
2	Colour (Hazen Units)	-	-	-	-	-	-	300.00
3	pH	7.7	8.0	7.9	8.0	8.0	8.2	6.5-8.5
4	Electrical Conductivity (µmhos/cm)	139.0	165.0	165.0	138.00	148.00	240.00	
5	Turbidity (NTU)	4.9	5.9	4.5	3.90	4.00	5.50	
6	Disslove Oxygen(mg/l)	8.2	7.6	7.2	8.00	8.00	6.90	4.00
7	Biochemical Oxygen Demand(mg/l)	1.3	1.50	1.80	1.00	1.40	2.20	3.00
8	Total Dissolve Solids (mg/l)	82.0	114.0	122.0	95.00	96.00	96.00	1500.00
9	Total Suspended Solids	5.0	6.0	6.0	6.00	6.00	5.00	100.00
10	Total hardness (mg/l)	88.0	90.0	104.0	66.00	70.00	122.00	
11	Chlorides as Cl (mg/l)	7.0	7.0	5.0	6.80	6.80	8.00	600.00
12	Alkalinity (mg/l)	68.0	88.0	102.0	72.00	74.00	116.00	
13	Calcium as Ca (mg/l)	68.0	70.0	70.0	44.00	42.00	80.00	
14	Boron as B (mg/l)	-	-	-	-	-	-	
15	Sulphate as SO4(mg/l)	4.0	9.8	10.5	6.80	7.00	7.20	400.00
16	Sulphides (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
17	Nitrate (mg/l)	0.45	0.40	0.40	0.38	0.30	0.48	50.00
18	Nitrite (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
19	Nickel (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
20	Ammonia Nitrogen (mg/l)	0.11	0.12	0.12	0.10	0.10	0.10	
21	Arsenic as As (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.20
22	Chromium (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.05
23	Iron as Fe (mg/l)	0.20	0.19	0.20	0.16	0.16	0.16	0.50
24	Fluoride as F (mg/l)	0.06	0.040	0.06	0.08	0.08	0.07	1.50
25	Lead as Pb (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.10
26	Copper as Cu (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	1.50
27	Zinc as Zn (mg/l)	BDL	BDL	BDL	0.01	0.01	0.01	15.00
28	Cadmium (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.01
29	Sodium (mg/l)	4.2	5.2	3.6	4.00	4.00	5.20	
30	Magnessium (mg/l)	20.0	18.00	34.0	22.00	28.00	42.00	
31	Manganese (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
32	Phosphate (mg/l)	0.020	0.020	0.020	0.010	0.010	0.030	
33	Potassium (mg/l)	2.4	2.6	1.5	2.00	2.00	2.20	
	Microbiological Parameters							
1	Total Coliform (MPN/100 ml)	79.0	94.0	93.0	120.00	110.00	120.00	5000.00
2	Faecal coliform (Nos/100ml)	-	-	-	-	-	-	
3	E- Coli (Nos/100 ml)	-	-	-	-	-	-	

Remarks:- Analysis is done by MSPCB, refer to Annexure VI

BDL :- Below Detection Limit

(-) :-Not Analysed by SPCB

SURFACE WATER QUALITY DATA

Project : Lafarage Umiam Mining Pvt. Ltd.

State : Meghalaya

Code : LWQ-4

Sampling Location :Down Stream of Phlangkaruh River

Table:15

Sl. No.	Parameter	Results						Standard IS - 2296 Class C
		Date of Collection	Date of Collection	Date of Collection	Date of Collection	Date of Collection	Date of Collection	
		31-Oct-18	28-Nov-18	14-Dec-18	7-Jan-19	1-Feb-19	5-Mar-19	
1	**Temperature (0°C) Air-Water**	-	-	-	-	-	-	
2	Colour (Hazen Units)	-	-	-	-	-	-	300.00
3	pH	7.7	8.2	7.8	8.0	8.2	8.1	6.5-8.5
4	Electrical Conductivity (µmhos/cm)	148.0	170.0	170.0	145.0	145.0	250.0	
5	Turbidity (NTU)	5.5	4.8	5.5	4.1	4.0	4.9	
6	Disslove Oxygen(mg/l)	7.6	7.4	7.5	8.00	7.80	6.70	4.00
7	Biochemical Oxygen Demand(mg/l)	1.20	1.6	1.8	1.60	1.60	2.30	3.00
8	Total Dissolve Solids (mg/l)	125.0	117.0	118.0	100.00	102.00	116.00	1500.00
9	Total Suspended Solids	5.0	6.0	7.0	9.00	8.00	7.00	100.00
10	Total hardness (mg/l)	90.0	98.0	102.0	100.00	72.00	126.00	
11	Chlorides as Cl (mg/l)	7.0	7.0	8.0	6.00	6.60	8.00	600.00
12	Alkalinity (mg/l)	70.0	98.0	102.0	100.00	70.00	120.00	
13	Calcium as Ca (mg/l)	70.0	72.0	68.0	72.00	50.00	82.00	
14	Boron as B (mg/l)	-	-	-	-	-	-	
15	Sulphate as SO4(mg/l)	3.8	10.0	10.1	10.00	9.80	9.20	400.00
16	Sulphides (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
17	Nitrate (mg/l)	0.50	0.46	0.43	0.42	0.42	11.40	50.00
18	Nitrite (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
19	Nickel (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
20	Ammonia Nitrogen (mg/l)	0.10	0.11	0.13	0.12	0.11	0.12	
21	Arsenic as As (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.20
22	Chromium (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.05
23	Iron as Fe (mg/l)	0.20	0.20	0.19	0.16	0.14	0.20	0.50
24	Fluoride as F (mg/l)	0.05	0.04	0.07	0.04	0.04	0.06	1.50
25	Lead as Pb (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.10
26	Copper as Cu (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	1.50
27	Zinc as Zn (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	15.00
28	Cadmium (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	0.01
29	Sodium (mg/l)	5.5	5.4	6.2	3.40	3.90	5.70	
30	Magnessium (mg/l)	20.0	26.00	34.0	28.00	22.00	44.00	
31	Manganese (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	
32	Phosphate (mg/l)	0.020	0.020	0.020	0.020	0.020	0.030	
33	Potassium (mg/l)	2.6	2.8	3.0	1.40	1.80	2.60	
	Microbiological Parameters							
1	Total Coliform (MPN/100 ml)	94.0	74.0	94.0	94.0	94.0	93.0	5000.00
2	Faecal coliform (Nos/100m	-	-	-	-	-	-	
3	E- Coli (Nos/100 ml)	-	-	-	-	-	-	

Remarks:- Analysis is done by MSPCB, refer to Annexure VI

BDL :- Below Detection Limit

(-) :-Not Analysed by SPCB

WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. Ltd State : Meghalaya

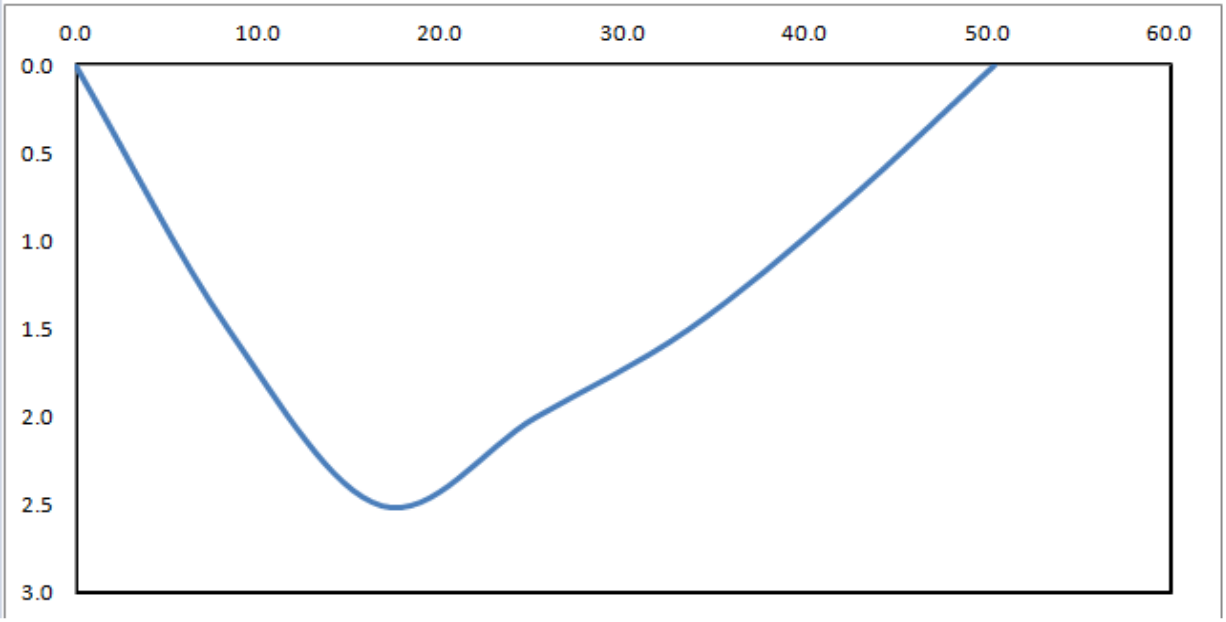
Code : LWF-1 Sampling Loc: Down stream of Umiam River near Temporary Bridge (during fair weather)

Date of Measurement :24.10.2018

Table:No. 16

Sl. No.	Distance from Initial Point	Width interval (m)	Depth of nalla (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0.0	0.0	0.0	0.0	0.0	0.0
2	8.40	8.40	1.50	0.20	6.30	0.63
3	16.80	8.40	2.50	0.30	16.80	4.20
4	25.20	8.40	2.00	0.40	18.90	6.62
5	33.60	8.40	1.50	0.33	14.70	5.37
6	42.00	8.40	0.80	0.20	9.66	2.56
7	50.40	0.00	0.00	0.00	3.36	0.34
					Total	19.71
					Discharge m^3/hr =70943.04	

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM UMIAM RIVER TOP OF THE BRIDGE BRIDGE (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. Ltd State : Meghalaya

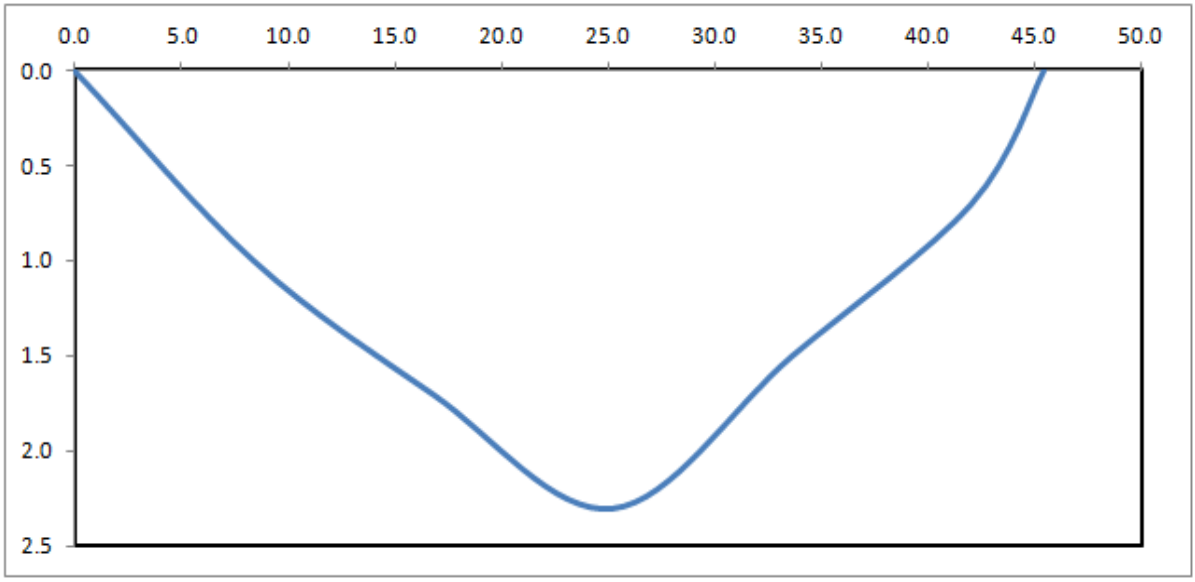
Code : LWF-1 Sampling Loc: Down stream of Umiam River Top of the bridge (during fair weather)

Date of Measurement :16.11.2018

Table No: 16 a

Sl. No.	Distance from Initial Point	Width interval (m)	Depth of nalla (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0.0	0.0	0.0	0.0	0.0	0.0
2	8.40	8.40	1.00	0.10	4.20	0.21
3	16.80	8.40	1.70	0.26	11.34	2.04
4	25.20	8.40	2.30	0.25	16.80	4.28
5	33.60	8.40	1.50	0.17	15.96	3.35
6	42.00	8.40	0.70	0.12	9.24	1.34
7	45.40	3.40	0.00	0.00	1.19	0.07
					Total	11.30
					Discharge m^3/hr =40672.8	

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM UMIAM RIVER TOP OF THE BRIDGE BRIDGE (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. Ltd State : Meghalaya

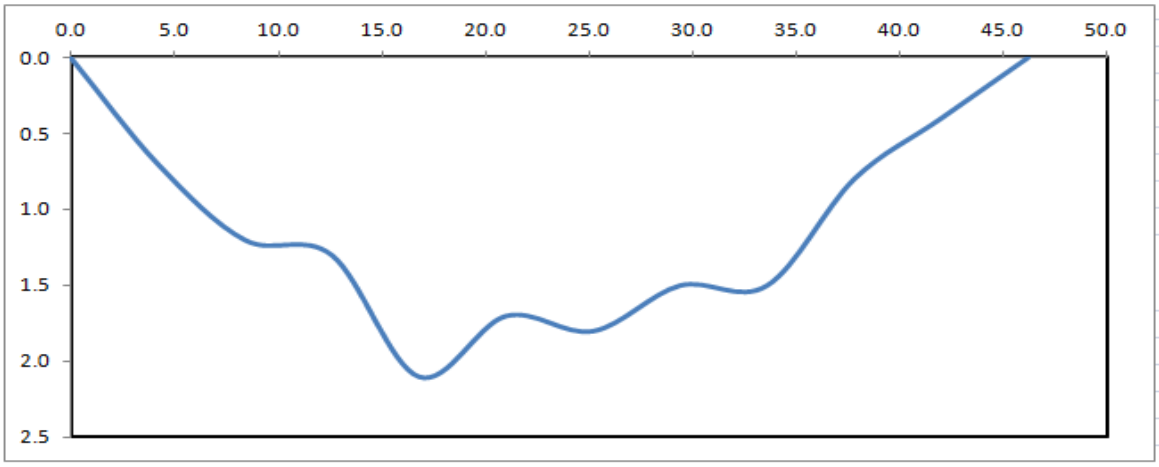
Code : LWF-1 Sampling Lo Down stream of Umiam River
Top of the bridge
(during fair weather)

Date of Measurement :17.12.2018

Table No: 16 b

Sl. No.	Distance from Initial Point	Width interval (m)	Depth of nalla (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0.0	0.00	0.0	0.0	0.0	0.0
2	4.20	4.20	0.70	0.03	1.47	0.02
3	8.40	4.20	1.2	0.16	3.99	0.38
4	12.60	4.20	1.30	0.19	5.25	0.92
5	16.80	4.20	2.10	0.10	7.14	1.04
6	21.00	4.20	1.70	0.28	7.98	1.52
7	25.20	4.20	1.80	0.32	7.35	2.21
8	29.40	4.20	1.50	0.20	6.93	1.80
9	33.60	4.20	1.50	0.15	6.30	1.10
10	37.80	4.20	0.80	0.10	4.83	0.60
11	42.00	4.20	0.40	0.05	2.52	0.19
12	46.20	4.20	0.00	0.00	0.64	0.02
					Total	6.08
					Discharge m^3/hr = 21874.86	

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM UMIAM RIVER TOP OF THE BRIDGE BRIDGE (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. Ltd State : Meghalaya

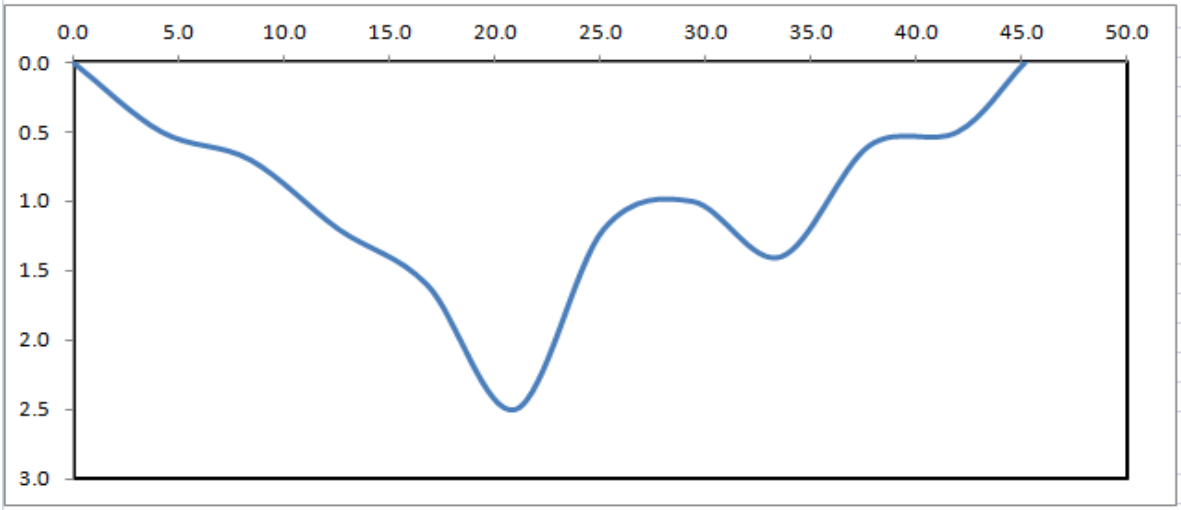
Code : LWF-1 Sampling Lo Down stream of Umiam River Top of the bridge (during fair weather)

Date of Measurement :18.01.2019

Table No: 16 c

Sl. No.	Distance from Initial Point	Width interval (m)	Depth of nalla (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0.0	0.00	0.0	0.0	0.0	0.0
2	4.2	4.20	0.50	0.07	1.05	0.04
3	8.4	4.20	0.70	0.06	2.52	0.16
4	12.6	4.20	1.20	0.12	3.99	0.36
5	16.8	4.20	1.60	0.18	5.88	0.88
6	21.0	4.20	2.50	0.25	8.61	1.85
7	25.2	4.20	1.20	0.26	7.77	1.98
8	29.4	4.20	1.00	0.20	4.62	1.06
9	33.6	4.20	1.40	0.19	5.04	0.98
10	37.8	4.20	0.60	0.12	4.20	0.65
11	42.0	4.20	0.50	0.08	2.31	0.23
12	45.2	3.20	0.00	0.00	0.80	0.03
					Total	5.27
					Discharge m^3/hr = 18986.94	

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM UMIAM RIVER TOP OF THE BRIDGE BRIDGE (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. Ltd State : Meghalaya

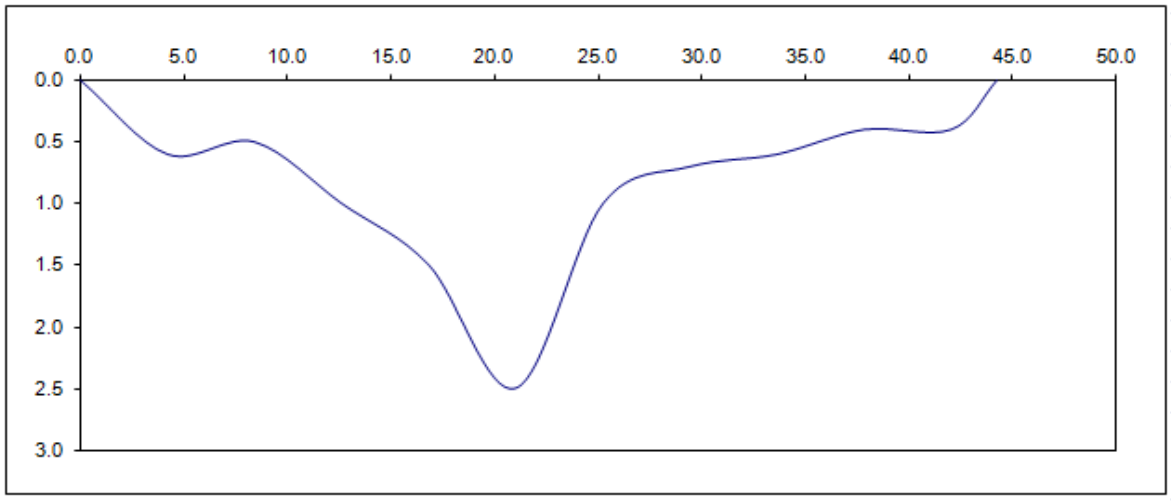
Code : LWF-1 Sampling Lo Down stream of Umiam River Top of the bridge

Date of Measurement :22.02.2019 (during fair weather)

Table No: 16 d

Sl. No.	Distance from Initial Point	Width interval (m)	Depth of nalla (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0.0	0.00	0.0	0.0	0.0	0.0
2	4.2	4.20	0.60	0.09	1.26	0.06
3	8.4	4.20	0.5	0.05	2.31	0.16
4	12.6	4.20	1.00	0.09	3.15	0.22
5	16.8	4.20	1.50	0.15	5.25	0.63
6	21.0	4.20	2.50	0.16	8.40	1.30
7	25.2	4.20	1.00	0.21	7.35	1.36
8	29.4	4.20	0.70	0.15	3.57	0.64
9	33.6	4.20	0.60	0.10	2.73	0.34
10	37.8	4.20	0.40	0.05	2.10	0.16
11	42.0	4.20	0.40	0.06	1.68	0.09
12	44.2	2.20	0.00	0.00	0.44	0.01
					Total	4.87
					Discharge m^3/hr = 17539.2	

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM UMIAM RIVER TOP OF THE BRIDGE BRIDGE (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. Ltd State : Meghalaya

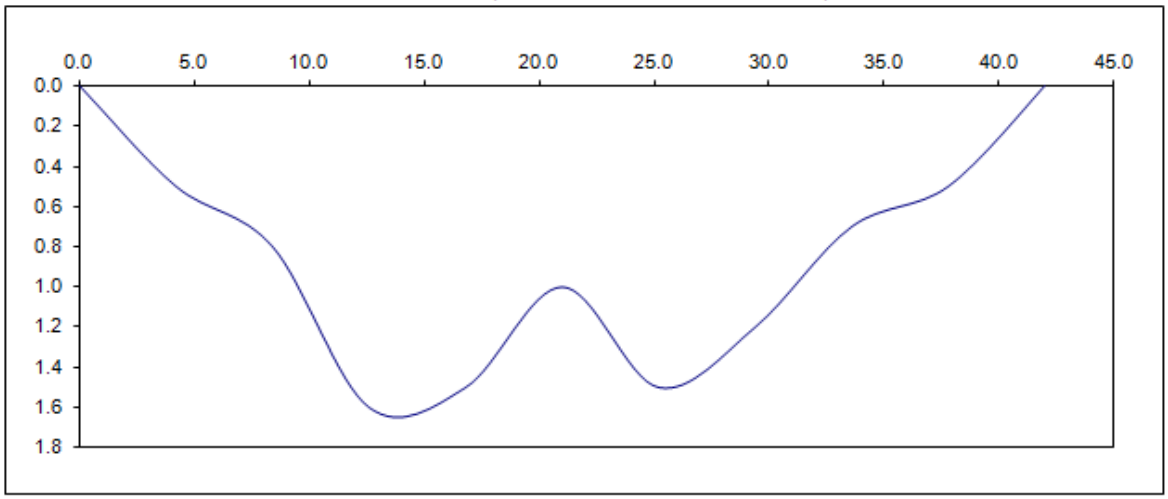
Code : LWF-1 Sampling Lo‹ Down stream of Umiam River Top of the bridge

Date of Measurement :27.03.2019 (during fair weather)

Table No: 16 e

Sl. No.	Distance from Initial Point	Width interval (m)	Depth of nalla (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0.0	0.00	0.0	0.0	0.0	0.0
2	4.2	4.20	0.50	0.05	1.05	0.03
3	8.4	4.20	0.8	0.06	2.73	0.15
4	12.6	4.20	1.60	0.11	5.04	0.43
5	16.8	4.20	1.50	0.14	6.51	0.81
6	21.0	4.20	1.00	0.17	5.25	0.81
7	25.2	4.20	1.50	0.15	5.25	0.84
8	29.4	4.20	1.20	0.10	5.67	0.71
9	33.6	4.20	0.70	0.10	3.99	0.40
10	37.8	4.20	0.50	0.08	2.52	0.23
11	42.0	4.20	0.00	0.00	1.05	0.04
					Total	4.41
					Discharge m^3/hr = 15864.66	

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM UMIAM RIVER TOP OF THE BRIDGE BRIDGE (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. State : Meghalaya

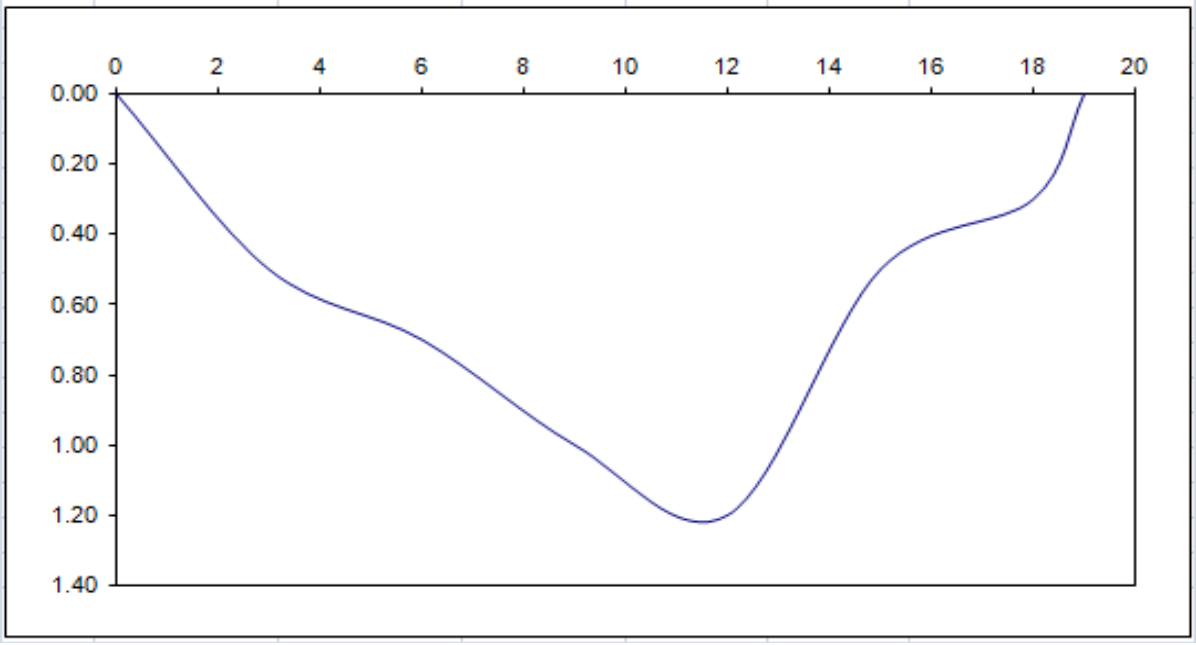
Code : LWF-2 Sampling L Down stream of Phlangkaruh River

Date of Measurement : 24.10.2018

Table No: 17

Sl. No.	Distance from Initial point (m)	Width interval (m)	Depth of stream (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0	0.0	0.00	0.00	0.0	0.000
2	3	3.00	0.50	0.05	0.75	0.019
3	6	3.00	0.70	0.05	1.80	0.090
4	9	3.00	1.00	0.07	2.55	0.153
5	12	3.00	1.20	0.12	3.30	0.314
6	15	3.00	0.50	0.09	2.55	0.268
7	18	3.00	0.30	0.01	1.20	0.060
8	19	1.00	0.00	0.00	0.15	0.001
					Total	0.84300
					Discharge m^3/hr =3034.8	

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM OF PHLANGKARUH RIVER (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. State : Meghalaya

Code : LWF-2 Sampling L Down stream of Phlangkaruh River

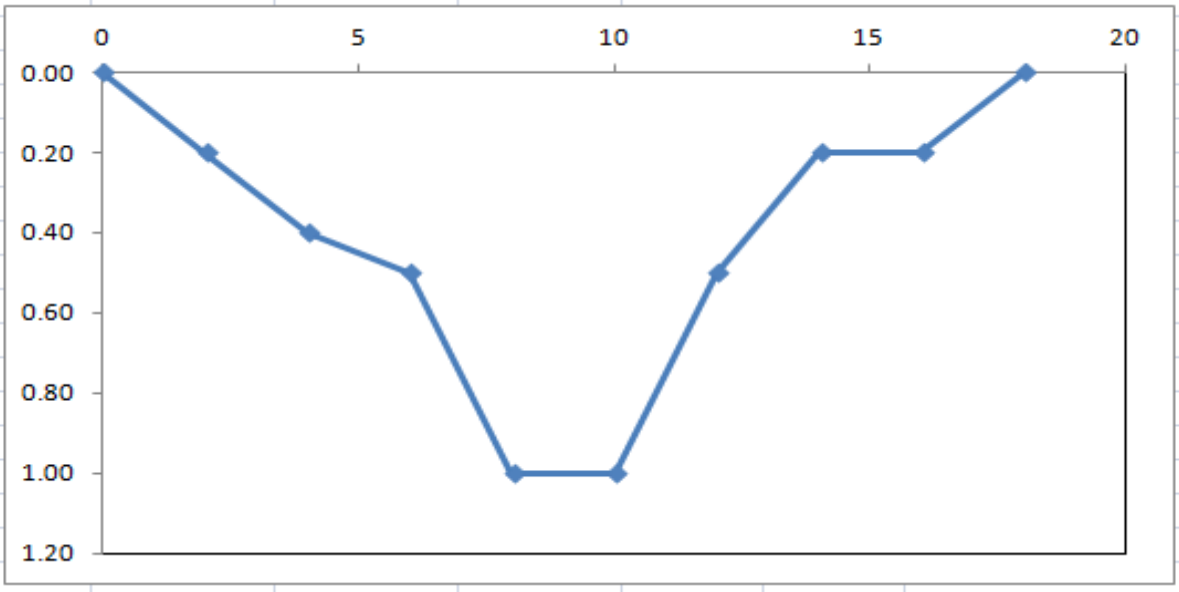
Date of Measurement : 16.11.2018

Table No: 17 a

Sl. No.	Distance from Initial point (m)	Width interval (m)	Depth of stream (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0	0.0	0.00	0.00	0.0	0.000
2	2	2.00	0.20	0.01	0.20	0.001
3	4	2.00	0.40	0.05	0.60	0.018
4	6	2.00	0.50	0.11	0.90	0.072
5	8	2.00	1.00	0.09	1.50	0.150
6	10	2.00	1.00	0.10	2.00	0.190
7	12	2.00	0.50	0.06	1.50	0.120
8	14	2.00	0.20	0.04	0.70	0.035
9	16	2.00	0.20	0.01	0.40	0.010
10	18	2.00	0.00	0.00	0.20	0.001
					Total	0.55100

Discharge m^3/hr =1983.6

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM OF PHLANGKARUH RIVER (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. State : Meghalaya

Code : LWF-2 Sampling Loc Down stream of Phlangkaruh River

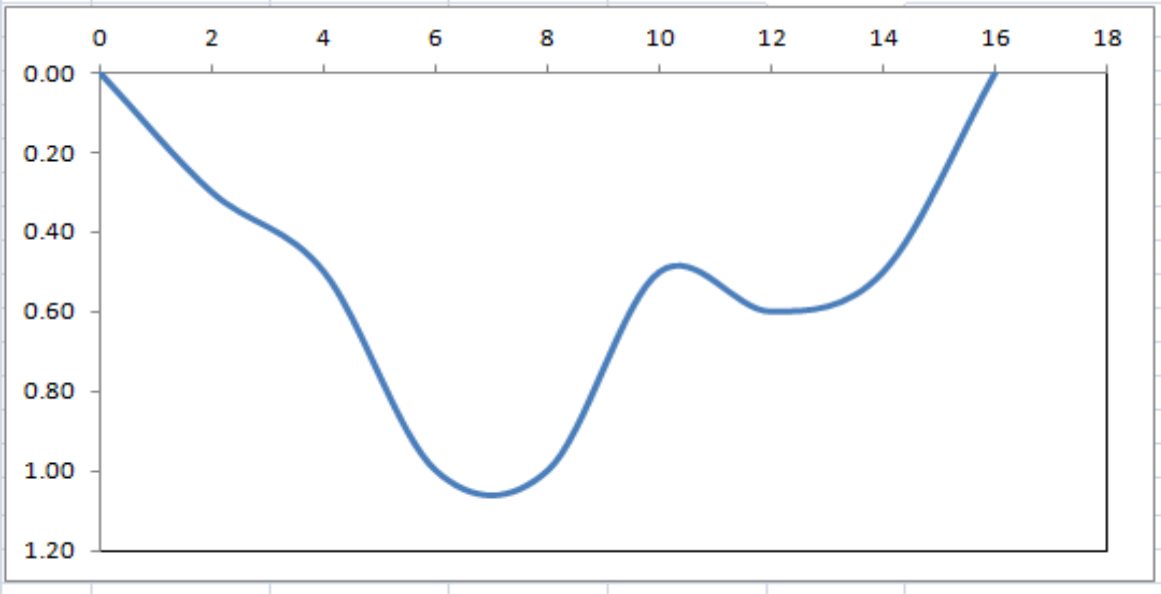
Date of Measurement : 17.12.2018

Table No: 17 b

Sl. No.	Distance from Initial point (m)	Width interval (m)	Depth of stream (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0	0.0	0.00	0.00	0.0	0.000
2	2	2.00	0.30	0.02	0.30	0.003
3	4	2.00	0.50	0.04	0.80	0.024
4	6	2.00	1.00	0.07	1.50	0.083
5	8	2.00	1.00	0.10	2.00	0.170
6	10	2.00	0.50	0.10	1.50	0.150
7	12	2.00	0.60	0.05	1.10	0.083
8	14	2.00	0.50	0.03	1.10	0.044
9	16	2.00	0.00	0.00	0.50	0.008
					Total	0.51200

Discharge m^3/hr =1843.2

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM OF PHLANGKARUH RIVER (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. State : Meghalaya

Code : LWF-2 Sampling Location Down stream of Phlangkaruh River

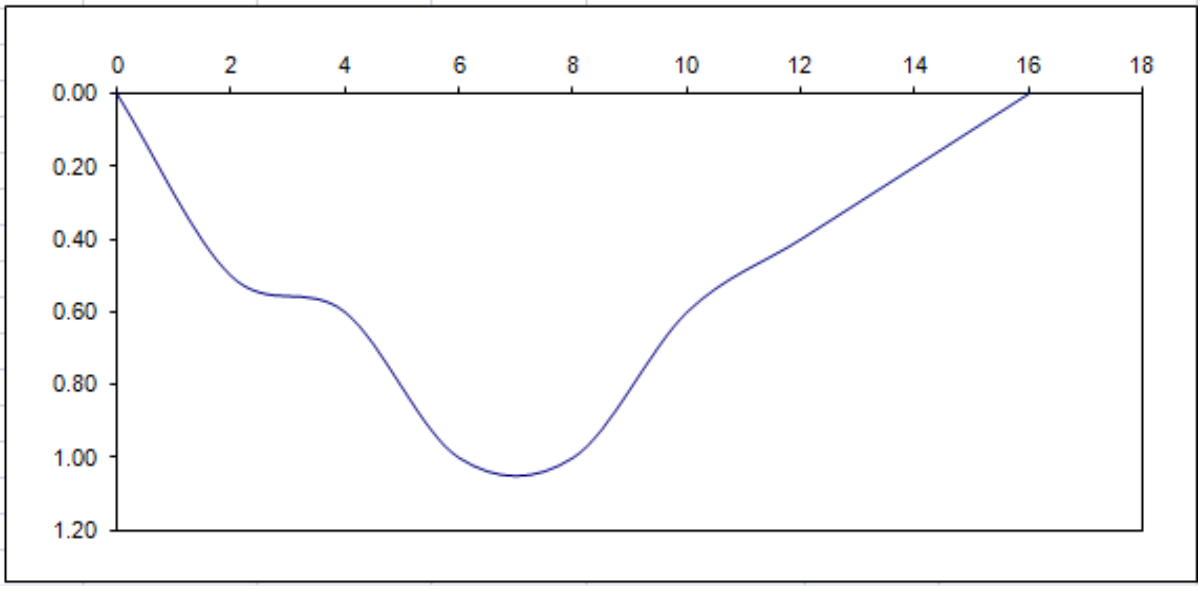
Date of Measurement : 19.01.2019

Table No: 17 c

Sl. No.	Distance from Initial point (m)	Width interval (m)	Depth of stream (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0	0.0	0.00	0.00	0.0	0.000
2	2	2.00	0.50	0.03	0.50	0.008
3	4	2.00	0.60	0.04	1.10	0.039
4	6	2.00	1.00	0.05	1.60	0.072
5	8	2.00	1.00	0.10	2.00	0.150
6	10	2.00	0.60	0.11	1.60	0.168
7	12	2.00	0.40	0.05	1.00	0.080
8	14	2.00	0.20	0.01	0.30	0.009
9	16	2.00	0.00	0.00	0.20	0.001
					Total	0.51600

Discharge m^3/hr =1857.6

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM OF PHLANGKARUH RIVER (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. State : Meghalaya

Code : LWF-2 Sampling L Down stream of Phlangkaruh River

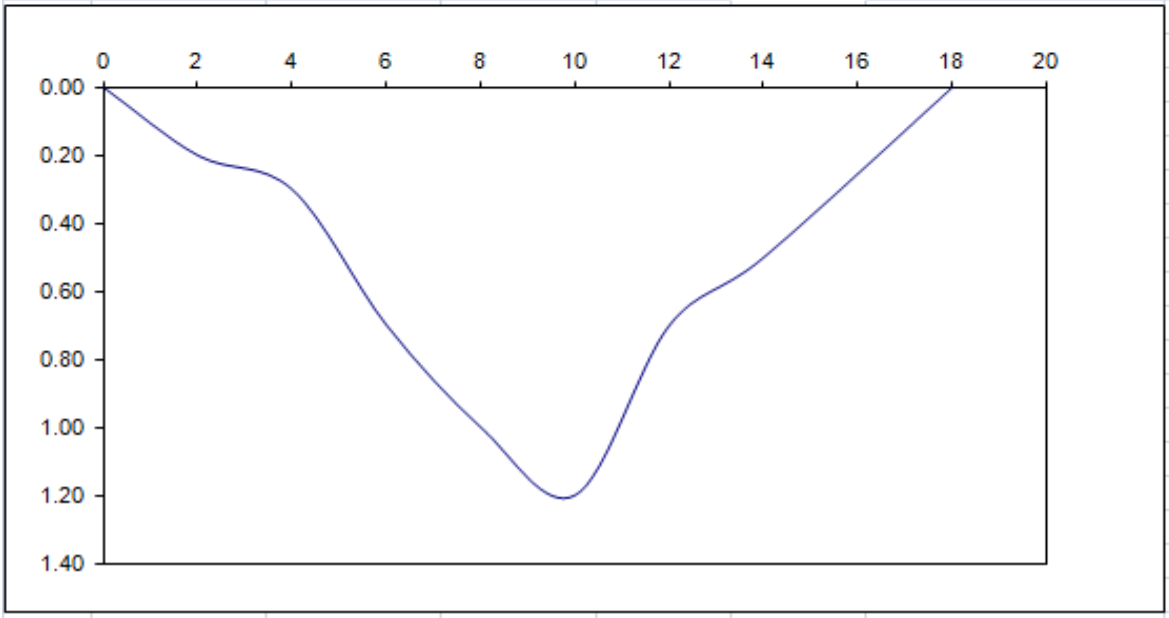
Date of Measurement : 22.02.2019

Table No: 17 d

Sl. No.	Distance from Initial point (m)	Width interval (m)	Depth of stream (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0	0.0	0.00	0.00	0.0	0.000
2	2	2.00	0.20	0.02	0.20	0.002
3	4	2.00	0.30	0.07	0.50	0.023
4	6	2.00	0.70	0.05	1.00	0.060
5	8	2.00	1.00	0.15	1.70	0.170
6	10	2.00	1.20	0.10	2.20	0.275
7	12	2.00	0.70	0.03	1.90	0.124
8	14	2.00	0.50	0.02	1.20	0.030
9	18	3.00	0.00	0.00	0.75	0.008
					Total	0.65300

Discharge m^3/hr =2350.8

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM OF PHLANGKARUH RIVER (DURING FAIR WEATHER)



WATER FLOW MEASUREMENT

Project : Lafarage Umiam Mining Pvt. Ltd State : Meghalaya

Code : LWF-2 Sampling Loc Down stream of Phlangkaruh River

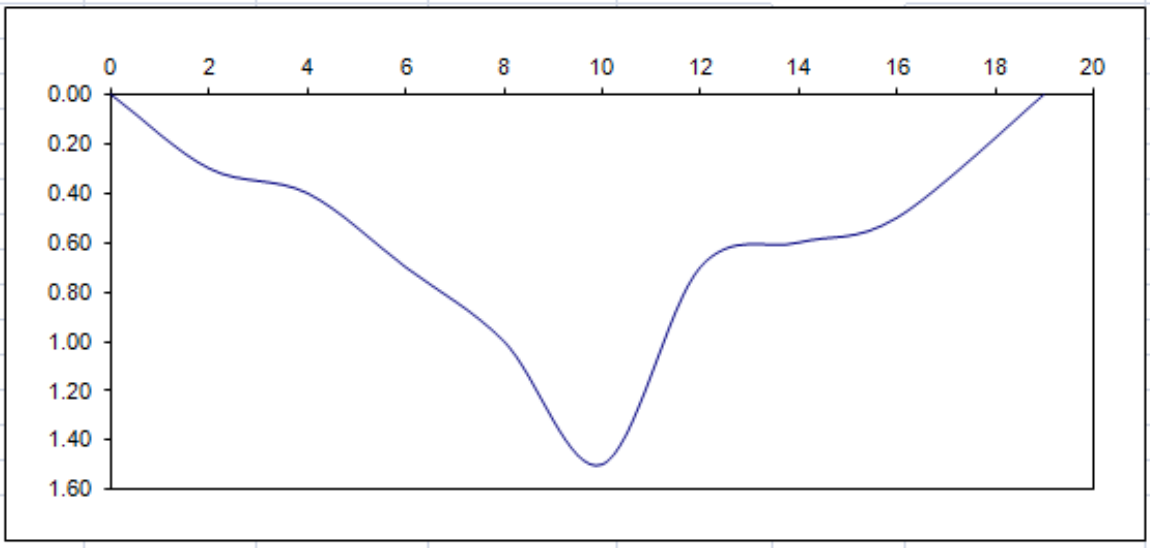
Date of Measurement : 27.03.2019

Table No: 17 e

Sl. No.	Distance from Initial point (m)	Width interval (m)	Depth of stream (m)	Velocity M/S	Area (m^2)	Discharge (m^3/sec)
1	0	0.0	0.00	0.00	0.0	0.000
2	2	2.00	0.30	0.02	0.30	0.003
3	4	2.00	0.40	0.03	0.70	0.018
4	6	2.00	0.70	0.13	1.10	0.088
5	8	2.00	1.00	0.15	1.70	0.238
6	10	2.00	1.50	0.10	2.50	0.313
7	12	2.00	0.70	0.07	2.20	0.187
8	14	2.00	0.60	0.05	1.30	0.078
9	16	2.00	0.50	0.04	1.10	0.050
10	19	3.00	0.00	0.00		
					Total	0.84600

Discharge m^3/hr =3045.6

CROSS SECTION OF WATER FLOW MEASUREMENT AT DOWNSTREAM OF PHLANGKARUH RIVER (DURING FAIR WEATHER)



PROJECT : LAFARGE UMIAM MINING PVT.LTD	STATE : MEGHALAYA			
SAMPLING LOCATION : SHELLA BAZAR (NON MARKET DAY)	CODE : LN - 1			
MONTH: OCTOBER - DECEMBER, 2018				
LOCATION CATEGORY : COMMERCIAL AREA	**Table No. 18**			

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	65	55.3 - 56.0	41.8	58.7	
Night Time (10.00 PM to 6.00 AM)	55	45.9 - 47.0			

PROJECT: LAFARGE UMIAM MINING PVT.LTD		STATE : MEGHALAYA			
SAMPLING LOCATION: PYRKAN VILLAGE		CODE : LN - 2			
MONTH: OCTOBER - DECEMBER, 2018					
LOCATION CATEGORY: RESIDENTIAL AREA		**Table No. 19**			

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	55	52.6 - 53.3	39.4	56.5	
Night Time (10.00 PM to 6.00 AM)	45	43.3 - 43.4			

PROJECT : LAFARGE UMIAM MINING PVT.LTD		STATE : MEGHALAYA			
SAMPLING LOCATION : PHALANGKARUH VILLAGE		CODE : LN - 3			
MONTH :OCTOBER - DECEMBER, 2018					
LOCATION CATEGORY : RESIDENTIAL AREA		**Table No. 20**			

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	55	52.0 - 53.0	39.2	56.2	
Night Time (10.00 PM to 6.00 AM)	45	43.0 - 43.7			

PROJECT : LAFARGE UMIAM MINING PVT.LTD. | STATE: MEGHALAYA

SAMPLING LOCATION : OFFICE AREA | CODE : LN - 4

MONTH :OCTOBER - DECEMBER, 2018

LOCATION CATEGORY : INDUSTRIAL AREA | **Table No. 21**

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	75	65.6 - 67.4	50.5	69.7	
Night Time (10.00 PM to 6.00 AM)	70	56.1 - 57.4			

PROJECT : LAFARGE UMIAM MINING PVT.LTD.		STATE: MEGHALAYA			
SAMPLING LOCATION : SHELLA PUNJEE		CODE : LN - 5			
MONTH :OCTOBER - DECEMBER, 2018					
LOCATION CATEGORY :RESIDENTIAL AREA		**Table No. 22**			

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	55	52.3 - 52.5	39.8	56.4	
Night Time (10.00 PM to 6.00 AM)	45	43.1 - 43.5			

PROJECT : LAFARGE UMIAM MINING PVT.LTD.		STATE: MEGHALAYA			
SAMPLING LOCATION :MAWRYNGKHONG		CODE : LN - 6			
MONTH : OCTOBER - DECEBER, 2018					
LOCATION CATEGORY :RESIDENTIAL AREA		**Table No. 23**			

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	55	51.9 - 53.2	39.4	56.5	
Night Time (10.00 PM to 6.00 AM)	45	43.3 - 44.0			

PROJECT : LAFARGE UMIAM MINING PVT.LTD		STATE : MEGHALAYA			
SAMPLING LOCATION : SHELLA BAZAR (NON MARKET DAY)		CODE : LN - 1			
MONTH: JANUARY - MARCH, 2019					
LOCATION CATEGORY : COMMERCIAL AREA		**Table No. 24**			

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	65	54.4 - 54.7	42.5	57.2	
Night Time (10.00 PM to 6.00 AM)	55	45.5 - 45.6			

PROJECT: LAFARGE UMIAM MINING PVT.LTD	STATE : MEGHALAYA
SAMPLING LOCATION: PYRKAN VILLAGE	CODE : LN - 2
MONTH: JANUARY - MARCH, 2019	
LOCATION CATEGORY: RESIDENTIAL AREA	**Table No. 25**

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	55	52.6 - 53.0	39.6	56.2	
Night Time (10.00 PM to 6.00 AM)	45	43.0 - 43.8			

PROJECT : LAFARGE UMIAM MINING PVT.LTD		STATE : MEGHALAYA			
SAMPLING LOCATION : PHALANGKARUH VILLAGE		CODE : LN - 3			
MONTH :JANUARY - MARCH, 2019					
LOCATION CATEGORY : RESIDENTIAL AREA		**Table No. 26**			

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	55	52.0 - 52.9	39.5	56.2	
Night Time (10.00 PM to 6.00 AM)	45	42.8 - 43.8			

PROJECT : LAFARGE UMIAM MINING PVT.LTD.		STATE: MEGHALAYA			
SAMPLING LOCATION : OFFICE AREA		CODE : LN - 4			
MONTH :JANUARY - MARCH, 2019					
LOCATION CATEGORY : INDUSTRIAL AREA		**Table No. 27**			

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	75	65.8 - 67.3	51.6	69.2	
Night Time (10.00 PM to 6.00 AM)	70	56.0 - 57.5			

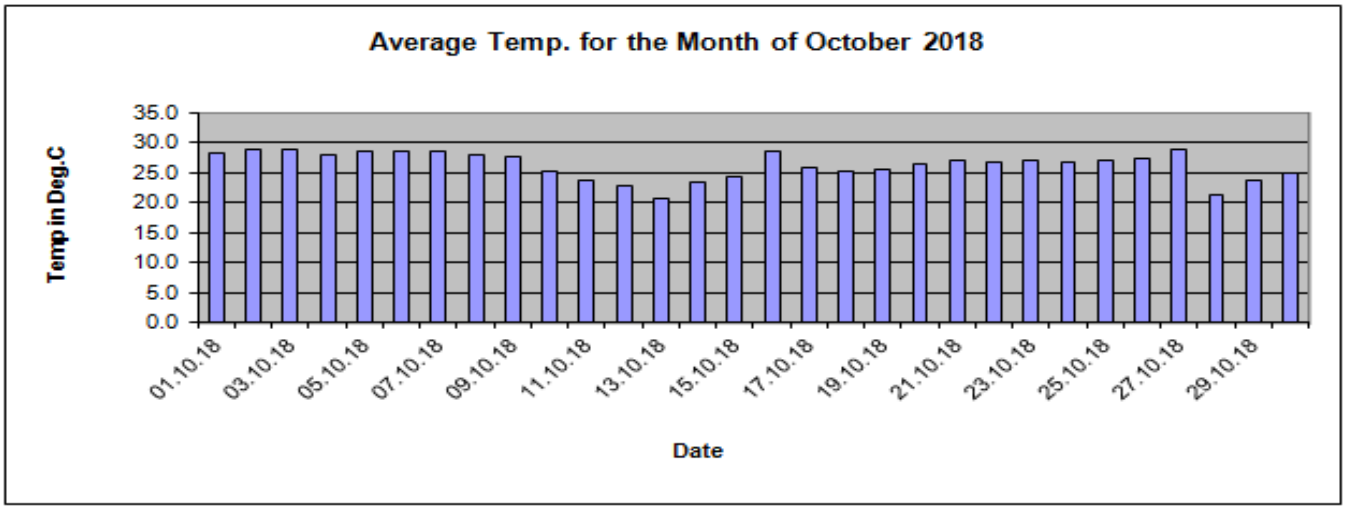
PROJECT : LAFARGE UMIAM MINING PVT.LTD.		STATE: MEGHALAYA			
SAMPLING LOCATION : SHELLA PUNJEE		CODE : LN - 5			
MONTH :JANUARY - MARCH, 2019					
LOCATION CATEGORY :RESIDENTIAL AREA		**Table No. 28**			

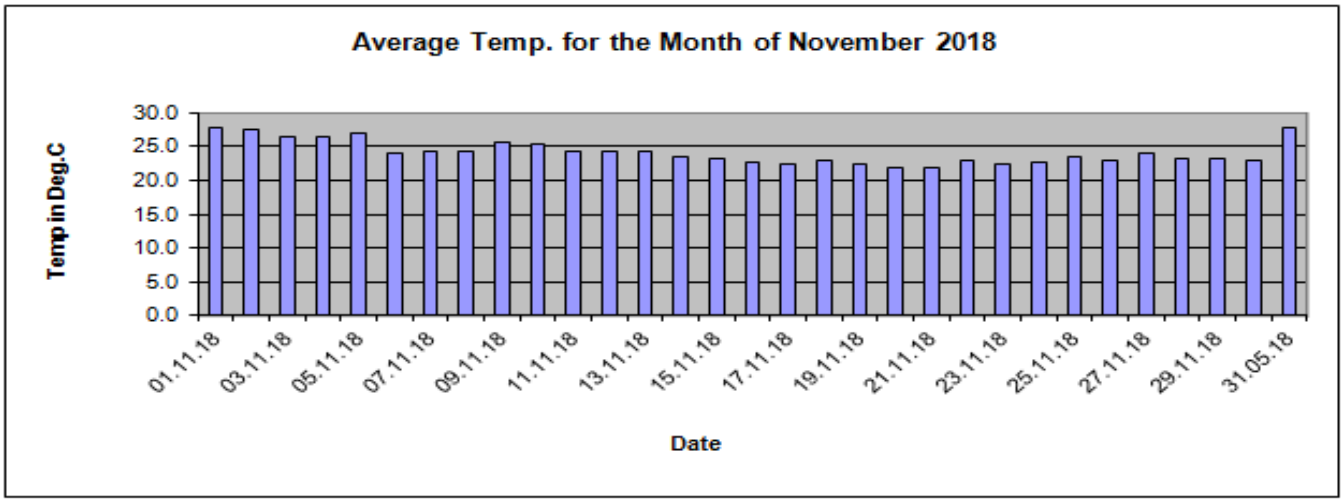
Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	55	52.4 - 53.3	39.5	56.8	
Night Time (10.00 PM to 6.00 AM)	45	43.0 - 43.3			

PROJECT : LAFARGE UMIAM MINING PVT.LTD.	STATE: MEGHALAYA		
SAMPLING LOCATION :MAWRYNGKHONG	CODE : LN - 6		
MONTH : JANUARY - MARCH, 2019			
LOCATION CATEGORY :RESIDENTIAL AREA	**Table No. 29**		

Time of Monitoring	Permissible Limit dB(A)	in dB(A)			Remarks
		Leq	Lmin	Lmax	
Day Time (6.00 AM to 10.00 PM)	55	52.2 - 53.1	39.5	57.2	
Night Time (10.00 PM to 6.00 AM)	45	43.1 - 43.2			

Diurnal Variation of Temperature (Oct to Dec 2018)





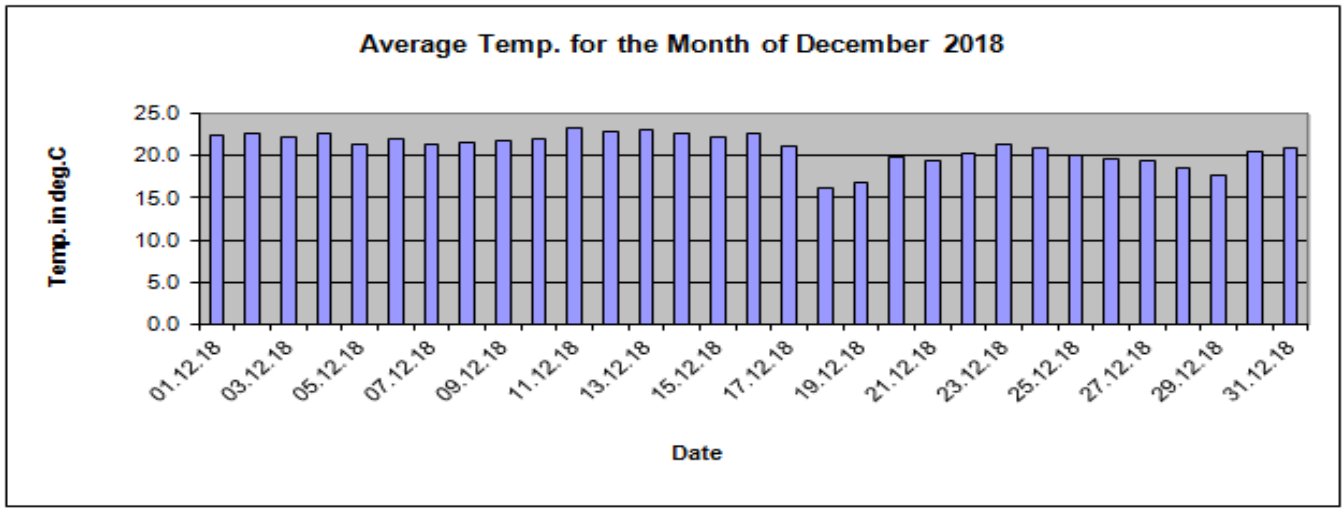
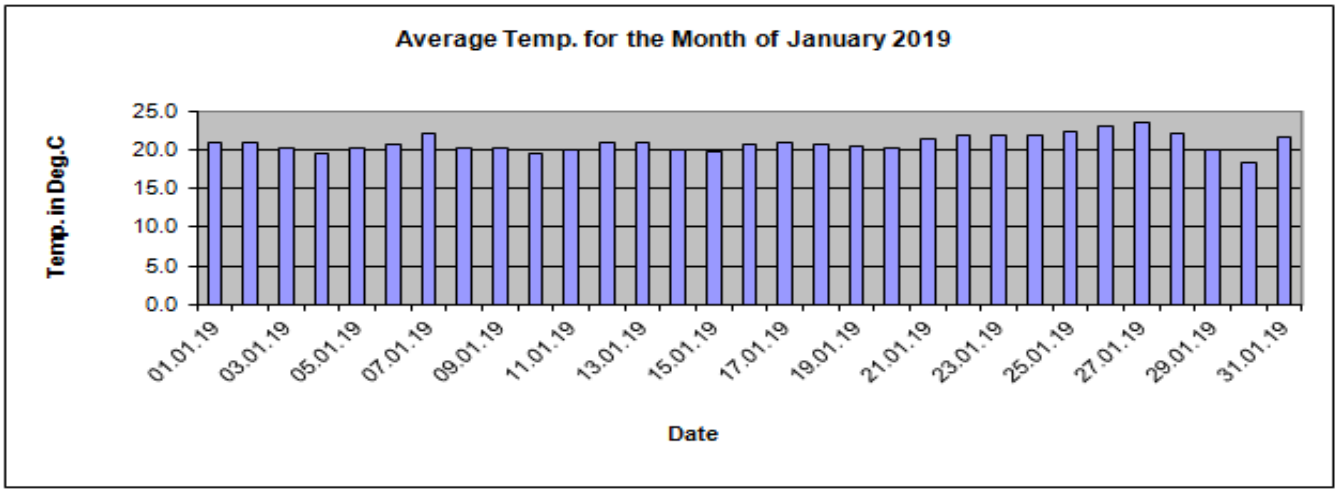
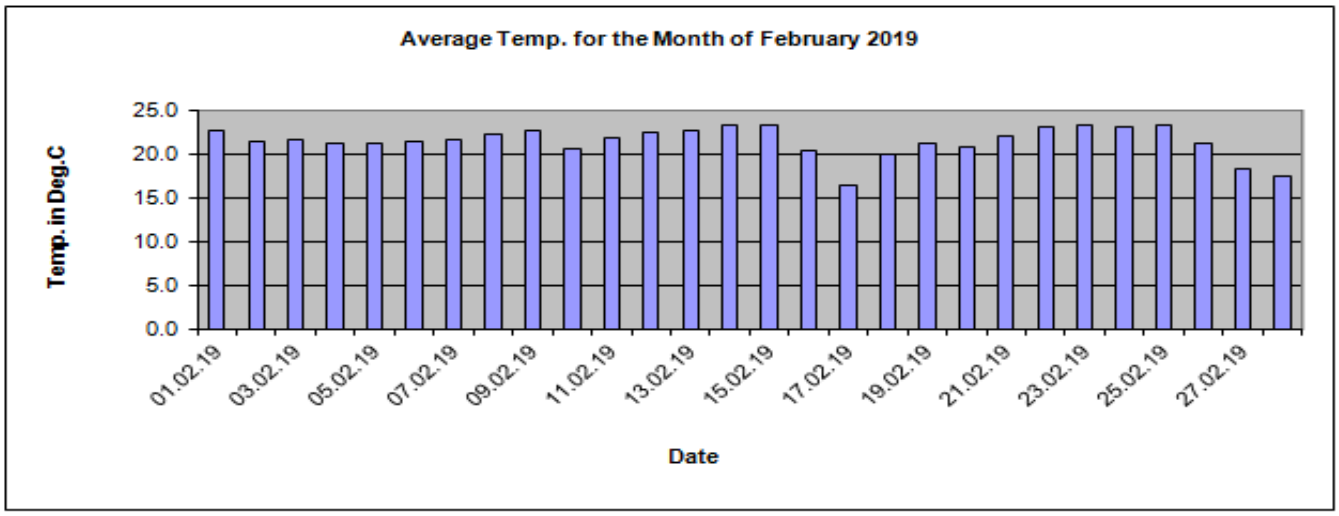


Exhibit No: 1

Diurnal Variation of Temperature (Jan - Mar 2019)





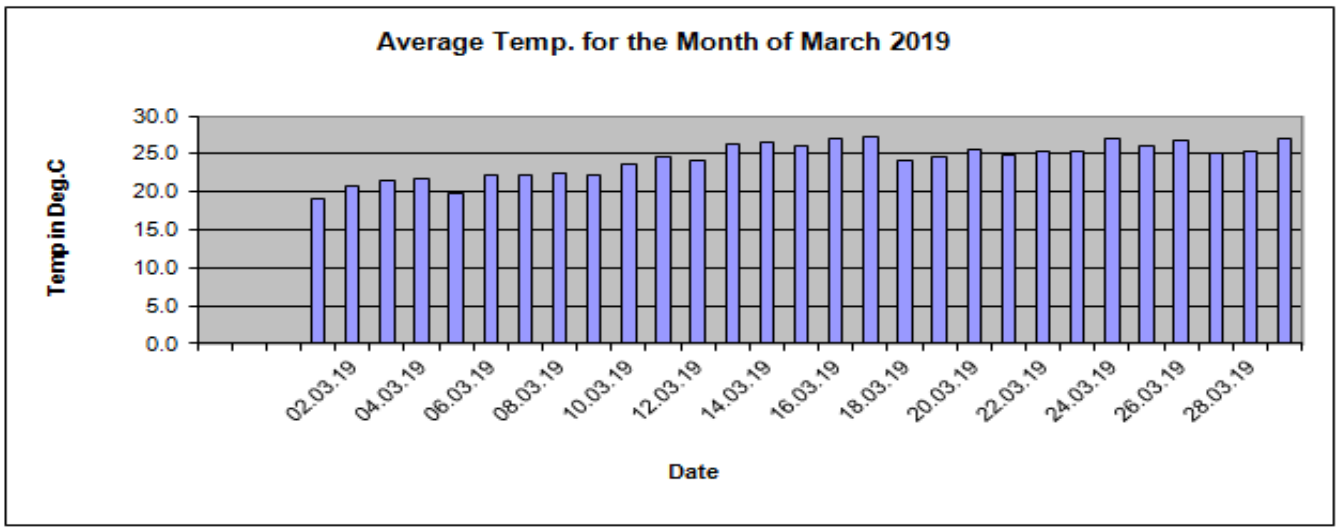
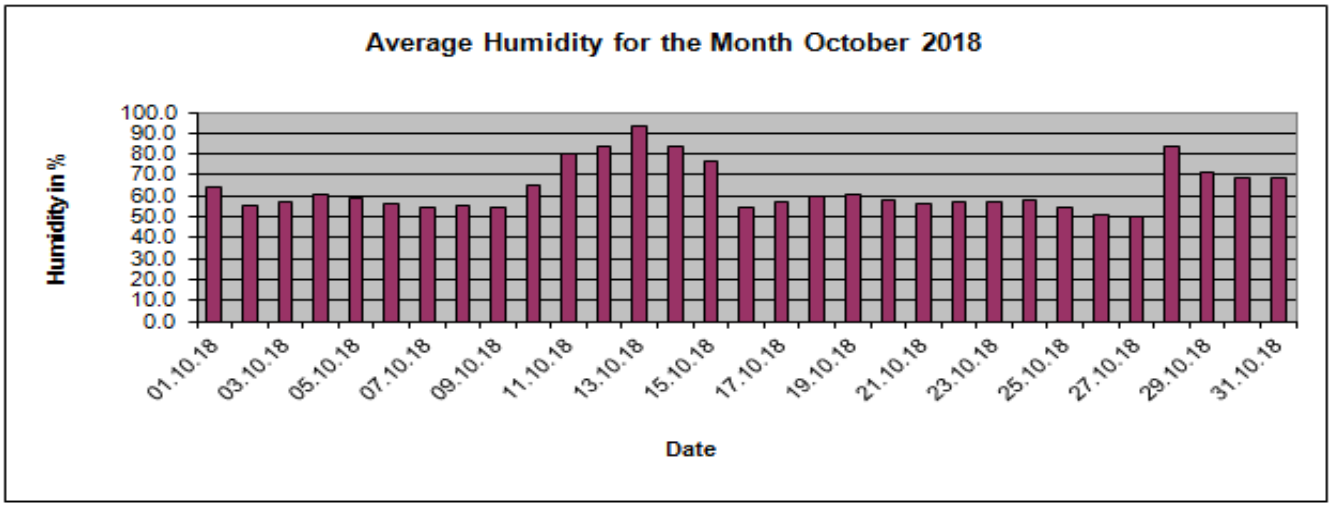
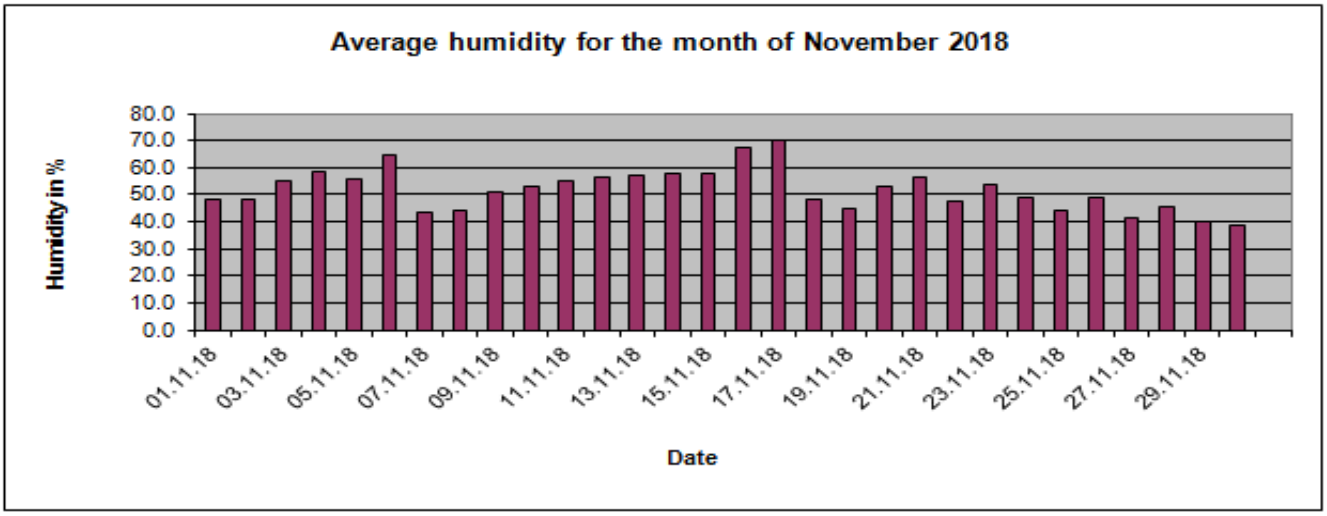


Exhibit-2

Diurnal Variation of Humidity (Oct - Dec 2018)





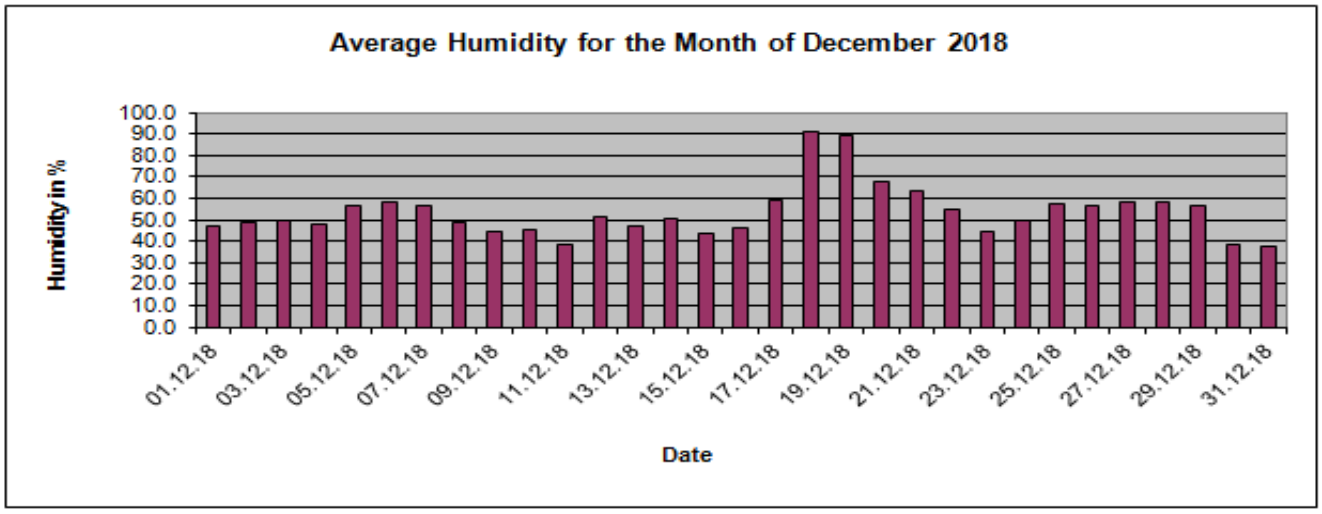
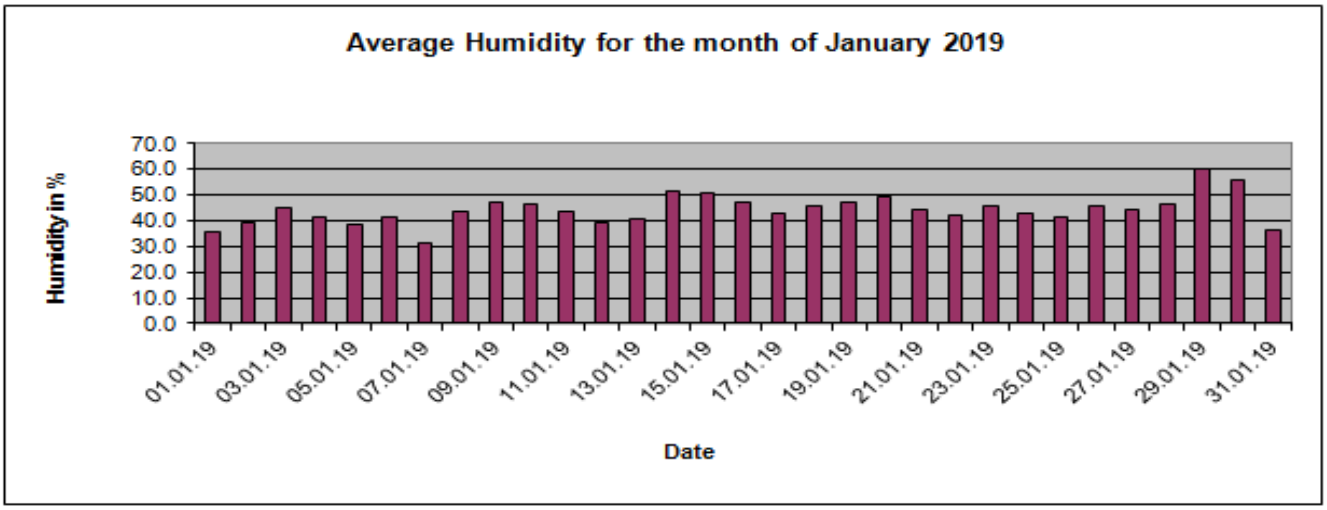
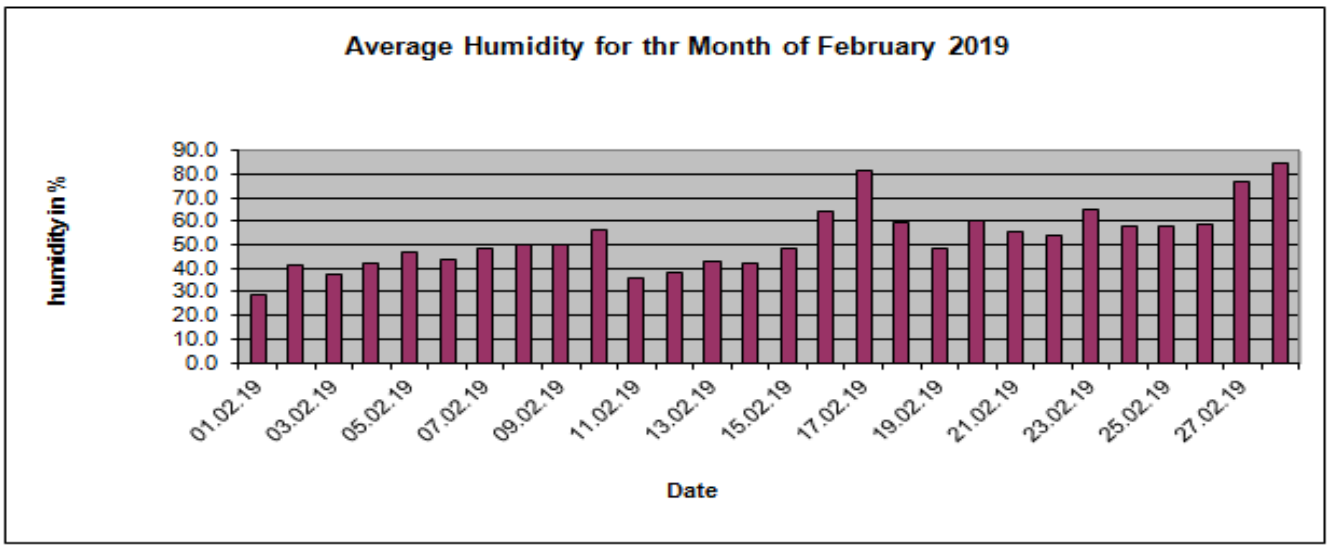


Exhibit-3

Diurnal Variation of Humidity (Jan – Mar 2019)





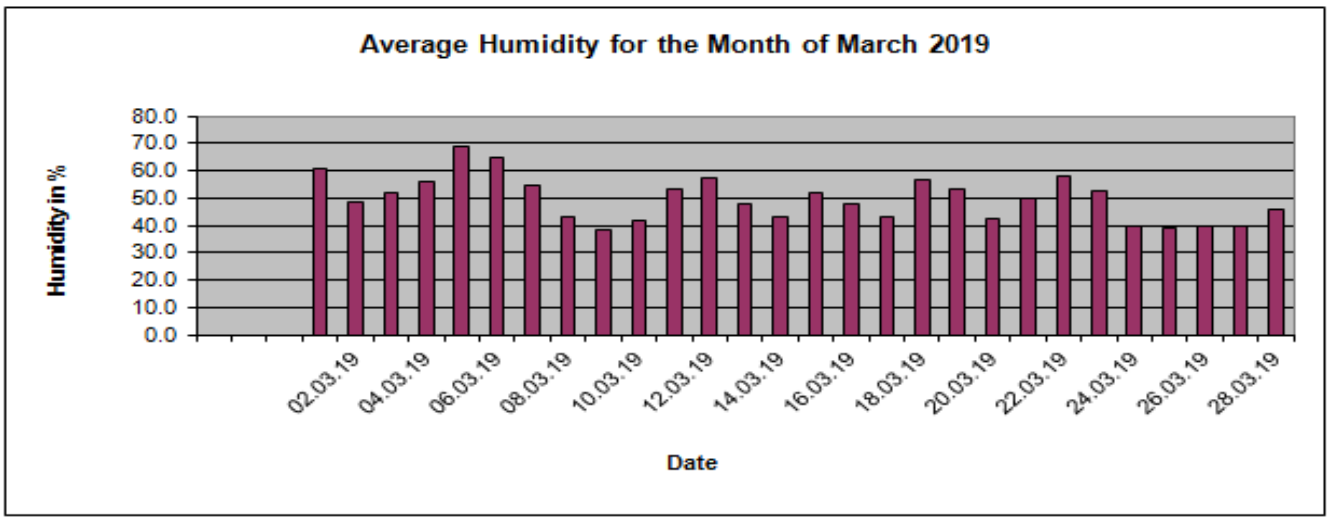
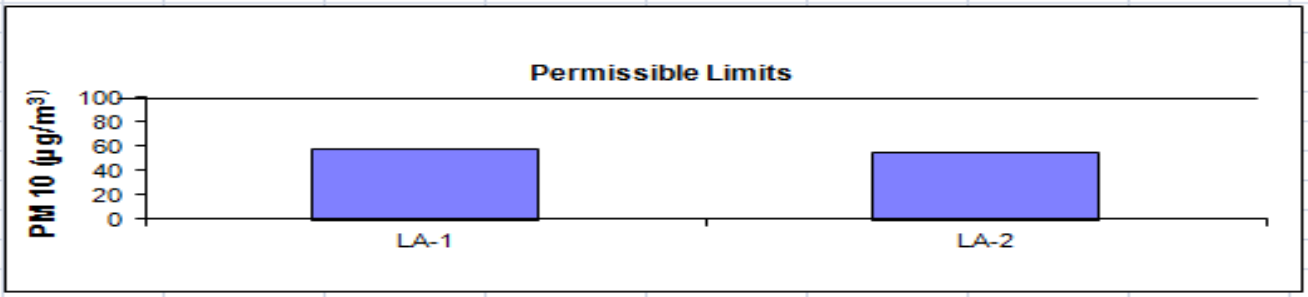
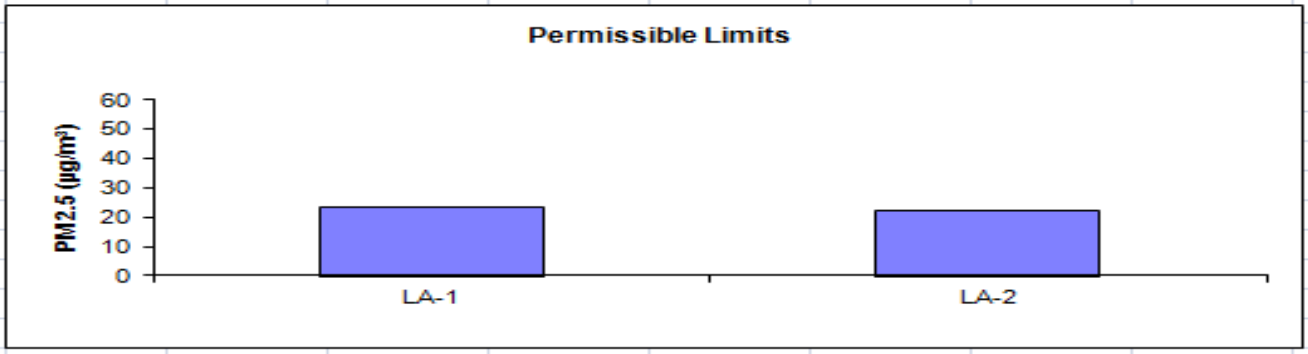
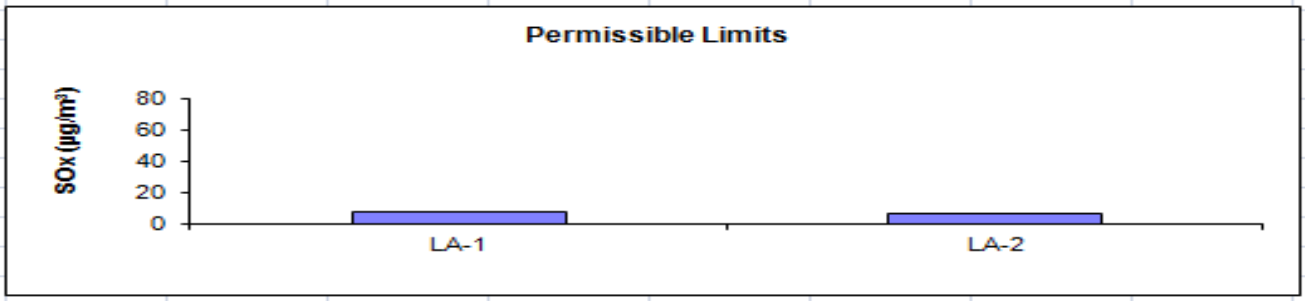


Exhibit-4

LAFARGE UMIAM MINING PVT. LTD. (Meghalaya)
Graphical Presentation of Ambient Air Quality
for Industrial and Mixed used Areas (Oct - Dec 2018)







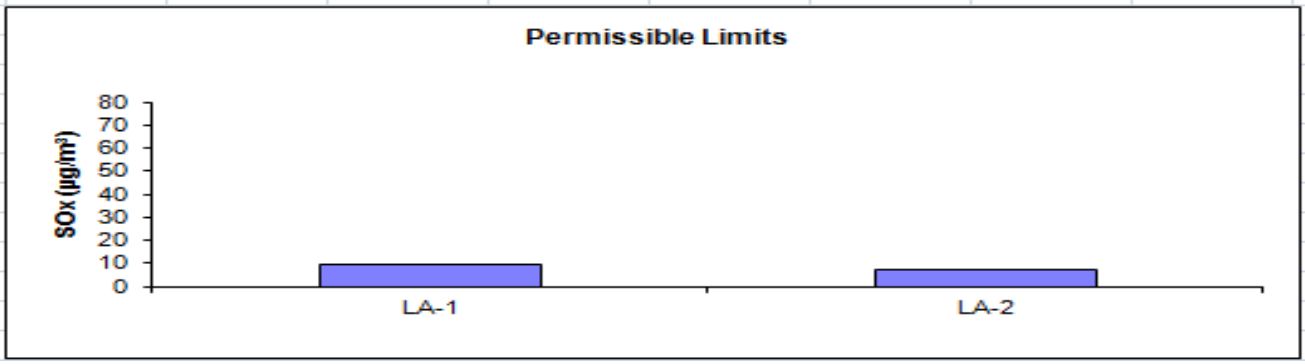
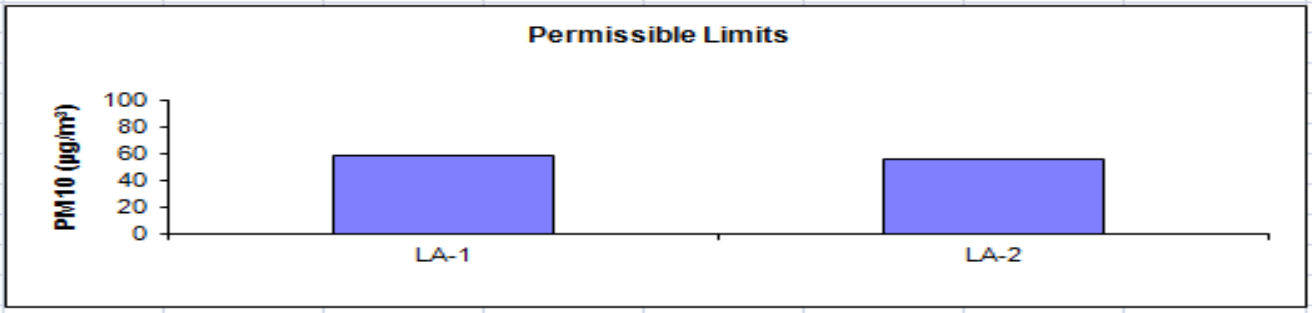
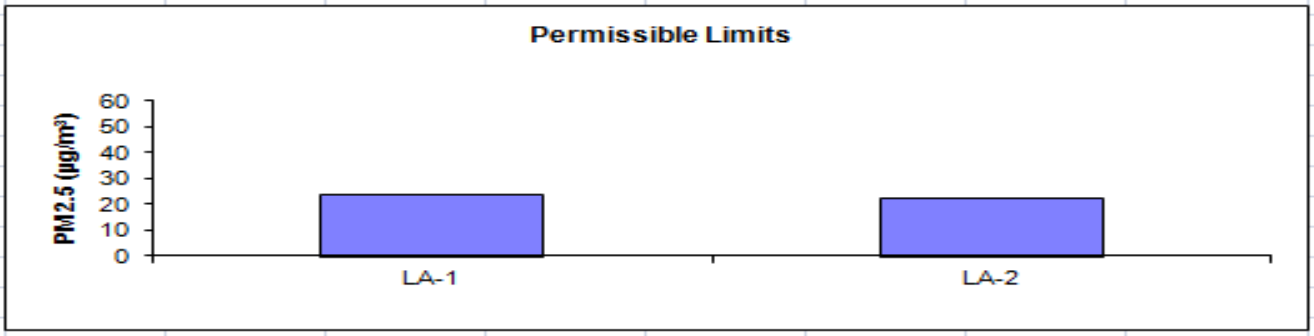
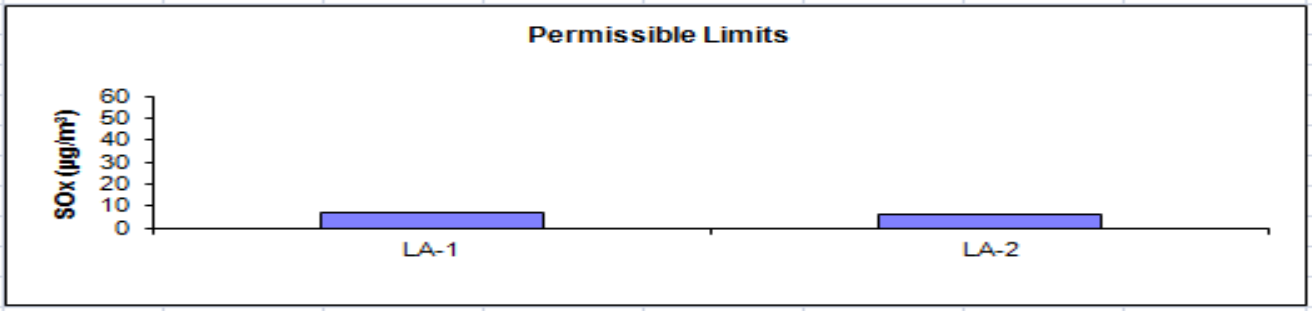


Exhibit No: 5

LAFARGE UMIAM MINING PVT. LTD. (Meghalaya)
Graphical Presentation of Ambient Air Quality
for Industrial and Mixed used Areas (Jan to Mar 2019)







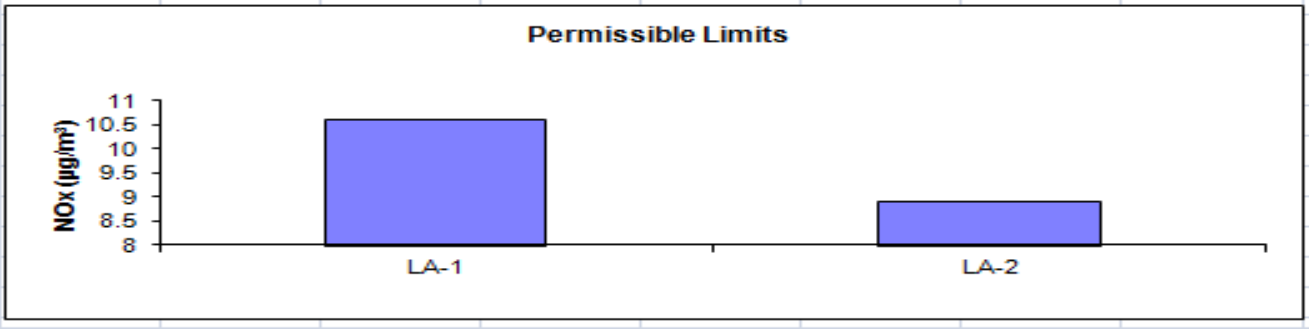


Exhibit No: 6

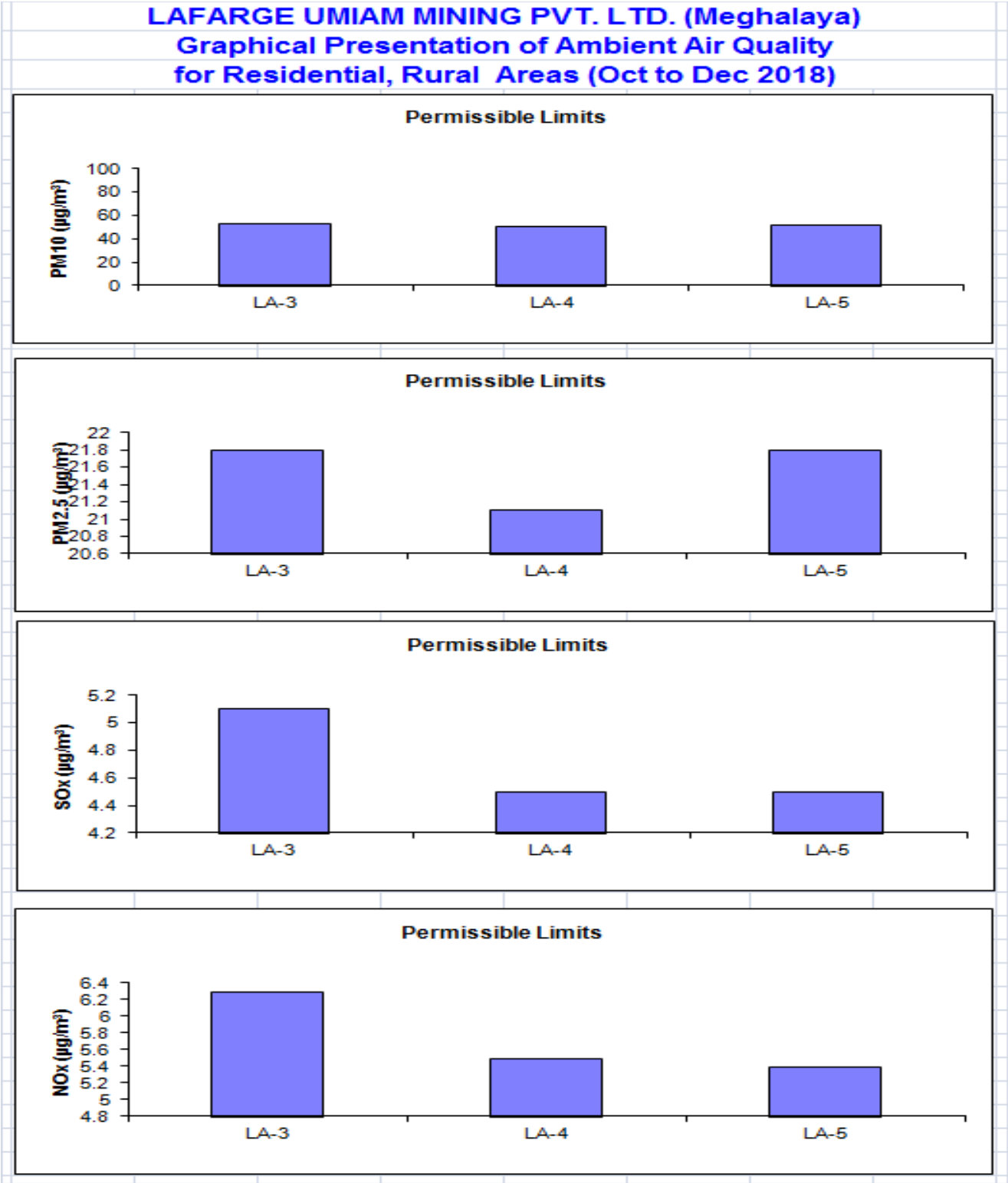
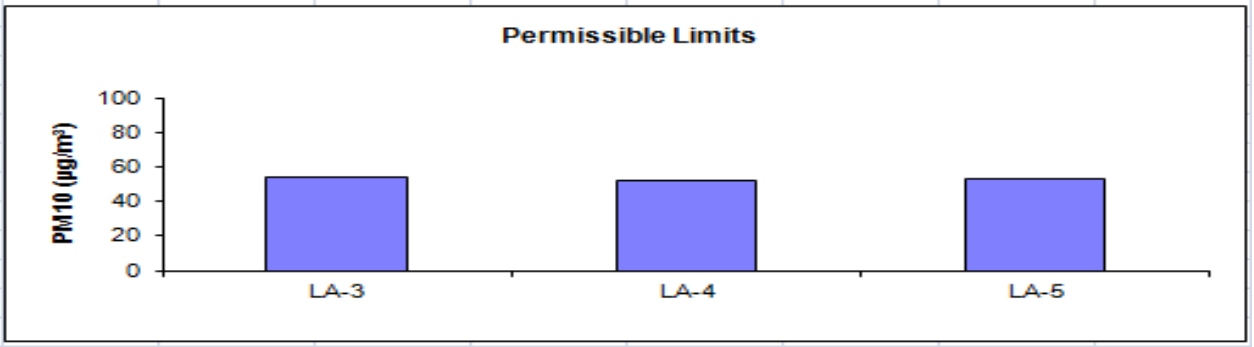
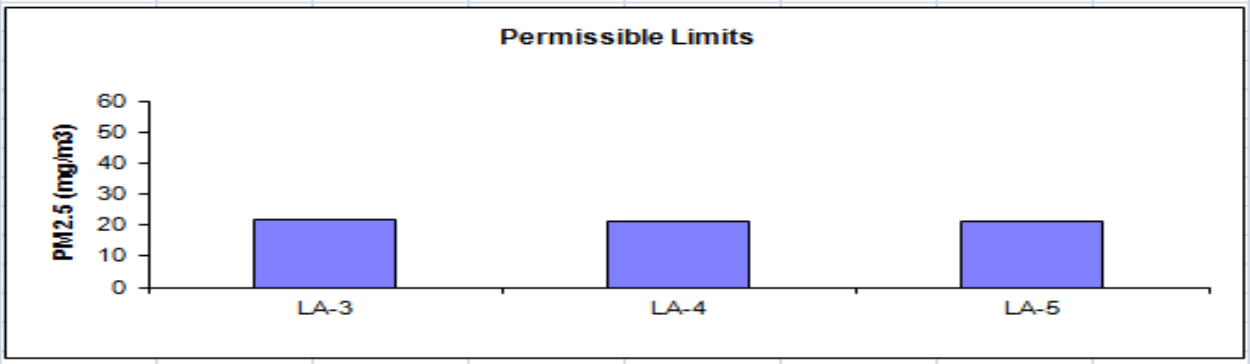
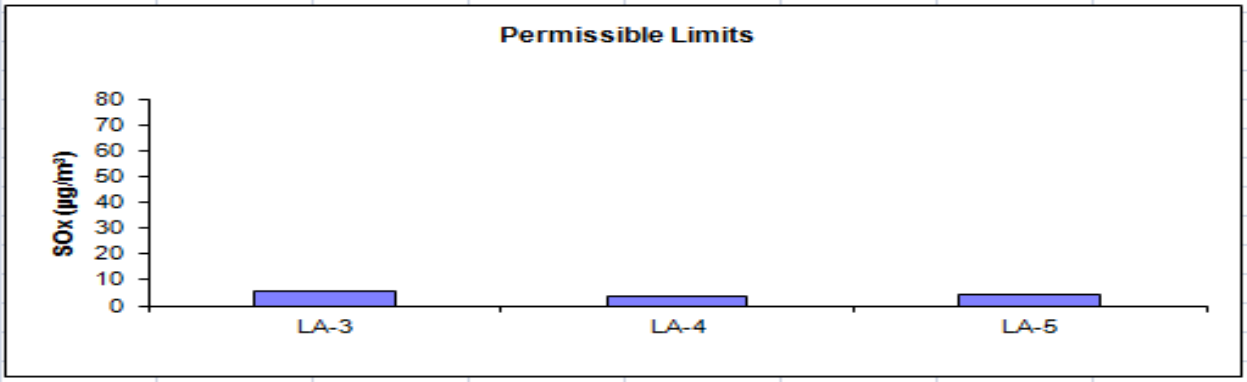

LAFARGE UMIAM MINING PVT. LTD. (Meghalaya)
Graphical Presentation of Ambient Air Quality
for Residential, Rural Areas (Oct to Dec 2018)
Permissible Limits
PM10 (µg/m³)
100
80
60
40
20
0
LA-3
LA-4
LA-5
Permissible Limits
PM2.5 (µg/m³)
22
21.8
21.6
21.4
21.2
21
20.8
20.6
LA-3
LA-4
LA-5
Permissible Limits
SOx (µg/m³)
5.2
5
4.8
4.6
4.4
4.2
LA-3
LA-4
LA-5
Permissible Limits
NOx (µg/m³)
6.4
6.2
6
5.8
5.6
5.4
5.2
5
4.8
LA-3
LA-4
LA-5

Exhibit No: 7

LAFARGE UMIAM MINING PVT. LTD. (Meghalaya)
Graphical Presentation of Ambient Air Quality
for Residential, Rural Areas (Jan to Mar 2019)







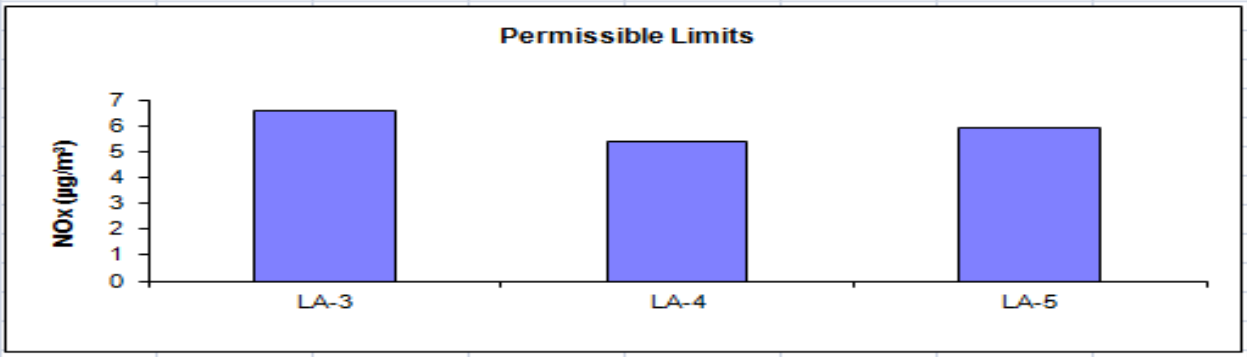


Exhibit No: 8

CAVE PROTECTION

Plate 1

DAILY WEATHER MONITORING DATA FOR THE PERIOD OCTOBER 2018 TO MARCH 2019

Lafarge Umiam Mining Pvt.Limited

Daily Weather Monitoring Data For the Month of Oct 2018

(Based on Hourly Readings from 00:00 Hrs. to 23:00 Hrs.)

Date	Wind Speed km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			Rainfall in mm
	Min	Max	Avg.		Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	
01.10.18	0.0	2.0	0.28	NNW	23.0	36.0	28.3	0.0	0.6	0.13	47.1	89.3	64.6	8.5
02.10.18	0.0	1.7	0.55	NNE	25.0	35.1	28.7	0.0	0.5	0.08	45.2	64.4	55.4	38.0
03.10.18	0.0	1.0	0.26	NW	24.0	36.2	28.7	0.0	0.6	0.10	39.3	68.4	57.4	3.5
04.10.18	0.0	1.7	0.34	NNE	24.2	35.2	28.0	0.0	0.6	0.08	43.2	76.0	61.0	1.0
05.10.18	0.0	0.8	0.13	N	24.3	36.2	28.6	0.0	0.6	0.12	41.1	76.0	58.8	0.0
06.10.18	0.0	1.5	0.42	NNW	24.0	35.4	28.4	0.0	0.6	0.12	42.0	73.0	55.8	0.5
07.10.18	0.0	2.8	0.77	NNE	25.0	35.4	28.5	0.0	0.5	0.11	44.0	72.0	54.7	0.0
08.10.18	0.0	3.3	0.88	WNW	24.1	35.4	27.8	0.0	0.5	0.11	41.2	68.1	55.2	0.5
09.10.18	0.0	3.9	0.88	NNW	23.0	35.3	27.5	0.0	0.6	0.11	41.1	68.2	54.2	0.0
10.10.18	0.0	2.5	0.16	W	21.2	31.0	25.1	0.0	0.4	0.04	53.1	90.0	65.4	4.5
11.10.18	0.0	5.6	0.80	WNW	20.1	29.0	23.7	0.0	0.1	0.01	63.1	93.5	80.4	14.5
12.10.18	0.0	7.3	0.73	NNW	21.0	26.0	22.8	0.0	0.0	0.00	71.4	93.5	84.0	16.5
13.10.18	0.0	1.7	0.19	NNW	20.1	22.3	20.7	0.0	0.0	0.00	93.0	93.5	93.3	53.5
14.10.18	0.0	0.6	0.02	NW	20.0	31.1	23.4	0.0	0.4	0.04	54.2	93.4	83.7	26.5
15.10.18	0.0	1.4	0.18	NNE	22.0	26.1	24.2	0.0	0.0	0.00	65.8	88.1	76.6	6.0
16.10.18	0.0	2.0	0.36	N	23.5	35.4	28.4	0.0	0.5	0.11	44.0	72.0	54.7	0.0
17.10.18	0.0	3.9	0.97	NNW	22.0	32.3	25.7	0.0	0.5	0.08	40.2	76.4	56.9	1.0
18.10.18	0.0	2.7	0.70	WNW	20.1	32.3	25.1	0.0	0.5	0.10	41.3	77.1	59.8	0.0
19.10.18	0.0	3.1	0.77	NW	21.1	33.0	25.5	0.0	0.5	0.10	43.1	76.2	60.4	0.0
20.10.18	0.0	1.5	0.42	NNW	22.1	34.0	26.5	0.0	0.6	0.11	39.3	70.0	58.2	0.0
21.10.18	0.0	4.0	0.60	N	23.1	34.4	27.0	0.0	0.6	0.12	40.0	78.1	55.9	1.5
22.10.18	0.0	2.6	0.68	N	22.1	33.4	26.7	0.0	0.6	0.12	40.1	76.2	56.8	0.5
23.10.18	0.0	2.0	0.49	NNE	22.2	35.0	26.9	0.0	0.6	0.10	40.1	74.0	57.5	0.5
24.10.18	0.0	1.5	0.49	NNW	22.1	33.6	26.7	0.0	0.6	0.13	41.2	73.2	58.1	3.0
25.10.18	0.0	3.2	0.98	N	22.2	23.2	26.9	0.0	0.6	0.08	39.3	69.0	54.6	0.0
26.10.18	0.0	4.9	1.80	N	22.2	35.1	27.2	0.0	0.6	0.08	37.1	66.2	51.1	0.0
27.10.18	0.0	5.3	1.35	NNW	24.1	36.6	28.7	0.0	0.6	0.08	34.1	75.0	50.1	0.5
28.10.18	0.0	1.4	0.30	SSE	19.1	24.0	21.3	0.0	0.0	0.00	76.0	93.2	83.5	2.0
29.10.18	0.0	0.1	0.00	NW	19.2	30.1	23.8	0.0	0.4	0.05	49.1	85.1	71.4	0.0
30.10.18	0.0	1.1	0.05	SW	21.0	23.2	25.0	0.0	0.4	0.07	43.0	82.3	68.4	1.0
31.10.18	0.0	1.1	0.05	SW	21.0	33.2	25.0	0.0	0.4	0.07	43.0	82.3	68.4	1.0
				NNW										
	0.0	7.3	0.5		19.1	36.6	26.2	0.0	0.6	0.1	34.1	93.5	63.4	184.5
	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Total Rainfall in mm
	Wind Speed Km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			

Lafarge Umiam Mining Pvt.Limited

Daily Weather Monitoring Data For the Month of Nov 2018

(Based on Hourly Readings from 00:00 Hrs. to 23:00 Hrs.)

Date	Wind Speed km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			Rainfall in mm
	Min	Max	Avg.		Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	
01.11.18	0.0	3.7	0.84	N	22.3	35.1	27.8	0.0	0.6	0.11	33.1	65.0	48.5	0.0
02.11.18	0.0	5.4	1.69	NNE	23.0	35.5	27.6	0.0	0.6	0.08	27.2	57.0	48.1	0.0
03.11.18	0.0	5.3	0.98	NW	21.3	33.5	26.5	0.0	0.6	0.10	39.2	77.1	55.1	0.0
04.11.18	0.0	1.5	0.42	NNW	22.1	34.0	26.5	0.0	0.6	0.11	39.3	70.0	58.2	0.0
05.11.18	0.0	4.0	0.60	N	23.1	34.4	27.0	0.0	0.6	0.12	40.0	78.1	55.9	0.0
06.11.18	0.0	3.9	0.98	WNW	20.1	30.1	23.9	0.0	0.5	0.05	45.2	83.2	64.7	0.0
07.11.18	0.0	5.4	1.56	NNE	18.0	31.0	24.2	0.0	0.5	0.10	25.2	67.0	43.4	0.0
08.11.18	0.0	3.0	0.78	N	19.3	31.6	24.3	0.0	0.6	0.12	29.3	61.4	44.0	0.0
09.11.18	0.0	2.3	0.60	NNE	21.0	31.0	25.6	0.0	0.5	0.13	41.5	69.0	50.9	0.0
10.11.18	0.0	6.3	1.48	WNW	21.0	33.3	25.3	0.0	0.6	0.09	36.0	68.0	53.3	0.0
11.11.18	0.0	3.2	1.17	NNE	19.1	31.3	24.4	0.0	0.6	0.12	39.3	72.2	55.2	0.0
12.11.18	0.1	5.4	2.05	NNE	20.2	30.4	24.2	0.0	0.5	0.10	39.5	82.4	56.7	9.5
13.11.18	0.0	4.3	1.85	N	20.6	31.0	24.2	0.0	0.5	0.10	39.2	72.4	57.2	0.5
14.11.18	0.0	5.9	1.43	NNW	18.0	30.0	23.6	0.0	0.5	0.09	43.2	81.6	57.8	0.0
15.11.18	0.0	3.6	0.97	NNE	19.2	29.3	23.2	0.0	0.4	0.08	45.0	70.4	58.0	0.5
16.11.18	0.0	1.2	0.22	W	20.0	28.0	22.6	0.0	0.3	0.04	52.6	77.2	67.3	0.0
17.11.18	0.0	1.3	0.17	WNW	19.3	26.4	22.4	0.0	0.3	0.02	56.4	93.3	70.3	4.5
18.11.18	0.0	8.8	3.10	NNE	19.4	29.6	22.9	0.0	0.5	0.10	38.3	65.1	48.2	0.5
19.11.18	0.0	8.6	2.89	NE	19.1	29.0	22.5	0.0	0.5	0.09	34.2	61.3	44.9	0.5
20.11.18	0.0	4.7	1.52	N	18.0	28.2	21.9	0.0	0.5	0.09	38.1	66.1	52.9	0.0
21.11.18	0.0	5.3	0.76	NNW	16.1	28.4	21.8	0.0	0.5	0.09	39.1	77.2	56.2	0.5
22.11.18	0.0	3.8	0.77	N	18.0	29.2	22.9	0.0	0.5	0.10	34.0	63.0	47.4	0.0
23.11.18	0.0	3.4	0.43	NNW	15.3	28.6	22.4	0.0	0.5	0.10	36.1	75.2	53.4	0.0
24.11.18	0.0	5.3	1.45	NE	18.0	29.3	22.8	0.0	0.5	0.10	34.2	63.2	48.6	0.5
25.11.18	0.0	3.0	0.80	NNE	18.6	30.6	23.6	0.0	0.5	0.11	30.2	57.0	44.3	0.0
26.11.18	0.0	2.4	0.58	N	17.3	30.3	23.0	0.0	0.5	0.10	32.5	64.6	48.7	0.5
27.11.18	0.0	9.1	2.12	N	18.6	31.4	23.9	0.0	0.6	0.12	28.3	50.6	41.1	0.0
28.11.18	0.0	8.5	1.17	NNE	16.5	30.4	23.3	0.0	0.6	0.11	28.1	77.2	45.7	0.0
29.11.18	0.0	9.8	2.97	NNE	19.2	30.3	23.2	0.0	0.6	0.13	28.0	54.2	39.9	0.5
30.11.18	0.0	9.0	4.00	NNE	19.2	29.4	22.9	0.0	0.6	0.13	28.2	50.1	38.7	0.0
				NNW										
	0.0	9.8	1.3		15.3	35.5	24.0	0.0	0.6	0.1	25.2	93.3	51.8	18.0
	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Total Rainfall in mm
	Wind Speed Km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			

Lafarge Umiam Mining Pvt.Limited

Daily Weather Monitoring Data For the Month of Dec 2018

(Based on Hourly Readings from 00:00 Hrs. to 23:00 Hrs.)

Date	Wind Speed km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			Rainfall in mm
	Min	Max	Avg.		Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	
01.12.18	0.0	9.4	2.95	NNW	17.3	29.5	22.5	0.0	0.5	0.11	33.3	68.1	47.4	0.0
02.12.18	0.0	7.2	2.61	NNE	19.1	29.1	22.6	0.0	0.5	0.10	32.1	60.4	48.7	0.0
03.12.18	0.0	8.9	2.85	N	19.1	28.3	22.3	0.0	0.5	0.10	33.5	63.2	49.6	0.0
04.12.18	0.0	6.4	2.26	N	18.1	29.2	22.6	0.0	0.5	0.10	32.3	60.0	47.7	0.5
05.12.18	0.0	4.7	0.96	N	17.0	26.2	21.4	0.0	0.5	0.07	44.2	77.4	56.4	15.0
06.12.18	0.0	1.7	0.47	NNW	17.1	28.4	21.9	0.0	0.5	0.10	38.1	73.3	58.1	15.5
07.12.18	0.0	4.0	0.70	NNW	17.1	27.3	21.4	0.0	0.5	0.10	39.0	69.2	56.5	17.5
08.12.18	0.0	5.1	1.10	N	17.1	28.2	21.5	0.0	0.5	0.10	31.4	66.4	48.9	3.5
09.12.18	0.0	5.2	1.88	NNE	18.1	28.2	21.7	0.0	0.5	0.11	30.0	56.2	44.7	0.0
10.12.18	0.0	6.5	2.30	N	18.1	29.1	22.1	0.0	0.5	0.11	28.3	56.3	45.0	0.0
11.12.18	0.0	8.6	2.72	N	18.6	30.1	23.3	0.0	0.5	0.10	21.2	55.2	38.0	0.0
12.12.18	0.0	6.3	1.61	N	19.1	29.6	22.8	0.0	0.4	0.09	40.2	67.1	51.7	0.0
13.12.18	0.0	6.8	1.78	NNE	17.2	29.3	23.1	0.0	0.5	0.10	34.0	64.1	47.3	8.5
14.12.18	0.0	3.7	1.07	N	19.0	28.5	22.7	0.0	0.5	0.08	39.0	68.1	50.8	13.0
15.12.18	0.0	3.9	0.77	NNE	18.2	28.2	22.2	0.0	0.4	0.09	33.0	64.4	43.9	8.5
16.12.18	0.0	2.5	0.15	WNW	19.2	28.4	22.7	0.0	0.4	0.06	33.0	61.2	46.5	7.5
17.12.18	0.0	2.4	0.24	WNW	18.2	24.3	21.2	0.0	0.0	0.00	41.5	81.4	58.8	5.5
18.12.18	0.0	0.6	0.05	W	15.1	18.2	16.2	0.0	0.0	0.00	75.1	92.4	91.1	7.0
19.12.18	0.0	0.0	0.00	NNW	15.0	22.5	16.9	0.0	0.2	0.01	69.1	93.0	89.3	0.0
20.12.18	0.0	1.0	0.08	N	15.5	26.6	19.8	0.0	0.5	0.11	45.0	89.4	67.5	0.0
21.12.18	0.0	0.7	0.07	N	15.3	24.3	19.4	0.0	0.4	0.06	44.1	83.4	63.7	0.0
22.12.18	0.0	3.2	0.77	NE	16.2	27.3	20.3	0.0	0.5	0.10	36.2	70.3	54.7	0.0
23.12.18	0.0	3.7	0.73	NNW	16.0	27.6	21.3	0.0	0.5	0.11	29.0	54.0	44.2	0.0
24.12.18	0.0	8.3	2.05	NNE	17.1	27.3	20.9	0.0	0.5	0.10	33.2	65.6	50.0	0.0
25.12.18	0.0	6.4	1.81	N	14.2	26.3	20.0	0.0	0.5	0.10	39.3	83.5	57.3	0.0
26.12.18	0.0	4.7	1.19	N	15.1	26.2	19.7	0.0	0.5	0.10	40.1	71.2	56.6	0.0
27.12.18	0.0	6.4	0.77	NNW	14.3	25.5	19.5	0.0	0.5	0.10	38.0	75.4	58.2	0.0
28.12.18	0.0	1.7	0.31	N	15.1	24.5	18.5	0.0	0.5	0.08	35.4	81.3	57.9	0.0
29.12.18	0.0	2.8	0.56	WNW	14.0	23.1	17.6	0.0	0.4	0.07	43.1	71.2	56.3	1.5
30.12.18	0.0	5.8	1.13	NW	13.4	27.4	20.6	0.0	0.6	0.11	24.2	63.5	38.7	0.0
31.12.18	0.0	7.4	1.73	N	13.2	28.5	20.9	0.0	0.6	0.15	22.0	57.5	37.4	0.0
				NNW										
	0.0	9.4	1.2		13.2	30.1	21.0	0.0	0.6	0.1	21.2	93.0	53.6	103.5
	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Total Rainfall in mm
	Wind Speed Km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			

Lafarge Umiam Mining Pvt.Limited

Daily Weather Monitoring Data For the Month of Jan 2019

(Based on Hourly Readings from 00:00 Hrs. to 23:00 Hrs.)

Date	Wind Speed km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			Rainfall in mm
	Min	Max	Avg.		Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	
01.01.19	0.0	8.9	2.95	N	13.4	28.0	20.9	0.0	0.6	0.12	21.2	62.1	35.4	0.0
02.01.19	0.0	8.3	3.90	NNE	17.2	27.1	20.8	0.0	0.5	0.11	29.3	51.6	39.0	0.0
03.01.19	0.2	8.5	2.88	N	15.4	26.3	20.1	0.0	0.5	0.11	29.0	64.3	45.4	0.0
04.01.19	0.0	7.6	2.94	NNE	15.5	25.4	19.4	0.0	0.5	0.09	31.1	52.2	41.8	0.0
05.01.19	0.0	7.6	1.63	NNW	15.0	27.2	20.1	0.0	0.5	0.11	24.0	49.5	38.3	0.0
06.01.19	0.0	4.4	1.26	N	14.3	28.5	20.7	0.0	0.6	0.12	25.1	65.1	41.2	0.0
07.01.19	0.0	5.6	1.67	N	17.2	29.0	22.0	0.0	0.6	0.13	23.1	43.4	31.2	0.0
08.01.19	0.0	9.0	2.43	N	13.1	26.4	20.2	0.0	0.6	0.12	23.4	61.2	43.3	0.5
09.01.19	0.0	6.4	1.27	N	16.0	26.2	20.2	0.0	0.5	0.10	33.1	59.1	47.2	0.0
10.01.19	0.0	3.4	0.43	N	16.3	25.2	19.6	0.0	0.5	0.10	37.2	63.0	46.9	0.0
11.01.19	0.0	5.5	1.20	N	14.5	26.5	19.9	0.0	0.5	0.11	32.0	58.0	43.3	0.0
12.01.19	0.1	7.9	3.15	N	16.1	27.2	20.8	0.0	0.6	0.13	30.5	48.2	39.1	4.0
13.01.19	0.0	6.7	2.34	N	14.2	27.2	21.0	0.0	0.6	0.13	28.3	60.2	41.1	0.0
14.01.19	0.0	5.8	1.88	N	14.3	26.6	20.0	0.0	0.5	0.11	35.3	73.0	51.7	0.0
15.01.19	0.0	6.1	2.02	N	13.3	26.4	19.7	0.0	0.5	0.10	35.0	78.5	51.2	0.0
16.01.19	0.0	6.1	1.08	NNW	13.3	27.6	20.6	0.0	0.6	0.13	30.1	82.1	47.6	0.0
17.01.19	0.0	7.7	2.08	NNW	12.2	27.3	20.8	0.0	0.6	0.13	28.1	77.4	42.7	0.0
18.01.19	0.0	7.4	2.67	NNW	15.1	26.5	20.7	0.0	0.5	0.10	32.0	64.5	45.5	0.0
19.01.19	0.0	7.6	2.02	N	16.1	27.1	20.5	0.0	0.5	0.10	30.2	72.0	47.4	0.0
20.01.19	0.0	4.0	0.82	NNW	13.1	27.4	20.2	0.0	0.5	0.10	30.2	77.6	49.6	0.0
21.01.19	0.0	4.7	1.24	N	15.0	28.3	21.4	0.0	0.6	0.12	30.2	67.1	44.3	0.0
22.01.19	0.0	6.3	1.69	N	17.3	28.1	21.9	0.0	0.6	0.12	32.1	50.1	42.5	0.0
23.01.19	0.0	5.4	1.51	NNW	15.3	28.4	21.9	0.0	0.6	0.13	32.0	66.5	45.7	1.0
24.01.19	0.0	5.1	1.52	N	18.0	28.1	21.9	0.0	0.5	0.11	33.2	57.0	43.2	0.0
25.01.19	0.0	3.9	0.74	N	16.0	29.4	22.4	0.0	0.5	0.12	31.0	61.0	41.5	4.5
26.01.19	0.0	0.5	0.04	NNW	17.0	29.5	23.0	0.0	0.5	0.11	30.1	61.2	45.8	1.0
27.01.19	0.0	1.1	0.13	W	17.6	29.3	23.4	0.0	0.4	0.08	30.0	68.5	44.3	9.0
28.01.19	0.0	1.5	0.19	N	17.3	28.2	22.1	0.0	0.5	0.07	34.0	64.2	46.9	7.0
29.01.19	0.0	0.3	0.01	N	15.2	27.6	19.9	0.0	0.6	0.10	37.0	85.0	60.5	0.0
30.01.19	0.0	1.9	0.20	NW	13.0	24.2	18.4	0.0	0.5	0.10	35.5	85.2	56.0	0.0
31.01.19	0.0	7.3	1.38	NNW	16.3	28.4	21.6	0.0	0.6	0.11	25.1	49.0	36.7	0.0
				N										
	0.0	9.0	1.6		12.2	29.5	20.8	0.0	0.6	0.1	21.2	85.2	44.4	27.0
	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Total Rainfall in mm
	Wind Speed Km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			

Lafarge Umiam Mining Pvt.Limited

Daily Weather Monitoring Data For the Month of Feb 2019

(Based on Hourly Readings from 00:00 Hrs. to 23:00 Hrs.)

Date	Wind Speed km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			Rainfall in mm
	Min	Max	Avg.		Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	
01.02.19	0.0	6.9	3.04	NNE	18.1	29.6	22.6	0.0	0.6	0.08	19.2	46.4	28.6	0.0
02.02.19	0.0	6.6	1.55	N	15.1	28.2	21.5	0.0	0.6	0.10	27.5	61.4	41.7	0.0
03.02.19	0.0	5.6	2.30	N	17.1	28.4	21.7	0.0	0.6	0.13	29.2	50.4	37.6	0.0
04.02.19	0.0	4.2	1.13	NNW	15.3	28.1	21.3	0.0	0.6	0.12	28.4	57.5	42.3	0.0
05.02.19	0.0	5.4	1.22	NNW	15.2	27.2	21.1	0.0	0.6	0.12	32.2	66.2	46.6	0.0
06.02.19	0.0	4.1	1.34	NNE	17.3	27.4	21.4	0.0	0.5	0.11	26.0	53.0	43.7	0.0
07.02.19	0.0	4.7	1.08	NNW	15.2	28.5	21.7	0.0	0.5	0.11	29.2	73.0	48.2	0.0
08.02.19	0.0	2.4	0.40	NNE	16.3	27.4	22.3	0.0	0.4	0.06	35.3	65.2	50.3	0.0
09.02.19	0.0	1.9	0.40	NW	18.2	28.2	22.6	0.0	0.4	0.07	33.2	78.0	50.1	0.0
10.02.19	0.0	4.8	0.92	NW	15.5	27.4	20.5	0.0	0.5	0.11	34.0	89.3	56.6	0.0
11.02.19	0.0	5.9	1.44	NNW	13.0	28.6	21.8	0.0	0.6	0.10	22.0	65.3	35.7	0.0
12.02.19	0.0	6.8	1.64	NNE	18.1	29.2	22.4	0.0	0.6	0.11	27.4	52.6	38.0	0.0
13.02.19	0.0	3.1	0.86	NE	15.2	30.1	22.7	0.0	0.6	0.12	24.2	69.2	42.7	0.5
14.02.19	0.0	3.0	0.65	N	18.4	29.5	23.2	0.0	0.6	0.13	28.2	55.1	41.8	0.0
15.02.19	0.0	2.3	0.42	N	17.1	30.1	23.2	0.0	0.5	0.11	32.3	66.0	48.4	0.0
16.02.19	0.0	3.1	0.47	N	17.0	24.1	20.3	0.0	0.2	0.02	52.5	80.6	63.8	0.0
17.02.19	0.0	2.4	0.34	NNW	15.2	18.6	16.3	0.0	0.0	0.00	52.3	92.5	81.2	10.5
18.02.19	0.0	8.1	2.24	NNE	15.1	25.3	20.1	0.0	0.6	0.12	37.0	88.5	59.1	0.0
19.02.19	0.0	5.3	1.60	NNW	15.0	27.3	21.1	0.0	0.6	0.10	31.5	76.1	48.5	0.0
20.02.19	0.0	5.4	0.69	NW	17.0	26.6	20.8	0.0	0.6	0.08	45.0	72.0	60.5	0.0
21.02.19	0.0	3.9	0.99	N	16.3	27.5	22.1	0.0	0.6	0.12	43.2	73.6	55.6	2.0
22.02.19	0.0	3.9	0.76	N	18.0	29.3	23.0	0.0	0.6	0.13	39.1	73.2	53.7	0.5
23.02.19	0.0	0.9	0.22	W	19.3	28.6	23.3	0.0	0.6	0.11	47.2	83.3	65.0	0.0
24.02.19	0.0	5.4	1.01	NNW	19.0	29.1	23.0	0.0	0.6	0.10	35.1	85.1	58.0	0.0
25.02.19	0.0	3.1	0.50	NW	19.0	29.1	23.2	0.0	0.6	0.10	35.1	85.1	58.0	0.0
26.02.19	0.0	2.3	0.39	W	18.0	27.0	21.1	0.0	0.6	0.06	39.4	79.3	58.7	0.0
27.02.19	0.0	1.9	0.43	WNW	15.2	25.3	18.2	0.0	0.5	0.04	46.0	92.4	76.4	15.0
28.02.19	0.0	0.4	0.10	N	15.1	23.1	17.4	0.0	0.3	0.04	61.0	92.4	84.6	18.0
				N										
	0.0	8.1	1.0		13.0	30.1	21.4	0.0	0.6	0.1	19.2	92.5	52.7	46.5
	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Total Rainfall in mm
	Wind Speed Km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			

Lafarge Umiam Mining Pvt.Limited

Daily Weather Monitoring Data For the Month of Mar 2019

(Based on Hourly Readings from 00:00 Hrs. to 23:00 Hrs.)

Date	Wind Speed km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			Rainfall in mm
	Min	Max	Avg.		Min	Max	Avg.	Min	Max	Avg.	Min	Max	Avg.	
01.03.19	0.0	5.5	0.78	N	14.2	25.5	19.2	0.0	0.6	0.10	36.0	90.3	60.8	8.0
02.03.19	0.0	6.1	1.79	NNE	16.0	27.3	20.8	0.0	0.6	0.10	30.0	61.3	48.3	5.0
03.03.19	0.0	2.3	0.54	NW	14.5	28.2	21.6	0.0	0.6	0.09	33.2	80.1	51.7	1.0
04.03.19	0.0	3.1	1.05	NNW	18.0	27.1	21.7	0.0	0.5	0.12	40.3	66.2	55.7	0.0
05.03.19	0.0	3.1	0.71	SSE	17.2	23.6	19.9	0.0	0.3	0.04	55.3	84.6	69.1	0.0
06.03.19	0.0	3.3	1.11	NW	17.3	28.3	22.2	0.0	0.5	0.09	43.0	86.2	64.6	0.0
07.03.19	0.0	2.9	1.00	NNW	17.4	28.6	22.3	0.0	0.6	0.09	37.1	67.6	54.4	0.0
08.03.19	0.0	4.4	1.62	N	17.2	28.4	22.4	0.0	0.6	0.11	21.4	76.0	43.2	0.0
09.03.19	0.0	6.2	1.75	NNW	14.6	28.6	22.2	0.0	0.6	0.10	25.1	70.3	38.4	0.5
10.03.19	0.0	7.0	2.41	NNE	16.2	30.1	23.6	0.0	0.5	0.07	28.3	63.1	41.9	0.0
11.03.19	0.0	5.6	1.06	NNW	19.0	30.3	24.6	0.0	0.5	0.06	36.2	69.2	53.1	0.0
12.03.19	0.0	5.9	0.48	WNW	19.1	28.4	24.2	0.0	0.4	0.05	44.1	68.1	57.0	0.0
13.03.19	0.0	0.2	0.00	N	22.4	32.6	26.3	0.0	0.6	0.08	39.3	53.3	48.1	0.0
14.03.19	0.0	0.4	0.02	NW	21.5	32.3	26.6	0.0	0.6	0.08	30.0	60.1	42.9	0.0
15.03.19	0.0	4.5	0.89	N	21.2	30.5	26.0	0.0	0.4	0.09	42.0	66.1	52.1	0.0
16.03.19	0.0	5.5	1.48	NE	21.1	33.4	27.0	0.0	0.5	0.07	33.2	65.0	48.1	0.5
17.03.19	0.0	4.8	0.93	NNW	22.4	33.4	27.3	0.0	0.5	0.08	29.2	63.0	43.2	0.0
18.03.19	0.0	4.3	0.51	NW	20.1	30.3	24.2	0.0	0.5	0.04	36.4	72.5	56.9	0.0
19.03.19	0.0	4.7	1.27	NNW	19.3	31.4	24.6	0.0	0.4	0.05	37.3	70.0	53.3	0.0
20.03.19	0.0	3.6	1.01	NNW	20.0	32.1	25.5	0.0	0.6	0.10	24.5	68.0	42.6	4.0
21.03.19	0.0	4.8	1.49	NNE	21.2	30.5	24.9	0.0	0.4	0.08	38.4	66.1	50.1	0.0
22.03.19	0.0	4.0	0.30	W	20.0	30.5	25.3	0.0	0.6	0.13	45.4	87.0	57.8	6.0
23.03.19	0.0	4.9	0.88	NW	20.0	31.6	25.4	0.0	1.0	0.16	41.4	71.1	52.8	0.0
24.03.19	0.0	6.1	1.27	NNE	21.1	32.2	27.1	0.0	0.5	0.12	21.2	65.0	39.5	1.0
25.03.19	0.0	6.2	1.57	NNE	19.1	33.5	26.0	0.0	1.0	0.13	21.2	62.1	38.7	7.0
26.03.19	0.0	3.5	0.25	NW	17.5	34.3	26.8	0.0	0.6	0.12	24.0	74.2	39.9	0.0
27.03.19	0.0	0.3	0.01	NNW	21.0	31.6	25.0	0.0	0.5	0.08	31.0	48.4	39.9	0.5
28.03.19	0.0	0.8	0.10	NW	19.0	32.1	25.3	0.0	1.0	0.14	29.0	59.2	46.0	1.5
29.03.19	0.0	5.4	1.37	NNE	22.0	33.1	27.0	0.0	0.5	0.08	33.0	59.5	46.4	7.5
30.03.19	0.0	4.3	0.71	NNW	23.1	34.4	28.2	0.0	0.5	0.10	28.0	63.1	43.8	2.5
31.03.19	0.0	3.5	0.24	NW	17.2	27.4	22.4	0.0	0.3	0.03	44.0	92.1	70.1	19.5
				NNW										
	0.0	7.0	0.9		14.2	34.4	24.4	0.0	1.0	0.1	21.2	92.1	50.0	64.5
	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Total Rainfall in mm
	Wind Speed Km/hr			Wind Dir.*	Ambient Temp.°C			Solar CCM			R. Humidity %			

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : 03 - 10 - 2018

STATION : SHELLA BAZAR (INFRONT OF PWD GUEST HOUSE) (NON MARKET DAY)

STATION CODE : LN-1

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	3-Oct-18	6:00	7:00	50.5
2			7:00	8:00	51.2
3			8:00	9:00	53.4
4			9:00	10:00	55.6
5			10:00	11:00	57.2
6			11:00	12:00	56.5
7			12:00	13:00	58.2
8			13:00	14:00	56.8
9			14:00	15:00	57.4
10			15:00	16:00	57.2
11			16:00	17:00	56.8
12			17:00	18:00	55.4
13			18:00	19:00	56.5
14			19:00	20:00	56.4
15			20:00	21:00	55.6
16			21:00	22:00	54.8
			Leq day in dB(A)		56.0
17	Night	03 & 04-Oct-18	22:00	23:00	50.2
18			23:00	0:00	48.5
19			0:00	1:00	46.2
20			1:00	2:00	45.4
21			2:00	3:00	44.6
22			3:00	4:00	45.8
23			4:00	5:00	46.2
24			5:00	6:00	47.9
			Leq Night in dB(A)		47.0

LAFARGE UMIAM MINING PVT. LTD.					
NOISE LEVEL DATA					
DATE: 05- 10 - 2018					
STATION : PYRKAN VILLAGE (INFRONT OF RAMKRISHNA SCHOOL)					
STATION CODE : LN-2					
			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	5-Oct-18	6:00	7:00	49.5
2			7:00	8:00	48.6
3			8:00	9:00	50.2
4			9:00	10:00	52.5
5			10:00	11:00	54.6
6			11:00	12:00	55.4
7			12:00	13:00	56.5
8			13:00	14:00	54.2
9			14:00	15:00	55.8
10			15:00	16:00	54.6
11			16:00	17:00	53.2
12			17:00	18:00	54.5
13			18:00	19:00	52.6
14			19:00	20:00	51.8
15			20:00	21:00	49.7
16			21:00	22:00	48.2
			Leq day in dB(A)		53.3
17	Night	05 & 06-Oct-18	22:00	23:00	45.4
18			23:00	0:00	43.6
19			0:00	1:00	42.3
20			1:00	2:00	41.8
21			2:00	3:00	40.2
22			3:00	4:00	41.5
23			4:00	5:00	43.5
24			5:00	6:00	45.7
24			Leq Night in dB(A)		43.4

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : 08-10-2018

STATION : PHALANG KA RUH VILLAGE

STATION CODE : LN-3

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	8-Oct-18	6:00	7:00	48.2
2			7:00	8:00	48.8
3			8:00	9:00	50.2
4			9:00	10:00	49.5
5			10:00	11:00	48.7
6			11:00	12:00	50.6
7			12:00	13:00	51.4
8			13:00	14:00	52.6
9			14:00	15:00	54.2
10			15:00	16:00	55.8
11			16:00	17:00	53.6
12			17:00	18:00	54.8
13			18:00	19:00	52.7
14			19:00	20:00	51.6
15			20:00	21:00	49.7
16			21:00	22:00	48.2
			Leq day in dB(A)		52.0
17	Night	08 & 09-Oct-18	22:00	23:00	45.2
18			23:00	0:00	44.6
19			0:00	1:00	43.5
20			1:00	2:00	41.2
21			2:00	3:00	40.5
22			3:00	4:00	42.2
23			4:00	5:00	43.6
24			5:00	6:00	45.8
			Leq Night in dB(A)		43.7

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 11 - 10- 2018

STATION: OFFICE AREA

STATION CODE : LN-4

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	11-Oct-18	6:00	7:00	66.2
2			7:00	8:00	67.5
3			8:00	9:00	69.2
4			9:00	10:00	68.5
5			10:00	11:00	67.5
6			11:00	12:00	66.2
7			12:00	13:00	65.8
8			13:00	14:00	64.8
9			14:00	15:00	66.2
10			15:00	16:00	67.5
11			16:00	17:00	69.2
12			17:00	18:00	68.4
13			18:00	19:00	67.9
14			19:00	20:00	68.9
15			20:00	21:00	65.2
16			21:00	22:00	64.8
			Leq day in dB(A)		67.4
17	Night	11 & 12-Oct-18	22:00	23:00	61.5
18			23:00	0:00	58.5
19			0:00	1:00	56.2
20			1:00	2:00	54.8
21			2:00	3:00	52.4
22			3:00	4:00	50.5
23			4:00	5:00	53.5
24			5:00	6:00	55.7
24			Leq Night in dB(A)		56.7

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : -15 -10 - 2018

STATION : SHELLA PUNJEE

STATION CODE : LN-5

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	15-Oct-18	6:00	7:00	49.2
2			7:00	8:00	47.8
3			8:00	9:00	49.5
4			9:00	10:00	51.2
5			10:00	11:00	50.5
6			11:00	12:00	52.6
7			12:00	13:00	54.3
8			13:00	14:00	55.8
9			14:00	15:00	56.4
10			15:00	16:00	53.5
11			16:00	17:00	52.6
12			17:00	18:00	53.2
13			18:00	19:00	51.8
14			19:00	20:00	49.8
15			20:00	21:00	48.2
16			21:00	22:00	47.5
			Leq day in dB(A)		52.3
17	Night	15 & 16-Oct-18	22:00	23:00	45.8
18			23:00	0:00	43.6
19			0:00	1:00	42.4
20			1:00	2:00	40.2
21			2:00	3:00	41.6
22			3:00	4:00	42.2
23			4:00	5:00	43.8
24			5:00	6:00	45.6
			Leq Night in dB(A)		43.5

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 18-10-2018

STATION : MAWRYNGKHONG

STATION CODE : LN-6

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	18-Oct-18	6:00	7:00	47.5
2			7:00	8:00	49.8
3			8:00	9:00	50.2
4			9:00	10:00	51.5
5			10:00	11:00	52.8
6			11:00	12:00	54.6
7			12:00	13:00	55.7
8			13:00	14:00	54.8
9			14:00	15:00	56.5
10			15:00	16:00	53.7
11			16:00	17:00	55.4
12			17:00	18:00	53.5
13			18:00	19:00	52.6
14			19:00	20:00	51.8
15			20:00	21:00	49.2
16			21:00	22:00	48.5
			Leq day in dB(A)		53.1
17	Night	18 & 19-Oct-18	22:00	23:00	46.2
18			23:00	0:00	45.4
19			0:00	1:00	43.2
20			1:00	2:00	41.5
21			2:00	3:00	40.2
22			3:00	4:00	42.7
23			4:00	5:00	43.8
24			5:00	6:00	45.7
			Leq Night in dB(A)		44.0

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : 05 - 11 - 2018

STATION : SHELLA BAZAR (INFRONT OF PWD GUEST HOUSE) (NON MARKET DAY)

STATION CODE : LN-1

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	5-Nov-18	6:00	7:00	51.6
2			7:00	8:00	53.6
3			8:00	9:00	52.5
4			9:00	10:00	54.5
5			10:00	11:00	56.4
6			11:00	12:00	57.2
7			12:00	13:00	58.2
8			13:00	14:00	56.5
9			14:00	15:00	55.8
10			15:00	16:00	54.2
11			16:00	17:00	56.7
12			17:00	18:00	57.4
13			18:00	19:00	55.6
14			19:00	20:00	54.2
15			20:00	21:00	52.6
16			21:00	22:00	53.5
			Leq day in dB(A)		55.4
17	Night	05 & 06-Nov-18	22:00	23:00	48.5
18			23:00	0:00	47.5
19			0:00	1:00	46.2
20			1:00	2:00	44.5
21			2:00	3:00	42.2
22			3:00	4:00	43.5
23			4:00	5:00	45.8
24			5:00	6:00	47.6
			Leq Night in dB(A)		46.2

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE: 09- 11 - 2018

STATION : PYRKAN VILLAGE (INFRONT OF RAMKRISHNA SCHOOL)

STATION CODE : LN-2

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	9-Nov-18	6:00	7:00	47.5
2			7:00	8:00	48.9
3			8:00	9:00	50.7
4			9:00	10:00	51.2
5			10:00	11:00	53.2
6			11:00	12:00	55.5
7			12:00	13:00	53.5
8			13:00	14:00	54.5
9			14:00	15:00	56.4
10			15:00	16:00	54.2
11			16:00	17:00	52.8
12			17:00	18:00	50.5
13			18:00	19:00	52.6
14			19:00	20:00	51.5
15			20:00	21:00	49.7
16			21:00	22:00	48.2
			Leq day in dB(A)		52.6
17	Night	9 & 10-Nov-18	22:00	23:00	45.5
18			23:00	0:00	43.4
19			0:00	1:00	41.7
20			1:00	2:00	40.6
21			2:00	3:00	41.4
22			3:00	4:00	42.5
23			4:00	5:00	43.8
24			5:00	6:00	45.7
24			Leq Night in dB(A)		43.4

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : 12-11-2018

STATION : PHALANG KA RUH VILLAGE

STATION CODE : LN-3

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	12-Nov-18	6:00	7:00	48.7
2			7:00	8:00	49.5
3			8:00	9:00	51.2
4			9:00	10:00	52.6
5			10:00	11:00	54.5
6			11:00	12:00	53.8
7			12:00	13:00	54.6
8			13:00	14:00	55.7
9			14:00	15:00	56.2
10			15:00	16:00	55.4
11			16:00	17:00	53.7
12			17:00	18:00	52.6
13			18:00	19:00	51.8
14			19:00	20:00	49.7
15			20:00	21:00	48.2
16			21:00	22:00	47.5
			Leq day in dB(A)		53.0
17	Night	12 & 13-Nov-18	22:00	23:00	45.4
18			23:00	0:00	43.6
19			0:00	1:00	41.5
20			1:00	2:00	40.2
21			2:00	3:00	39.5
22			3:00	4:00	41.2
23			4:00	5:00	43.2
24			5:00	6:00	45.4
			Leq Night in dB(A)		43.0

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 15 - 11 - 2018

STATION: OFFICE AREA

STATION CODE : LN-4

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	15-Nov-18	6:00	7:00	67.5
2			7:00	8:00	66.2
3			8:00	9:00	68.4
4			9:00	10:00	65.2
5			10:00	11:00	63.8
6			11:00	12:00	64.2
7			12:00	13:00	66.4
8			13:00	14:00	65.2
9			14:00	15:00	63.4
10			15:00	16:00	62.5
11			16:00	17:00	64.3
12			17:00	18:00	66.2
13			18:00	19:00	64.8
14			19:00	20:00	65.7
15			20:00	21:00	66.2
16			21:00	22:00	64.8
			Leq day in dB(A)		65.6
17	Night	15 & 16-Nov-18	22:00	23:00	60.2
18			23:00	0:00	58.5
19			0:00	1:00	55.4
20			1:00	2:00	53.6
21			2:00	3:00	51.7
22			3:00	4:00	52.8
23			4:00	5:00	53.5
24			5:00	6:00	55.9
24			Leq Night in dB(A)		56.1

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : -19 -11 - 2018

STATION : SHELLA PUNJEE

STATION CODE : LN-5

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	19-Nov-18	6:00	7:00	48.5
2			7:00	8:00	49.2
3			8:00	9:00	50.7
4			9:00	10:00	51.5
5			10:00	11:00	53.2
6			11:00	12:00	54.6
7			12:00	13:00	55.4
8			13:00	14:00	54.8
9			14:00	15:00	53.7
10			15:00	16:00	55.2
11			16:00	17:00	54.2
12			17:00	18:00	53.5
13			18:00	19:00	51.2
14			19:00	20:00	49.7
15			20:00	21:00	48.5
16			21:00	22:00	47.6
			Leq day in dB(A)		52.7
17	Night	19 & 20-Nov-18	22:00	23:00	45.2
18			23:00	0:00	43.7
19			0:00	1:00	41.2
20			1:00	2:00	40.5
21			2:00	3:00	39.8
22			3:00	4:00	41.5
23			4:00	5:00	43.6
24			5:00	6:00	45.7
			Leq Night in dB(A)		43.1

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 22-11-2018

STATION : MAWRYNGKHONG

STATION CODE : LN-6

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	22-Nov-18	6:00	7:00	48.2
2			7:00	8:00	49.7
3			8:00	9:00	50.5
4			9:00	10:00	51.2
5			10:00	11:00	53.4
6			11:00	12:00	54.6
7			12:00	13:00	55.2
8			13:00	14:00	54.8
9			14:00	15:00	53.6
10			15:00	16:00	55.4
11			16:00	17:00	56.4
12			17:00	18:00	54.6
13			18:00	19:00	53.5
14			19:00	20:00	51.7
15			20:00	21:00	49.6
16			21:00	22:00	48.5
			Leq day in dB(A)		53.2
17	Night	22 & 23-Nov-18	22:00	23:00	46.5
18			23:00	0:00	44.8
19			0:00	1:00	42.5
20			1:00	2:00	40.5
21			2:00	3:00	39.4
22			3:00	4:00	41.8
23			4:00	5:00	43.5
24			5:00	6:00	45.8
			Leq Night in dB(A)		43.7

LAFARGE UMIAM MINING PVT. LTD.					
NOISE LEVEL DATA					
DATE : 03 - 12 - 2018					
STATION : SHELLA BAZAR (INFRONT OF PWD GUEST HOUSE) (NON MARKET DAY)					
STATION CODE : LN-1					
			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	3-Dec-18	6:00	7:00	50.8
2			7:00	8:00	51.5
3			8:00	9:00	53.2
4			9:00	10:00	55.6
5			10:00	11:00	56.5
6			11:00	12:00	57.4
7			12:00	13:00	56.8
8			13:00	14:00	57.2
9			14:00	15:00	58.7
10			15:00	16:00	56.5
11			16:00	17:00	54.7
12			17:00	18:00	53.5
13			18:00	19:00	54.2
14			19:00	20:00	52.6
15			20:00	21:00	53.5
16			21:00	22:00	51.8
			Leq day in dB(A)		55.3
17	Night	03 & 04-Dec-18	22:00	23:00	48.7
18			23:00	0:00	46.8
19			0:00	1:00	45.4
20			1:00	2:00	43.6
21			2:00	3:00	41.8
22			3:00	4:00	43.5
23			4:00	5:00	45.4
24			5:00	6:00	47.6
			Leq Night in dB(A)		45.9

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE: 06- 12 - 2018

STATION : PYRKAN VILLAGE (INFRONT OF RAMKRISHNA SCHOOL)

STATION CODE : LN-2

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	6-Dec-18	6:00	7:00	47.9
2			7:00	8:00	48.5
3			8:00	9:00	50.5
4			9:00	10:00	52.6
5			10:00	11:00	53.8
6			11:00	12:00	55.2
7			12:00	13:00	54.6
8			13:00	14:00	53.5
9			14:00	15:00	55.4
10			15:00	16:00	54.2
11			16:00	17:00	52.6
12			17:00	18:00	51.8
13			18:00	19:00	53.5
14			19:00	20:00	52.4
15			20:00	21:00	51.4
16			21:00	22:00	48.5
			Leq day in dB(A)		52.8
17	Night	6 & 7-Dec-18	22:00	23:00	45.6
18			23:00	0:00	42.5
19			0:00	1:00	41.7
20			1:00	2:00	39.4
21			2:00	3:00	41.5
22			3:00	4:00	42.6
23			4:00	5:00	43.8
24			5:00	6:00	45.7
24			Leq Night in dB(A)		43.3

LAFARGE UMIAM MINING PVT. LTD.					
NOISE LEVEL DATA					
DATE : 10-12-2018					
STATION : PHALANG KA RUH VILLAGE					
STATION CODE : LN-3					
			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	10-Dec-18	6:00	7:00	48.2
2			7:00	8:00	49.6
3			8:00	9:00	51.2
4			9:00	10:00	50.5
5			10:00	11:00	51.8
6			11:00	12:00	52.7
7			12:00	13:00	54.6
8			13:00	14:00	55.7
9			14:00	15:00	56.2
10			15:00	16:00	54.8
11			16:00	17:00	53.5
12			17:00	18:00	52.7
13			18:00	19:00	51.8
14			19:00	20:00	50.4
15			20:00	21:00	48.5
16			21:00	22:00	48.2
			Leq day in dB(A)		52.6
17	Night	10 & 11-Dec-18	22:00	23:00	45.4
18			23:00	0:00	43.7
19			0:00	1:00	42.5
20			1:00	2:00	40.6
21			2:00	3:00	39.2
22			3:00	4:00	41.5
23			4:00	5:00	43.2
24			5:00	6:00	45.7
			Leq Night in dB(A)		43.2

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 13 - 12- 2018

STATION: OFFICE AREA

STATION CODE : LN-4

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	13-Dec-18	6:00	7:00	66.2
2			7:00	8:00	67.5
3			8:00	9:00	65.4
4			9:00	10:00	66.8
5			10:00	11:00	68.2
6			11:00	12:00	67.5
7			12:00	13:00	64.5
8			13:00	14:00	65.8
9			14:00	15:00	67.5
10			15:00	16:00	68.2
11			16:00	17:00	69.7
12			17:00	18:00	67.5
13			18:00	19:00	65.4
14			19:00	20:00	64.6
15			20:00	21:00	63.5
16			21:00	22:00	64.8
			Leq day in dB(A)		66.7
17	Night	13 & 14-Dec-18	22:00	23:00	61.5
18			23:00	0:00	59.7
19			0:00	1:00	57.6
20			1:00	2:00	56.5
21			2:00	3:00	54.5
22			3:00	4:00	52.5
23			4:00	5:00	53.7
24			5:00	6:00	55.4
24			Leq Night in dB(A)		57.4

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : -17 -12 - 2018

STATION : SHELLA PUNJEE

STATION CODE : LN-5

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	17-Dec-18	6:00	7:00	48.2
2			7:00	8:00	50.5
3			8:00	9:00	51.6
4			9:00	10:00	53.5
5			10:00	11:00	52.8
6			11:00	12:00	54.6
7			12:00	13:00	55.7
8			13:00	14:00	56.2
9			14:00	15:00	54.7
10			15:00	16:00	53.8
11			16:00	17:00	54.7
12			17:00	18:00	55.2
13			18:00	19:00	53.7
14			19:00	20:00	52.4
15			20:00	21:00	50.4
16			21:00	22:00	48.5
			Leq day in dB(A)		53.5
17	Night	17 & 18-Dec-18	22:00	23:00	45.6
18			23:00	0:00	43.8
19			0:00	1:00	41.7
20			1:00	2:00	40.2
21			2:00	3:00	41.5
22			3:00	4:00	42.6
23			4:00	5:00	43.8
24			5:00	6:00	45.7
			Leq Night in dB(A)		43.5

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 20-12-2018

STATION : MAWRYNGKHONG

STATION CODE : LN-6

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	20-Dec-18	6:00	7:00	48.2
2			7:00	8:00	49.5
3			8:00	9:00	51.2
4			9:00	10:00	50.8
5			10:00	11:00	52.4
6			11:00	12:00	54.6
7			12:00	13:00	55.7
8			13:00	14:00	54.5
9			14:00	15:00	53.8
10			15:00	16:00	52.4
11			16:00	17:00	51.6
12			17:00	18:00	50.5
13			18:00	19:00	49.7
14			19:00	20:00	48.5
15			20:00	21:00	48.6
16			21:00	22:00	47.5
			Leq day in dB(A)		51.9
17	Night	20 & 21-Dec-18	22:00	23:00	45.2
18			23:00	0:00	43.7
19			0:00	1:00	42.4
20			1:00	2:00	40.5
21			2:00	3:00	41.6
22			3:00	4:00	42.6
23			4:00	5:00	43.2
24			5:00	6:00	45.3
			Leq Night in dB(A)		43.3

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : 03 - 01 - 2019

STATION : SHELLA BAZAR (INFRONT OF PWD GUEST HOUSE) (NON MARKET DAY)

STATION CODE : LN-1

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	3-Jan-19	6:00	7:00	49.2
2			7:00	8:00	50.7
3			8:00	9:00	52.5
4			9:00	10:00	54.6
5			10:00	11:00	55.8
6			11:00	12:00	56.5
7			12:00	13:00	57.2
8			13:00	14:00	55.7
9			14:00	15:00	54.8
10			15:00	16:00	53.5
11			16:00	17:00	54.2
12			17:00	18:00	56.5
13			18:00	19:00	54.8
14			19:00	20:00	53.5
15			20:00	21:00	52.6
16			21:00	22:00	51.8
			Leq day in dB(A)		54.5
17	Night	03 & 04-Jan-19	22:00	23:00	48.2
18			23:00	0:00	47.5
19			0:00	1:00	45.6
20			1:00	2:00	43.8
21			2:00	3:00	42.5
22			3:00	4:00	43.4
23			4:00	5:00	44.7
24			5:00	6:00	46.2
			Leq Night in dB(A)		45.6

LAFARGE UMIAM MINING PVT. LTD.					
NOISE LEVEL DATA					
DATE: 07- 01 - 2019					
STATION : PYRKAN VILLAGE (INFRONT OF RAMKRISHNA SCHOOL)					
STATION CODE : LN-2					
			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	7-Jan-18	6:00	7:00	48.2
2			7:00	8:00	49.5
3			8:00	9:00	51.2
4			9:00	10:00	52.6
5			10:00	11:00	53.4
6			11:00	12:00	53.8
7			12:00	13:00	54.6
8			13:00	14:00	55.2
9			14:00	15:00	54.8
10			15:00	16:00	53.6
11			16:00	17:00	53.2
12			17:00	18:00	52.7
13			18:00	19:00	51.8
14			19:00	20:00	50.4
15			20:00	21:00	49.8
16			21:00	22:00	48.6
			Leq day in dB(A)		52.6
17	Night	7 & 8-Jan-19	22:00	23:00	45.2
18			23:00	0:00	43.8
19			0:00	1:00	41.8
20			1:00	2:00	40.6
21			2:00	3:00	41.6
22			3:00	4:00	42.5
23			4:00	5:00	43.2
24			5:00	6:00	45.4
24			Leq Night in dB(A)		43.3

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : 10-01-2019

STATION : PHALANG KA RUH VILLAGE

STATION CODE : LN-3

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	10-Jan-19	6:00	7:00	48.5
2			7:00	8:00	49.7
3			8:00	9:00	50.4
4			9:00	10:00	51.3
5			10:00	11:00	52.6
6			11:00	12:00	54.5
7			12:00	13:00	53.8
8			13:00	14:00	54.6
9			14:00	15:00	53.5
10			15:00	16:00	52.4
11			16:00	17:00	52.6
12			17:00	18:00	51.7
13			18:00	19:00	51.4
14			19:00	20:00	50.8
15			20:00	21:00	49.5
16			21:00	22:00	48.6
			Leq day in dB(A)		52.0
17	Night	10 & 11-Jan-19	22:00	23:00	45.6
18			23:00	0:00	43.5
19			0:00	1:00	42.4
20			1:00	2:00	41.2
21			2:00	3:00	40.5
22			3:00	4:00	42.3
23			4:00	5:00	43.5
24			5:00	6:00	45.6
			Leq Night in dB(A)		43.4

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 14 - 01- 2019

STATION: OFFICE AREA

STATION CODE : LN-4

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	14-Jan-19	6:00	7:00	66.5
2			7:00	8:00	67.2
3			8:00	9:00	68.6
4			9:00	10:00	68.5
5			10:00	11:00	67.9
6			11:00	12:00	68.5
7			12:00	13:00	69.2
8			13:00	14:00	68.4
9			14:00	15:00	67.4
10			15:00	16:00	66.5
11			16:00	17:00	66.4
12			17:00	18:00	67.2
13			18:00	19:00	65.4
14			19:00	20:00	64.6
15			20:00	21:00	66.2
16			21:00	22:00	65.8
			Leq day in dB(A)		67.3
17	Night	14 & 15-Jan-19	22:00	23:00	60.2
18			23:00	0:00	56.8
19			0:00	1:00	54.6
20			1:00	2:00	53.5
21			2:00	3:00	52.6
22			3:00	4:00	53.2
23			4:00	5:00	55.4
24			5:00	6:00	56.2
24			Leq Night in dB(A)		56.0

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : -17 -01 - 2019

STATION : SHELLA PUNJEE

STATION CODE : LN-5

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	17-Jan-19	6:00	7:00	48.5
2			7:00	8:00	49.6
3			8:00	9:00	50.5
4			9:00	10:00	51.2
5			10:00	11:00	52.6
6			11:00	12:00	53.5
7			12:00	13:00	54.6
8			13:00	14:00	55.4
9			14:00	15:00	54.8
10			15:00	16:00	53.6
11			16:00	17:00	53.4
12			17:00	18:00	52.6
13			18:00	19:00	51.8
14			19:00	20:00	51.2
15			20:00	21:00	49.8
16			21:00	22:00	48.5
			Leq day in dB(A)		52.5
17	Night	17 & 18-Jan-19	22:00	23:00	45.2
18			23:00	0:00	43.6
19			0:00	1:00	41.9
20			1:00	2:00	39.5
21			2:00	3:00	40.2
22			3:00	4:00	41.5
23			4:00	5:00	43.2
24			5:00	6:00	45.1
			Leq Night in dB(A)		43.0

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 21-01-2019

STATION : MAWRYNGKHONG

STATION CODE : LN-6

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	21-Jan-19	6:00	7:00	48.5
2			7:00	8:00	49.7
3			8:00	9:00	50.2
4			9:00	10:00	51.6
5			10:00	11:00	52.4
6			11:00	12:00	53.5
7			12:00	13:00	54.6
8			13:00	14:00	55.4
9			14:00	15:00	54.8
10			15:00	16:00	53.5
11			16:00	17:00	54.2
12			17:00	18:00	52.6
13			18:00	19:00	51.8
14			19:00	20:00	50.5
15			20:00	21:00	49.8
16			21:00	22:00	49.2
			Leq day in dB(A)		52.5
17	Night	21 & 22-Jan-19	22:00	23:00	45.6
18			23:00	0:00	44.2
19			0:00	1:00	42.6
20			1:00	2:00	41.5
21			2:00	3:00	39.5
22			3:00	4:00	40.2
23			4:00	5:00	42.6
24			5:00	6:00	44.8
			Leq Night in dB(A)		43.1

LAFARGE UMIAM MINING PVT. LTD.					
NOISE LEVEL DATA					
DATE : 04 - 02 - 2019					
STATION : SHELLA BAZAR (INFRONT OF PWD GUEST HOUSE) (NON MARKET DAY)					
STATION CODE : LN-1					
			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	4-Feb-19	6:00	7:00	49.7
2			7:00	8:00	51.3
3			8:00	9:00	52.6
4			9:00	10:00	53.2
5			10:00	11:00	53.5
6			11:00	12:00	54.8
7			12:00	13:00	55.6
8			13:00	14:00	56.5
9			14:00	15:00	57.2
10			15:00	16:00	56.8
11			16:00	17:00	56.5
12			17:00	18:00	55.4
13			18:00	19:00	54.8
14			19:00	20:00	53.5
15			20:00	21:00	53.2
16			21:00	22:00	52.8
			Leq day in dB(A)		54.7
17	Night	04 & 05-Feb-19	22:00	23:00	47.6
18			23:00	0:00	46.5
19			0:00	1:00	45.4
20			1:00	2:00	44.6
21			2:00	3:00	43.5
22			3:00	4:00	44.2
23			4:00	5:00	45.4
24			5:00	6:00	46.2
			Leq Night in dB(A)		45.6

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE: 08- 02 - 2019

STATION : PYRKAN VILLAGE (INFRONT OF RAMKRISHNA SCHOOL)

STATION CODE : LN-2

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	8-Feb-18	6:00	7:00	48.2
2			7:00	8:00	49.4
3			8:00	9:00	50.2
4			9:00	10:00	51.6
5			10:00	11:00	52.2
6			11:00	12:00	53.5
7			12:00	13:00	54.2
8			13:00	14:00	55.6
9			14:00	15:00	56.2
10			15:00	16:00	55.8
11			16:00	17:00	54.6
12			17:00	18:00	53.5
13			18:00	19:00	52.6
14			19:00	20:00	51.4
15			20:00	21:00	49.8
16			21:00	22:00	48.5
			Leq day in dB(A)		53.0
17	Night	8 & 9-Feb-19	22:00	23:00	45.6
18			23:00	0:00	43.5
19			0:00	1:00	41.2
20			1:00	2:00	39.6
21			2:00	3:00	40.2
22			3:00	4:00	42.4
23			4:00	5:00	43.5
24			5:00	6:00	44.7
24			Leq Night in dB(A)		43.0

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : 11-02-2019

STATION : PHALANG KA RUH VILLAGE

STATION CODE : LN-3

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	11-Feb-19	6:00	7:00	48.5
2			7:00	8:00	49.7
3			8:00	9:00	50.2
4			9:00	10:00	51.5
5			10:00	11:00	52.6
6			11:00	12:00	53.4
7			12:00	13:00	55.2
8			13:00	14:00	54.8
9			14:00	15:00	53.7
10			15:00	16:00	52.6
11			16:00	17:00	53.8
12			17:00	18:00	54.6
13			18:00	19:00	53.5
14			19:00	20:00	52.2
15			20:00	21:00	51.7
16			21:00	22:00	49.2
			Leq day in dB(A)		52.7
17	Night	11 & 12-Feb-19	22:00	23:00	45.8
18			23:00	0:00	43.2
19			0:00	1:00	41.5
20			1:00	2:00	40.2
21			2:00	3:00	39.5
22			3:00	4:00	40.6
23			4:00	5:00	42.4
24			5:00	6:00	44.8
			Leq Night in dB(A)		42.8

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 15- 02- 2019

STATION: OFFICE AREA

STATION CODE : LN-4

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	15-Feb-18	6:00	7:00	65.2
2			7:00	8:00	64.5
3			8:00	9:00	66.2
4			9:00	10:00	67.5
5			10:00	11:00	65.8
6			11:00	12:00	66.2
7			12:00	13:00	64.5
8			13:00	14:00	66.5
9			14:00	15:00	67.6
10			15:00	16:00	65.8
11			16:00	17:00	66.4
12			17:00	18:00	65.7
13			18:00	19:00	64.8
14			19:00	20:00	66.4
15			20:00	21:00	67.5
16			21:00	22:00	66.8
			Leq day in dB(A)		66.2
17	Night	15 & 16-Feb-19	22:00	23:00	62.5
18			23:00	0:00	59.7
19			0:00	1:00	55.4
20			1:00	2:00	53.2
21			2:00	3:00	51.6
22			3:00	4:00	53.4
23			4:00	5:00	55.4
24			5:00	6:00	56.8
24			Leq Night in dB(A)		57.5

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : -18 -02 - 2019

STATION : SHELLA PUNJEE

STATION CODE : LN-5

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	18-Feb-19	6:00	7:00	49.5
2			7:00	8:00	50.4
3			8:00	9:00	51.6
4			9:00	10:00	52.5
5			10:00	11:00	53.4
6			11:00	12:00	54.5
7			12:00	13:00	55.6
8			13:00	14:00	56.8
9			14:00	15:00	55.8
10			15:00	16:00	54.6
11			16:00	17:00	53.5
12			17:00	18:00	52.6
13			18:00	19:00	52.4
14			19:00	20:00	51.7
15			20:00	21:00	49.8
16			21:00	22:00	48.2
			Leq day in dB(A)		53.3
17	Night	18 & 19-Feb-19	22:00	23:00	45.4
18			23:00	0:00	43.2
19			0:00	1:00	41.5
20			1:00	2:00	40.2
21			2:00	3:00	41.6
22			3:00	4:00	42.8
23			4:00	5:00	43.5
24			5:00	6:00	44.7
			Leq Night in dB(A)		43.2

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 22-02-2019

STATION : MAWRYNGKHONG

STATION CODE : LN-6

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	22-Feb-19	6:00	7:00	48.5
2			7:00	8:00	49.7
3			8:00	9:00	50.2
4			9:00	10:00	51.6
5			10:00	11:00	52.4
6			11:00	12:00	53.5
7			12:00	13:00	54.6
8			13:00	14:00	55.2
9			14:00	15:00	57.2
10			15:00	16:00	55.4
11			16:00	17:00	54.2
12			17:00	18:00	53.5
13			18:00	19:00	52.6
14			19:00	20:00	51.4
15			20:00	21:00	50.2
16			21:00	22:00	48.7
			Leq day in dB(A)		53.1
17	Night	22 & 23-Feb-19	22:00	23:00	45.4
18			23:00	0:00	43.2
19			0:00	1:00	41.2
20			1:00	2:00	40.5
21			2:00	3:00	41.6
22			3:00	4:00	42.5
23			4:00	5:00	43.7
24			5:00	6:00	44.8
			Leq Night in dB(A)		43.2

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : 04 -03- 2019

STATION : SHELLA BAZAR (INFRONT OF PWD GUEST HOUSE) (NON MARKET DAY)

STATION CODE : LN-1

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	4-Mar-18	6:00	7:00	50.5
2			7:00	8:00	51.6
3			8:00	9:00	52.4
4			9:00	10:00	53.5
5			10:00	11:00	54.2
6			11:00	12:00	55.6
7			12:00	13:00	55.8
8			13:00	14:00	56.5
9			14:00	15:00	57.2
10			15:00	16:00	56.1
11			16:00	17:00	55.4
12			17:00	18:00	54.6
13			18:00	19:00	53.5
14			19:00	20:00	52.7
15			20:00	21:00	52.1
16			21:00	22:00	50.4
			Leq day in dB(A)		54.4
17	Night	04 & 05-Mar-19	22:00	23:00	48.2
18			23:00	0:00	46.8
19			0:00	1:00	44.5
20			1:00	2:00	42.6
21			2:00	3:00	43.2
22			3:00	4:00	44.1
23			4:00	5:00	45.3
24			5:00	6:00	46.5
			Leq Night in dB(A)		45.5

LAFARGE UMIAM MINING PVT. LTD.					
NOISE LEVEL DATA					
DATE: 08- 03 - 2019					
STATION : PYRKAN VILLAGE (INFRONT OF RAMKRISHNA SCHOOL)					
STATION CODE : LN-2					
			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	8-Mar-19	6:00	7:00	48.7
2			7:00	8:00	49.5
3			8:00	9:00	50.2
4			9:00	10:00	51.3
5			10:00	11:00	52.6
6			11:00	12:00	53.5
7			12:00	13:00	54.6
8			13:00	14:00	56.2
9			14:00	15:00	55.4
10			15:00	16:00	53.5
11			16:00	17:00	54.2
12			17:00	18:00	53.7
13			18:00	19:00	52.1
14			19:00	20:00	51.8
15			20:00	21:00	49.8
16			21:00	22:00	48.5
			Leq day in dB(A)		52.8
17	Night	08 & 09-Mar-19	22:00	23:00	45.8
18			23:00	0:00	44.6
19			0:00	1:00	43.5
20			1:00	2:00	42.1
21			2:00	3:00	41.6
22			3:00	4:00	42.5
23			4:00	5:00	43.4
24			5:00	6:00	44.8
24			Leq Night in dB(A)		43.8

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : 12-03-2019

STATION : PHALANG KA RUH VILLAGE

STATION CODE : LN-3

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	12-Mar-19	6:00	7:00	48.7
2			7:00	8:00	49.4
3			8:00	9:00	50.5
4			9:00	10:00	51.6
5			10:00	11:00	52.4
6			11:00	12:00	53.5
7			12:00	13:00	53.8
8			13:00	14:00	54.2
9			14:00	15:00	55.7
10			15:00	16:00	56.2
11			16:00	17:00	54.8
12			17:00	18:00	53.4
13			18:00	19:00	52.6
14			19:00	20:00	51.9
15			20:00	21:00	50.2
16			21:00	22:00	48.7
			Leq day in dB(A)		52.9
17	Night	12 & 13-Mar-19	22:00	23:00	45.4
18			23:00	0:00	43.6
19			0:00	1:00	42.5
20			1:00	2:00	41.2
21			2:00	3:00	42.4
22			3:00	4:00	43.6
23			4:00	5:00	44.2
24			5:00	6:00	45.4
			Leq Night in dB(A)		43.8

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 15- 03- 2019

STATION: OFFICE AREA

STATION CODE : LN-4

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	15-Mar-19	6:00	7:00	65.8
2			7:00	8:00	66.2
3			8:00	9:00	67.4
4			9:00	10:00	66.2
5			10:00	11:00	64.8
6			11:00	12:00	67.5
7			12:00	13:00	66.8
8			13:00	14:00	65.8
9			14:00	15:00	67.2
10			15:00	16:00	65.4
11			16:00	17:00	66.2
12			17:00	18:00	64.8
13			18:00	19:00	63.5
14			19:00	20:00	64.6
15			20:00	21:00	63.5
16			21:00	22:00	64.2
			Leq day in dB(A)		65.8
17	Night	15 & 16-Mar-19	22:00	23:00	61.5
18			23:00	0:00	59.4
19			0:00	1:00	57.5
20			1:00	2:00	55.4
21			2:00	3:00	54.2
22			3:00	4:00	53.5
23			4:00	5:00	54.6
24			5:00	6:00	56.2
24			Leq Night in dB(A)		57.4

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : -18 -03 - 2019

STATION : SHELLA PUNJEE

STATION CODE : LN-5

			Time (in hour)		
Sl. No.		Date	From	To	Hourly Leq dB(A)
1	Day	18-Mar-19	6:00	7:00	48.2
2			7:00	8:00	49.5
3			8:00	9:00	50.2
4			9:00	10:00	51.6
5			10:00	11:00	52.5
6			11:00	12:00	53.6
7			12:00	13:00	54.2
8			13:00	14:00	55.8
9			14:00	15:00	54.2
10			15:00	16:00	53.5
11			16:00	17:00	53.8
12			17:00	18:00	52.6
13			18:00	19:00	51.4
14			19:00	20:00	50.5
15			20:00	21:00	49.7
16			21:00	22:00	48.6
			Leq day in dB(A)		52.4
17	Night	18 & 19-Mar-19	22:00	23:00	45.2
18			23:00	0:00	43.4
19			0:00	1:00	42.5
20			1:00	2:00	41.6
21			2:00	3:00	40.2
22			3:00	4:00	42.3
23			4:00	5:00	43.5
24			5:00	6:00	45.1
			Leq Night in dB(A)		43.3

LAFARGE UMIAM MINING PVT. LTD.

NOISE LEVEL DATA

DATE : - 21-03-2019

STATION : MAWRYNGKHONG

STATION CODE : LN-6

Sl. No.		Date	Time (in hour) From	To	Hourly Leq dB(A)
1	Day	21-Mar-19	6:00	7:00	48.5
2			7:00	8:00	49.2
3			8:00	9:00	50.4
4			9:00	10:00	51.6
5			10:00	11:00	52.5
6			11:00	12:00	53.4
7			12:00	13:00	54.2
8			13:00	14:00	55.7
9			14:00	15:00	54.8
10			15:00	16:00	53.6
11			16:00	17:00	52.5
12			17:00	18:00	51.7
13			18:00	19:00	50.5
14			19:00	20:00	49.7
15			20:00	21:00	48.6
16			21:00	22:00	48.5
			Leq day in dB(A)		52.2
17	Night	21 & 22-Mar-19	22:00	23:00	45.2
18			23:00	0:00	43.5
19			0:00	1:00	41.7
20			1:00	2:00	40.5
21			2:00	3:00	41.8
22			3:00	4:00	42.5
23			4:00	5:00	43.4
24			5:00	6:00	44.9
			Leq Night in dB(A)		43.2

Annexure I

COMPLIANCE STATUS OF TASKS IDENTIFIED UNDER ACTIONS PLAN ON ISSUES RAISED DURING PUBLIC HEARING WITH BUDGETARY PROVISIONS

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
A1	LUMPL will continue to engage with the local communities/ Durbars for the benefits and development of the area as was done in the past.	Will continue to carry out CSR activities based upon needs assessment carried out as per the local requirement of the Durbar/ local communities in line with the annual budgetary provisions. CSR activities for the FY 2016-17 includes with the focus areas as following: a) Health Services; b) Educational Support; c) Infrastructure Improvement; d) Income generation programs – development of skill sets, training and awareness programs etc. e) Sponsoring social and cultural events	CSR Budget for 2018. The budget provisions shall be continued in similar lines for the following years	~115.00	A budgetary provision on CSR activities for the year 2019 is INR140.75 Lakhs.
A2	LUMPL will continue to engage with the local communities/Durbars for the benefits and development of the area as was done in the past. For the proposed expansion, the payment to SPV will continue made by LUMPL at INR 90/ per tonne.	CSR activities will continue to be in place as described above. A Special Purpose Vehicle (SPV) has already been set up by the Government of Meghalaya as per the directions of Hon'ble Supreme Court of India for undertaking "welfare projects including development of Health, Education, Economy, Irrigation and Agriculture in the project area of 50 kms solely for local community and welfare of tribals".	Payment to SPV will continue to be made as per the direction of Hon'ble Supreme Court of India for the limestone mining @ INR 90 per tonne)	Up to 1800.00 (for 2.0 MTPA) Up to 4500.00 (for 5.0 MTPA)	The amount accrued and paid to SPV based on the production during the period October 2018 to March 2019 was INR 879.07 Lakhs.
A3 &A 4	LUMPL will continue to follow best practices as being carried out in the past.	Best practices of mining will continue to be followed. CSR activities will continue to be in place as described			Being followed up.

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
		above.			
A5	The blasting for 5 MTPA will be undertaken as per the parameters already defined by the Blasting Study conducted by Central Institute of Mining and Fuel Research (CIMFR), Government of India in 2015. The details of impacts and mitigation measures have been included in the EIA study. LUMPL will continue to ensure proper design of blast hole drilling pattern and blast geometry, use of NONEL with TLD detonators and blasting operations to be carried out only during the day time between 1300 and 1500 hours. LUMPL will ensure that the explosive use is not exceeding 63 kg per hole as suggested by CIMFR. Ground vibrations will continue to be monitored with every blast. LUMPL monitors the limit and ensures that its internal norm of 5 mm/sec will continue to be adhered to at all the structures as against the DGMS prescribed limit of maximum ground vibrations of 10 mm/sec.	1. Ensure proper design of blast hole drilling pattern and blast geometry, use of NONEL with TLD detonators and blasting operations to be carried out only during the day time between 1300 and 1500 hours. 2. Explosive use will not exceed 63 kg per hole as suggested by CIMFR. 3. Ground vibrations monitoring with every blast to ensure vibrations limits prescribed by DGMS are always adhered to. 4. Comply with the mitigation measures for blasting and other mining related activities as suggested in the Environmental Management Plan for the proposed 5.0 MTPA expansion Project.	Recurring cost for blasting and related studies (annual average) as included in the EMP	~15.00*	Mitigation measures are being implemented Last study was completed in the year 2015. Last Study conducted in the year 2018 by CIMFR. Expenditure towards the blasting study is INR 8.64 Lakhs

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	LUMPL has also conducted ground vibrations monitoring in the surrounding villages i.e. Mawryngkhong, Nongrum, and Nongnong (all these villages are located across Umiam River and located beyond 1 km from the mine site). During the monitoring ground vibrations at all these villages have been found to be "not triggered" i.e. it remained below 1 mm/sec. The water flow from current location of active mining area is not flowing into the Umiam River. The mine being devoid of overburden, there is no overburden waste hence there is no chance of escape of silt from mine overburden. Mitigation measures have been suggested whereby proper drainage to be planned prior to start of development of new benches for mining from northern side (from 21st to 25th year for the expansion project). LUMPL is required to construct a garland drain to guide rainwater to continue to flow west to east from northern part into the	5. Monthly monitoring of surface water quality	Monitoring of surface water quality (annual budget)	~5.00*	Expenditures towards the water analysis for the period October 2018 to March 2019 was INR 3.65 Lakhs.

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	Umiam River. The garland drain will prevent rainwater entering into the mine from outside and maintain flow from mine area into Umiam River. LUMPL will ensure that the drainage through garland drain is provided with silt traps to arrest any scree coming from outside the mine. LUMPL will continue to monitor the quality of water of rivers and report the same to MSPCB and MoEFCC.				
A6	The blasting for 5 MTPA will be undertaken as per the parameters already defined in the Blasting Study conducted by Central Institute of Mining and Fuel Research (CIMFR), Government of India in 2015. The details of impacts and mitigation measures have been included in the EIA study. LUMPL will continue to ensure proper design of blast hole drilling pattern and blast geometry, use of NONEL with TLD detonators and blasting operations to be carried out only during the day time between 1300 hours and 1500 hours. LUMPL will	1. Implementation of mitigation measures related to blasting as stated above in serial no. A.5	1. As stated above in serial no. A 5		

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	ensure that the explosive use is not exceeding 63 kg per hole as suggested by CIMFR. Ground vibrations will continue to be monitored with every blast. LUMPL monitors the limit and ensures that its internal norm of 5 mm/sec will continue to be adhered to at all the structures as against the DGMS prescribed limit of maximum ground vibrations of 10 mm/sec. LUMPL has also conducted ground vibrations monitoring in the surrounding villages i.e. Mawryngkhong, Nongrum, and Nongnong (all these villages are located across Umiam River and located beyond 1 km from the mine site). During the monitoring ground vibrations at all these villages have been found to be "not triggered" i.e. it remained below 1 mm/sec. LUMPL has been monitoring ambient air quality at villages surrounding the mine site twice a week every week. The quality of ambient air quality has been observed to be	2. Fugitive dust and air quality monitoring as per the frequency given in the EMP	2. Fugitive dust and air quality monitoring (annual budget)	~20.00*	Expenditures towards monitoring on fugitive dust and air quality conducted during the period October 2018 to March 2019 was INR 3.18 Lakhs.

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	well within the National Ambient Air Quality Standards (NAAQS). Monitoring has also been conducted by external laboratories including MSPCB and has been found to be well within the NAAQS.				
B1 a & b	GIEM (India) Consortium, Calcutta has carried out detailed investigation and exploration which confirmed presence of limestone in the 100 Ha mine lease area. Accordingly, Mining Lease was granted by the Government of Meghalaya as well as Mining Plan and Scheme of Mining approved by Indian Bureau of Mines, Government of India. The mine lease relates to mining of limestone only. LUMPL has been filing monthly returns to IBM and to Department of Mines and Geology, Meghalaya on the mineral limestone extracted during the previous month. For the mineral limestone extracted (which is the only mineral available in the mine), LUMPL has been paying rent to the Nongtrai Village Durbar as per the terms of the Agreement.	LUMPL has entered into land lease deed with Nongtrai Village Durbar for mine lease area, crusher area and related infrastructure. As per the lease deed LUMPL will continue to pay an annual rent/royalty (the current rate of INR 13 per tonne of limestone).	Annual amount will continue to be paid as per the rate agreed in the lease deed (current rate of INR 13 per tonne)	Up to 260.00 (for 2.0 MTPA) Up to 650.00 (for 5.0 MTPA)	LUMPL has been making annual payments to the Nogntrai Village Durbar as per the rate agreed in the lease deed.

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	As stated above and the current scheme relates to mining of limestone as the only mineral present within the 100 Ha of mine lease area. For limestone mining, LUMPL has also been complying with all the terms of the Agreement with the Durbar as well as the mining lease granted by Government of Meghalaya and Mining Plan approved by IBM. Accordingly, the revenues to the state and central governments are being paid by LUMPL.				
B1 c	All the limestone mined is exported through long belt conveyor across border to Bangladesh. LUMPL has installed the weighing system for measurement of limestone exported through the belt conveyor. The accuracy of the measurement system is calibrated and certified annually by the Legal Metrology Department, Government of Meghalaya. The fully automated online measurement system and export material i.e. limestone has been under direct supervision of Customs	Accuracy of measurement system will continue to be ensured through annual calibration and certification by the Legal Metrology Department, Government of Meghalaya Supervision of Customs Department will continue to be in place	-	-	Accuracy of measurement system is being followed under the supervision of Legal Metrology Department, Government of Meghalaya and Customs Department.

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	Department personnel who have been deployed at the loading point of the Nongtrai Limestone Mine.				
B1 d	Based on the observations of Hon'ble Supreme Court, MoEFCC (vide file no. 07 - 31/2007 – FC dated March 30, 2010 in the matter of IA 1868 WP(C) no. 202/95) appointed a committee consisting of team of officials led by (Mr. B. N Jha), Regional Chief Conservator of Forests, North Eastern Region, Shillong as Team Leader; Director/Additional Director in the North Eastern Region, Shillong as Member; Head Zonal Office of Central Pollution Control Board, Shillong as Member; and a senior Mining Officer of State Mining Department as Member. The terms of reference of the Committee included the following: 1. Assessment of compliance to conditions stipulated during the Environmental Clearance accorded under the EIA notification. 2. Assessment of impact of the	Presently, there are ~200 local personnel (~35% of total manpower) are engaged from Nongtrai, Shella and surrounding villages. This employment of local personnel will continue.	-	-	Employment of personnel from local villages is continuing.

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	mining on forest, wildlife and surroundings – A detailed account of the vegetation and wildlife with their sample photographs may also be attached with the report. 3. Interaction with the local population and institutions and to suggest effective measures for mitigating adverse impacts of mining on them. 4. Assessment of limestone lying in the yard after quarrying and feasibility regarding their storage/transportation. The detailed findings of the Committee are included in ***Annex G***. The extracts from the report of the MoEFCC constituted Committee are as following: ▪ ToR 1: "… As a whole, compliance status appears as satisfactory since 8 out of 15 Specific conditions were fully complied with while 5 were partially complied with. One of the Specific conditions is being complied with and another one is also mostly complied with at				

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	the time of visit of the Committee. Of the 12 General conditions, 11 were observed as complied with while 1 condition remained under process of compliance…" ▪ ToR 2: "… Impact of mining on the surrounding villages in Nongtrai and Shella (especially Nongtrai) has been found very positive and beneficial to the residents due to huge amount of cash going to village Durbar and reaching individual household improving the financial health of the population of these villages…." ▪ ToR3: "…. In the light of above salient points which emerged in the interactions with local population and institution, in plain and simple way the local population is very much benefitted with mining by LUMPL, they do not have any problem/grievance with LUMPL and they want that mining should be allowed to take place and Govt of				

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	India to give all clearance needed for the same." ▪ ToR 4: "Committee assessed the stock pile lying in the stock yard at mining site….."				
B1e	Special Purpose Vehicle (SPV) has been set up by the State Government of Meghalaya in relation to the welfare projects mandated upon it including the development of health, education, economy, irrigation and agriculture in the project area of 50 kms solely for the local community and welfare of Tribals. LUMPL has deposited to SPV a sum of INR 114.25 Crore as on September 30, 2015. During the pendency of the matter of IA no. 1868 in WP (C) 202 of 1995 in the Hon'ble Supreme Court, MoEFCC vide order F. No. 07-31/2007 dated March 30, 2010 constituted a Committee headed by Mr BN Jha, CCF, RO Shillong and the report was submitted by MoEFCC to the Hon'ble Supreme Court. Amongst other contexts the report stated that, "...According to the	1. Payments to SPV will continue as stated above in serial no. A 2. 2. Implement mitigation measures as suggested in the EMP	Capital cost of EMP Recurring cost of EMP	710.00 (to be spent over the years) 210.00 (upon achieving full production)	Capital expenditure of EMP after of 5.0 MTPA environment clearance up to March 2019 was INR 187.25 Lakhs Recurring expenditure of EMP after receipt of 5.0 MTPA environmental clearances up to March 2019 was INR 408.26 Lakhs.

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	report, M/s. Lafarge has been contributing for the benefits of the village as well as for all the villagers by way of payment of rent for the use of the community land as well as towards the price of limestone exported to Bangladesh. The figures of such payments are also indicated in the report. Further, the report states that mining is not having any adverse effect on the human life.. ..." For the proposed expansion Project, detailed mining impacts have been worked out in the EIA report. Detailed mitigation measures have been suggested to minimize adverse impacts.				
B1f	LUMPL has been making payment to Nongtrai Durbar based on current rate rental payment of INR 13 per tonne of limestone. The public hearing was attended by more than 300 people (refer to the attendance sheet – in ***Annex A-2***) from surrounding villages including Nongtrai. The statements made by speakers as is obvious from the proceedings of the	As stated above in serial no. B1a	As stated above in serial no. B1a	As stated above in serial no. B1a	As given above in B1a

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	public hearing, supported the expansion Proposal due to the benefits LUMPL has been providing to the village.				
B2					
B2a	The blasting for 5 MTPA will be undertaken as per the parameters already defined by the Blasting Study conducted by Central Institute of Mining and Fuel Research (CIMFR), Government of India in 2015. The details of impacts and mitigation measures have been included in the EIA study. LUMPL will continue to ensure proper design of blast hole drilling pattern and blast geometry, use of NONEL with TLD detonators and blasting operations to be carried out only during the day time between 1300 hours and 1500 hours. LUMPL will ensure that the explosive use is not exceeding 63 kg per hole as suggested by CIMFR. Ground vibrations are to be monitored with every blast and it should adhere to the limits prescribed by DGMS which is maximum ground vibrations of 10	1. Implementation of blasting related mitigation meausres as suggested in EMP and as stated above in serial no. A.5.	-	-	Mitigation measures are being implemented.

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
	mm/sec. – LUMPL monitors the limit and ensures that its internal norm of 5 mm/sec which will be adhered to at all the structures. – LUMPL has also conducted ground vibrations monitoring in the surrounding villages i.e. Mawryngkhong, Nongrum, and Nongnong (all these villages are located across Umiam River and located beyond 1 km from the mine site). During the monitoring ground vibrations at all these villages have been found to be not triggered i.e. below 1 mm/sec.				
B2 b	LUMPL has been monitoring ambient air quality at villages surrounding the mine site twice a week every week. The quality of ambient air quality has been observed to be well within the National Ambient Air Quality Standards. Monitoring has also been conducted by external laboratories including MSPCB and has been found to be well within the NAAQS.	1. Implementation of mitigation measures to control dust emissions as described in the EMP. 2. Implementation of action plan on fugitive dust and air quality monitoring as stated in the serial no. A.6.	Fugitive dust control through water sprinkling using raingun fogger, water tankers and fixed sprinkling system set along the median of the haul road As stated above in serial no. A6	40.00* -	

SN	LUMPL's Response to Issues Raised during Public Hearing dated 22 January 2016	Tasks Identified as per Action Plan	Remarks	Budgetary Provision, INR in Lakhs	Status of Compliance as on 31 March 2019
		3. Support to local community for providing health related services as part of CSR activities	As stated above in serial no. A1	As stated above in serial no. A1	
B2c	Mitigation measures have been suggested including proper drainage to be planned prior to start of development of new benches and prior to start of mining from northern side (21st to 25th year), for the northern drainage through northern part, LUMPL is required to construct a garland drain to guide rainwater continue to flow west to east into the Umiam River. The garland drain will prevent rainwater entering into the mine from outside and maintain flow from mine area into Umiam River. LUMPL will ensure that the drainage through garland drain is provided with silt traps to arrest any scree coming from outside the mine. LUMPL will continue to monitor the quality of water of rivers and report the same to MSPCB and MoEFCC.	1. Construction of Storm water drains (along northern boundary 1 km length (from 20th year onwards) and for pit water discharge from lowest bench from 10th year onwards 2. Construction of drain along the haul road and approach road 3. Setting up pit water evacuation pump	Cost of construction of garland drain Cost of drainage system along haul road and approach Cost of water evacuation pump	200.00* 50.00* 20.00*	Actions to be implemented from 20th year onwards from the year 2015-16.

Note - *Cost as included in the EMP.

Vehicular Emission Monitoring October 2018 to March 2019

MEGHALAYA STATE POLLUTION CONTROL BOARD

"ARDEN", LUMPYNGNGAD, SHILLONG-793014

e-mail : megspcb@rediffmail.com
Phone : 0364-2521533,2521514,2522726
Fax: 0364-2521217,2521764

mspcb

Sl. No.: 1351

VEHICLE EMISSION TEST REPORT
(DIESEL DRIVEN)

Date of testing : 31/07/18

Certified that the exhaust emission of Vehicle No. ML05 8/1694 has been tested and the result is as under:

Method of Test	Maximum Smoke Density			Result (Hartidge Smoke Unit)
	Light Absorption Co-efficient (l/m)	Bosch Units	Hartidge Unit	
(a) For vehicles other than agricultural tractors: Full load at 60 to 70% of maximum engine rated rpm declared by the manufacturer or	3.25	5.2	75	—
Free acceleration for turbo charged engine or Free acceleration for naturally aspired engine	2.45	--	65	40.31
(b) For agricultural tractors 80% load corresponding to maximum power developed in PTO performance tests.	3.25	5.2	75	—

Certified that the vehicle meets the emission standard and this certificate is valid for 6 (six) months from the date of issue. This Certificate is valid upto 04/03/19

CENTRAL LABORATORY

Signature of Issuing Official
Dr. SCIENTIFIC ASSTT
Meghalaya State Pollution Control Board
Shillong

Authority vide Order No. Com/Trans/89/216/52 dt. 03/02/1990 of Commissioner of Transport, Govt. of Meghalaya.

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-557

Report No: WQ/2018/366

1.	Issue Date	:	5.12.2018
2.	Name of the Project	:	Effluent Quality
3.	Sample matrix	:	30.10.2018
4.	Date of sample collection	:	MSPCB
5.	Samples collected by	:	31.10.2018
6.	Date of sample receipt	:	31.10.2018-13.11.2018
7.	Date of sample analysis	:	G/307/18/10
8.	Sample Registration No.	:	-
9.	Sample plan reference	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
10.	Report sent to (Name & Address)	:	-
11.	Deviation, if any	:	IS-3025-Part I
12.	Method of sampling	:	11.9.2018
13.	Remarks	:	

Parameters	Test method APHA 21st Ed. No.	Limits	Sample Code/Sampling location
		General Standards for discharge of environmental pollutants into inland surface water as per EPA Notification vide GSR 801 (E) EPA, 1986 Dated December, 31 1993	G/307/18/10 ETP (Workshop)
pH	4500-11+B	5.5-9.0	7.8
Total Suspended Solids (mg/l)	2540D	100.0	27.0
Total Dissolved Solids (mg/l)	2540C	*	129.0
Oil & Grease (mg/l)	5520 B	10.0	BDL**

***Not Prescribed/** Below Detectable Limits**

Statement:

1. ***The results are reported based on the materials received***
2. ***Sample will be destroyed after one month from the date of issue of the report.***
3. ***The report shall not be reproduced except in full, without the written approval of the laboratory.***

Scientist C **Sr. Scientist**

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-557

Report No: WQ/2018/400

1.	Issue Date	:	16.01.2019
2.	Name of the Project	:	Effluent Quality
3.	Sample matrix	:	28.11.2018
4.	Date of sample collection	:	MSPCB
5.	Samples collected by	:	29.11.2018
6.	Date of sample receipt	:	29.11.2018-20.12.2018
7.	Date of sample analysis	:	G/341/18/10
8.	Sample Registration No.	:	-
9.	Sample plan reference	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
10.	Report sent to (Name & Address)	:	-
11.	Deviation, if any	:	IS-3025-Part I
12.	Method of sampling	:	11.9.2018
13.	Remarks	:	-

Parameters	Test method APHA 21st Ed. No.	Limits	Sample Code/Sampling location
		General Standards for discharge of environmental pollutants into inland surface water as per EPA Notification vide GSR 801 (E) EPA, 1986 Dated December, 31 1993	G/341/18/10 ETP (Workshop)
pH	4500-11+B	5.5-9.0	8.0
Total Suspended Solids (mg/l)	2540D	100.0	24.0
Total Dissolved Solids (mg/l)	2540C	*	50.0
Oil & Grease (mg/l)	5520 B	10.0	BDL**

*Not Prescribed/** Below Detectable Limits

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-557

Report No: WQ/2018/411

1.	Issue Date	:	08.02.2019
2.	Name of the Project	:	Effluent Quality
3.	Sample matrix	:	Water
4.	Date of sample collection	:	13.12.2018
5.	Samples collected by	:	MSPCB
6.	Date of sample receipt	:	14.12.2018
7.	Date of sample analysis	:	14.12.2018-21.12.2018
8.	Sample Registration No.	:	G/350/18/10
9.	Sample plan reference	:	-
10.	Report sent to (Name & Address)	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
11.	Deviation, if any	:	-
12.	Method of sampling	:	IS-3025-Part I
13.	Remarks	:	-

Parameters	Test method APHA 21st Ed. No.	Limits	Sample Code/Sampling location
		General Standards for discharge of environmental pollutants into inland surface water as per EPA Notification vide GSR 801 (E) EPA, 1986 Dated December, 31 1993	G/350/18/10 ETP (Workshop)
pH	4500-11+B	5.5-9.0	7.8
Total Suspended Solids (mg/l)	2540D	100.0	20.0
Total Dissolved Solids (mg/l)	2540C	*	116.0
Oil & Grease (mg/l)	5520 B	10.0	BDL**

*Not Prescribed/** Below Detectable Limits

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-5577

Report No: WQ/2019/77

1.	Issue Date	:	12.3.2019
2.	Name of the Project	:	Effluent Quality
3.	Sample matrix	:	Water
4.	Date of sample collection	:	7.1.2019
5.	Samples collected by	:	MSPCB
6.	Date of sample receipt	:	8.1.2019
7.	Date of sample analysis	:	9.1.201920.1.2019
8.	Sample Registration No.	:	G/2/19/10
9.	Sample plan reference	:	-
10.	Report sent to (Name & Address)	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
11.	Deviation, if any	:	-
12.	Method of sampling	:	IS-3025-Part I
13.	Remarks	:	-

Parameters	Test method APHA 21st Ed. No.	Limits	Sample Code/Sampling location
		General Standards for discharge of environmental pollutants into inland surface water as per EPA Notification vide GSR 801 (E) EPA, 1986 Dated December, 31 1993	G/2/19/10 ETP (Workshop)
pH	4500-11+B	5.5-9.0	7.8
Total Suspended Solids (mg/l)	2540D	100.0	25.0
Total Dissolved Solids (mg/l)	2540C	*	109.0
Oil & Grease (mg/l)	5520 B	10.0	BDL**

*Not Prescribed/** Below Detectable Limits

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-5577

Report No: WQ/2019/100

1.	Issue Date	:	28.3.2019
2.	Name of the Project	:	Effluent Quality
3.	Sample matrix	:	Water
4.	Date of sample collection	:	1.2.2019
5.	Samples collected by	:	MSPCB
6.	Date of sample receipt	:	1.2.2019
7.	Date of sample analysis	:	1.2.2019-20.2.2019
8.	Sample Registration No.	:	G/25/19/10
9.	Sample plan reference	:	-
10.	Report sent to (Name & Address)	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
11.	Deviation, if any	:	-
12.	Method of sampling	:	IS-3025-Part I
13.	Remarks	:	-
		:	-

Parameters	Test method APHA 21st Ed. No.	Limits	Sample Code/Sampling location
		General Standards for discharge of environmental pollutants into inland surface water as per EPA Notification vide GSR 801 (E) EPA, 1986 Dated December, 31 1993	G/25/19/10 ETP (Workshop)
pH	4500-11+B	5.5-9.0	8.0
Total Suspended Solids (mg/l)	2540D	100.0	20.0
Total Dissolved Solids (mg/l)	2540C	*	120.0
Oil & Grease (mg/l)	5520 B	10.0	BDL**

*Not Prescribed/** Below Detectable Limits

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-5577

Report No: WQ/2019/122

1.	Issue Date	:	16.4.2019
2.	Name of the Project	:	Effluent Quality
3.	Sample matrix	:	Water
4.	Date of sample collection	:	4.3.2019
5.	Samples collected by	:	MSPCB
6.	Date of sample receipt	:	5.3.2019
7.	Date of sample analysis	:	5.3.2019-22.9.2019
8.	Sample Registration No.	:	G/58/19/10
9.	Sample plan reference	:	-
10.	Report sent to (Name & Address)	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
11.	Deviation, if any	:	-
12.	Method of sampling	:	IS-3025-Part I
13.	Remarks	:	-
		:	-

Parameters	Test method APHA 21st Ed. No.	Limits	Sample Code/Sampling location
		General Standards for discharge of environmental pollutants into inland surface water as per EPA Notification vide GSR 801 (E) EPA, 1986 Dated December, 31 1993	G/58/19/10 ETP (Workshop)
pH	4500-11+B	5.5-9.0	8.1
Total Suspended Solids (mg/l)	2540D	100.0	22.0
Total Dissolved Solids (mg/l)	2540C	*	112.0
Oil & Grease (mg/l)	5520 B	10.0	BDL**

*Not Prescribed/** Below Detectable Limits

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist

ANNEXURE-IV

Ground water level results for the period Oct – Dec 2018 and Jan – Mar 2019 (Vibrating Wire Piezometer)

Location	Oct			Nov			Dec		
	Reading in Unit meter			Reading in Unit meter			Reading in Unit meter		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
PWD Road (To the South West of the Mine)	49.98	52.05	51.53	48.06	52.20	49.63	47.76	48.65	47.93
Near Mine entry gate (To the South of the Mine)	51.50	55.62	53.91	50.86	53.25	52.04	50.58	51.60	50.83
Near Transit House (To the South East of the Mine)	50.22	53.12	52.21	48.02	52.05	49.78	47.80	48.58	47.99

Location	Jan			Feb			Mar		
	Reading in Unit meter			Reading in Unit meter			Reading in Unit meter		
	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
PWD Road (To the South West of the Mine)	47.74	48.52	48.25	47.38	48.06	47.69	47.45	48.02	47.73
Near Mine entry gate (To the South of the Mine)	50.42	50.82	50.64	49.85	50.40	50.12	49.82	50.92	50.33
Near Transit House (To the South East of the Mine)	47.80	48.45	48.21	47.56	48.12	47.84	48.26	50.18	49.08

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-5577

Report No: WQ/2018/364

1.	Issue Date	:	5.12.2018
2.	Name of the Project	:	River Water Quality
3.	Sample matrix	:	Water
4.	Date of sample collection	:	30.10.2018
5.	Samples collected by	:	MSPCB
6.	Date of sample receipt	:	31.10.2018
7.	Date of sample analysis	:	31.10.2018-13.11.2018
8.	Sample Registration No.	:	G/307/18/1-4
9.	Sample plan reference	:	-
10.	Report sent to (Name & Address)	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
11.	Deviation, if any	:	-
12.	Method of sampling	:	IS-3025-Part I
13.	Remarks	:	-

Parameters	Test Method: APHA 21st Ed. No.	Sampling Code/Location			
		G/307/18/1 LWQ1	G/307/18/2 LWQ2	G/307/18/3 LWQ3	G/307/18/4 LWQ4
pH	4500-H^+ B	7.5	7.5	7.7	7.7
Conductivity (µmho/cm)	2510 A	74.0	79.0	139.0	148.0
Turbidity (NTU)	2130 B	7.5	7.7	4.9	5.5
Total Suspended Solids (mg/l)	2540D	4.0	5.0	5.0	5.0
Total Dissolved Solids (mg/l)	2540C	69.0	121.0	82.0	125.0
Chloride (mg/l)	4500-Cl^- B	7.0	7.0	7.0	7.0
Total Hardness (mg/l)	2340 C	32.0	30.0	88.0	90.0
Alkalinity (mg/l)	2320 B	28.0	28.0	68.0	70.0
Nitrate-N (mg/l)	4500-NO_3^- D	0.4	0.4	0.45	0.5
Nitrite-N (mg/l)	4500NO2-B	BDL*	BDL*	BDL*	BDL*
Iron (mg/l)	3500-Fe B	0.18	0.2	0.2	0.2
Flouride (mg/l)	4500-F-D	0.06	0.05	0.06	0.05
Dissolved Oxygen (mg/l)	4500-O C	8.0	7.8	8.2	7.6
Biochemical Oxygen Demand (mg/l)	IS-3025 (P-44)	1.6	1.6	1.3	1.2
Calcium as $CaCO_3$ (mg/l)	3500-CaB	20.0	20.0	68.0	70.0
Magnesium as $CaCO_3$(mg/l)	3500-MgB	12.0	10.0	20.0	20.0

Potassium (mg/l)	3500-KB	2.6	2.5	2.4	2.6
Sodium (mg/l)	3500-NaB	5.2	5.0	4.2	5.5
Ammonia Nitrogen (mg/l)	4500-NH3A&C	0.15	0.14	0.11	0.1
Phosphates (mg/l)	4500-P D	0.01	0.01	0.02	0.02
Sulphates (mg/l)	4500-SO4-2E	3.8	3.6	4.0	3.8
Sulphides (mg/l)	4500-S^{2-}	BDL*	BDL*	BDL*	BDL*
Arsenic (mg/l)	3500 As B	BDL*	BDL*	BDL*	BDL*
Copper (mg/l)	3030 E,3111B	BDL*	BDL*	BDL*	BDL*
Lead (mg/l)		BDL*	BDL*	BDL*	BDL*
Chromium (mg/l)		BDL*	BDL*	BDL*	BDL*
Zinc (mg/l)		0.01	0.01	BDL	BDL
Cadmium (mg/l)		BDL*	BDL*	BDL*	BDL*
Nickel (mg/l)		BDL*	BDL*	BDL*	BDL*
Manganese(mg/l)		BDL*	BDL*	BDL*	BDL*
Total Coliform (MPN/100ml)	9221 B	120	110	79	94

*BDL – Below Detectable Limit

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-557

Report No: WQ/2018/398

1.	Issue Date	:	16.01.2019
2.	Name of the Project	:	River Water Quality
3.	Sample matrix	:	Water
4.	Date of sample collection	:	28.11.2018
5.	Samples collected by	:	MSPCB
6.	Date of sample receipt	:	28.11.2018
7.	Date of sample analysis	:	29.11.2018-20.12.2018
8.	Sample Registration No.	:	G/341/18/1-4
9.	Sample plan reference	:	-
10.	Report sent to (Name & Address)	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
11.	Deviation, if any	:	-
12.	Method of sampling	:	IS-3025-Part I
13.	Remarks	:	-

Parameters	Test Method: APHA 21st Ed. No.	Sampling Code/Location			
		G/341/18/1 LWQ1	G/341/18/2 LWQ2	G/341/18/3 LWQ3	G/341/18/4 LWQ4
pH	4500-H^+ B	7.6	7.8	8.0	8.2
Conductivity (µmho/cm)	2510 A	110.0	115.0	165.0	170.0
Turbidity (NTU)	2130 B	5.5	4.8	5.9	4.8
Total Suspended Solids (mg/l)	2540D	5.0	5.0	6.0	6.0
Total Dissolved Solids (mg/l)	2540C	76.0	79.0	114.0	117.0
Chloride (mg/l)	4500-Cl^- B	6.0	7.0	7.0	7.0
Total Hardness (mg/l)	2340 C	40.0	50.0	90.0	98.0
Alkalinity (mg/l)	2320 B	42.0	52.0	88.0	98.0
Nitrate-N (mg/l)	4500-NO_3^- D	0.3	0.32	0.4	0.46
Nitrite-N (mg/l)	4500NO2-B	BDL*	BDL*	BDL*	BDL*
Iron (mg/l)	3500-Fe B	0.1	0.18	0.19	0.2
Flouride (mg/l)	4500-F-D	0.05	0.06	0.04	0.04
Dissolved Oxygen (mg/l)	4500-O C	7.9	8.0	7.6	7.4
Biochemical Oxygen Demand (mg/l)	IS-3025 (P-44)	1.2	1.2	1.5	1.6
Calcium as $CaCO_3$ (mg/l)	3500-CaB	24.0	26.0	70.0	72.0
Magnesium as $CaCO_3$(mg/l)	3500-MgB	16.0	14.0	18.0	26.0

Potassium (mg/l)	3500-KB	2.2	2.4	2.6	2.8
Sodium (mg/l)	3500-NaB	4.0	5.0	5.2	5.4
Ammonia Nitrogen (mg/l)	4500-NH3A&C	0.12	0.14	0.12	0.11
Phosphates (mg/l)	4500-P D	0.01	0.01	0.02	0.02
Sulphates (mg/l)	4500-SO4-2E	5.5	6.0	9.8	10.0
Sulphides (mg/l)	4500-S^{2-}	BDL*	BDL*	BDL*	BDL*
Arsenic (mg/l)	3500 As B	BDL*	BDL*	BDL*	BDL*
Copper (mg/l)	3030 E,3111B	BDL*	BDL*	BDL*	BDL*
Lead (mg/l)		BDL*	BDL*	BDL*	BDL*
Chromium (mg/l)		BDL*	BDL*	BDL*	BDL*
Zinc (mg/l)		0.01	0.01	BDL	BDL
Cadmium (mg/l)		BDL*	BDL*	BDL*	BDL*
Nickel (mg/l)		BDL*	BDL*	BDL*	BDL*
Manganese(mg/l)		BDL*	BDL*	BDL*	BDL*
Total Coliform (MPN/100ml)	9221 B	110	70	94	74

***BDL – Below Detectable Limit**

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-557

Report No: WQ/2018/409

1.	Issue Date	:	08.02.2019
2.	Name of the Project	:	River Water Quality
3.	Sample matrix	:	Water
4.	Date of sample collection	:	13.12.2018
5.	Samples collected by	:	MSPCB
6.	Date of sample receipt	:	14.12.2018
7.	Date of sample analysis	:	14.12.2018-21.12.2018
8.	Sample Registration No.	:	G/350/18/1-4
9.	Sample plan reference	:	-
10.	Report sent to (Name & Address)	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
11.	Deviation, if any	:	-
12.	Method of sampling	:	IS-3025-Part I
13.	Remarks	:	-

Parameters	Test Method: APHA 21st Ed. No.	Sampling Code/Location			
		G/350/18/1 LWQ1	G/350/18/2 LWQ2	G/350/18/3 LWQ3	G/350/18/4 LWQ4
pH	4500-H^+ B	7.8	7.8	7.9	7.8
Conductivity (µmho/cm)	2510 A	108.0	110.0	165.0	170.0
Turbidity (NTU)	2130 B	4.5	5.5	4.5	5.5
Total Suspended Solids (mg/l)	2540D	5.0	6.0	6.0	7.0
Total Dissolved Solids (mg/l)	2540C	58.0	60.0	122.0	118.0
Chloride (mg/l)	4500-Cl^- B	6.0	6.0	5.0	8.0
Total Hardness (mg/l)	2340 C	42.0	68.0	104.0	102.0
Alkalinity (mg/l)	2320 B	46.0	70.0	102.0	102.0
Nitrate-N (mg/l)	4500-NO_3^- D	0.28	0.32	0.4	0.43
Nitrite-N (mg/l)	4500NO2-B	BDL*	BDL*	BDL*	BDL*
Iron (mg/l)	3500-Fe B	0.16	0.18	0.2	0.19
Flouride (mg/l)	4500-F-D	0.07	0.07	0.06	0.07
Dissolved Oxygen (mg/l)	4500-O C	8.0	8.2	7.2	7.5
Biochemical Oxygen Demand (mg/l)	IS-3025 (P-44)	1.0	1.0	1.8	1.8
Calcium as $CaCO_3$ (mg/l)	3500-CaB	28.0	46.0	70.0	68.0
Magnesium as $CaCO_3$(mg/l)	3500-MgB	14.0	22.0	34.0	34.0

Potassium (mg/l)	3500-KB	2.0	2.0	1.5	3.0
Sodium (mg/l)	3500-NaB	4.3	4.3	3.6	6.2
Ammonia Nitrogen (mg/l)	4500-NH3A&C	0.1	0.11	0.12	0.13
Phosphates (mg/l)	4500-P D	0.01	0.01	0.02	0.02
Sulphates (mg/l)	4500-SO4-2E	6.5	6.6	10.5	10.1
Sulphides (mg/l)	4500-S^{2-}	BDL*	BDL*	BDL*	BDL*
Arsenic (mg/l)	3500 As B	BDL*	BDL*	BDL*	BDL*
Copper (mg/l)	3030 E,3111B	BDL*	BDL*	BDL*	BDL*
Lead (mg/l)		BDL*	BDL*	BDL*	BDL*
Chromium (mg/l)		BDL*	BDL*	BDL*	BDL*
Zinc (mg/l)		0.01	0.01	BDL	BDL
Cadmium (mg/l)		BDL*	BDL*	BDL*	BDL*
Nickel (mg/l)		BDL*	BDL*	BDL*	BDL*
Manganese(mg/l)		BDL*	BDL*	BDL*	BDL*
Total Coliform (MPN/100ml)	9221 B	140	110	93	94

*BDL – Below Detectable Limit

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-5577

Report No: WQ/2019/75

1.	Issue Date	:	12.3.2019
2.	Name of the Project	:	River Water Quality
3.	Sample matrix	:	Water
4.	Date of sample collection	:	7.1.2019
5.	Samples collected by	:	MSPCB
6.	Date of sample receipt	:	8.1.2019
7.	Date of sample analysis	:	8.1.2019-22.1.2019
8.	Sample Registration No.	:	G/2/19/1-4
9.	Sample plan reference	:	-
10.	Report sent to (Name & Address)	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
11.	Deviation, if any	:	-
12.	Method of sampling	:	IS-3025-Part I
13.	Remarks	:	-

Parameters	Test Method: APHA 21st Ed. No.	Sampling Code/Location			
		G/2/19/1 LWQ1	G/2/19/2 LWQ2	G/2/19/3 LWQ3	G/2/19/4 LWQ4
pH	4500-H^+ B	7.8	7.8	8.0	8.0
Conductivity (µmho/cm)	2510 A	98.0	102.0	138.0	145.0
Turbidity (NTU)	2130 B	3.5	3.3	3.9	4.1
Total Suspended Solids (mg/l)	2540D	5.0	6.0	6.0	9.0
Total Dissolved Solids (mg/l)	2540C	68.0	70.0	95.0	100.0
Chloride (mg/l)	4500-Cl^- B	6.0	7.0	6.8	6.0
Total Hardness (mg/l)	2340 C	40.0	42.0	66.0	100.0
Alkalinity (mg/l)	2320 B	40.0	42.0	72.0	100.0
Nitrate-N (mg/l)	4500-NO_3^- D	0.4	0.3	0.38	0.42
Nitrite-N (mg/l)	4500NO2-B	BDL*	BDL*	BDL*	BDL*
Iron (mg/l)	3500-Fe B	0.14	0.15	0.16	0.16
Flouride (mg/l)	4500-F-D	0.04	0.05	0.08	0.04
Dissolved Oxygen (mg/l)	4500-O C	8.0	7.8	8.0	7.4
Biochemical Oxygen Demand (mg/l)	IS-3025 (P-44)	1.4	1.2	1.0	1.6
Calcium as $CaCO_3$ (mg/l)	3500-CaB	26.0	30.0	44.0	72.0
Magnesium as $CaCO_3$(mg/l)	3500-MgB	10.0	12.0	22.0	28.0

Potassium (mg/l)	3500-KB	2.0	2.2	2.0	1.4
Sodium (mg/l)	3500-NaB	3.8	3.8	4.0	3.4
Ammonia Nitrogen (mg/l)	4500-NH3A&C	0.11	0.1	0.1	0.12
Phosphates (mg/l)	4500-P D	0.01	0.01	0.01	0.02
Sulphates (mg/l)	4500-SO4-2E	7.2	7.0	6.8	10.0
Sulphides (mg/l)	4500-S^{2-}	BDl*	BDL*	BDL*	BDL*
Arsenic (mg/l)	3500 As B	BDl*	BDL*	BDL*	BDL*
Copper (mg/l)	3030 E,3111B	BDl*	BDL*	BDL*	BDL*
Lead (mg/l)		BDl*	BDL*	BDL*	BDL*
Chromium (mg/l)		BDl*	BDL*	BDL*	BDL*
Zinc (mg/l)		BDl*	0.01	0.01	BDL
Cadmium (mg/l)		BDl*	BDL*	BDL*	BDL*
Nickel (mg/l)		BDl*	BDL*	BDL*	BDL*
Manganese(mg/l)		BDl*	BDL*	BDL*	BDL*
Total Coliform (MPN/100ml)	9221 B	140	150	120	94

*BDL – Below Detectable Limit

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-5577

Report No: WQ/2019/98

1.	Issue Date	:	28.3.2019
2.	Name of the Project	:	River Water Quality
3.	Sample matrix	:	Water
4.	Date of sample collection	:	1.2.2019
5.	Samples collected by	:	MSPCB
6.	Date of sample receipt	:	1.2.2019
7.	Date of sample analysis	:	1.2.2019-20.2.2019
8.	Sample Registration No.	:	G/25/19/1-4
9.	Sample plan reference	:	-
10.	Report sent to (Name & Address)	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
11.	Deviation, if any	:	-
12.	Method of sampling	:	IS-3025-Part I
13.	Remarks	:	-

Parameters	Test Method: APHA 21st Ed. No.	Sampling Code/Location			
		G/25/19/1 LWQ1	G/25/19/2 LWQ2	G/25/19/3 LWQ3	G/25/19/4 LWQ4
pH	4500-H^+ B	7.7	7.8	8.0	8.2
Conductivity (µmho/cm)	2510 A	100.0	104.0	148.0	145.0
Turbidity (NTU)	2130 B	3.2	3.4	4.0	4.0
Total Suspended Solids (mg/l)	2540D	5.0	5.0	6.0	8.0
Total Dissolved Solids (mg/l)	2540C	70.0	72.0	96.0	102.0
Chloride (mg/l)	4500-Cl^- B	7.0	7.0	6.8	6.6
Total Hardness (mg/l)	2340 C	42.0	44.0	70.0	72.0
Alkalinity (mg/l)	2320 B	40.0	42.0	74.0	70.0
Nitrate-N (mg/l)	4500-NO_3^- D	0.3	0.3	0.4	0.42
Nitrite-N (mg/l)	4500NO2-B	BDL*	BDL*	BDL*	BDL*
Iron (mg/l)	3500-Fe B	0.14	0.16	0.16	0.14
Flouride (mg/l)	4500-F-D	0.04	0.05	0.08	0.04
Dissolved Oxygen (mg/l)	4500-O C	7.6	7.8	8.0	7.8
Biochemical Oxygen Demand (mg/l)	IS-3025 (P-44)	1.2	1.2	1.4	1.6
Calcium as $CaCO_3$ (mg/l)	3500-CaB	28.0	30.0	42.0	50.0
Magnesium as $CaCO_3$(mg/l)	3500-MgB	14.0	14.0	28.0	22.0

Potassium (mg/l)	3500-KB	2.0	2.0	2.0	1.8
Sodium (mg/l)	3500-NaB	3.4	3.6	4.0	3.9
Ammonia Nitrogen (mg/l)	4500-NH3A&C	0.1	0.1	0.1	0.11
Phosphates (mg/l)	4500-P D	0.01	0.01	0.01	0.02
Sulphates (mg/l)	4500-SO4-2E	7.8	7.6	7.0	9.8
Sulphides (mg/l)	4500-S^{2-}	BDl*	BDL*	BDL*	BDL*
Arsenic (mg/l)	3500 As B	BDl*	BDL*	BDL*	BDL*
Copper (mg/l)	3030 E,3111B	BDl*	BDL*	BDL*	BDL*
Lead (mg/l)		BDl*	BDL*	BDL*	BDL*
Chromium (mg/l)		BDl*	BDL*	BDL*	BDL*
Zinc (mg/l)		BDl*	0.01	0.01	BDL
Cadmium (mg/l)		BDl*	BDL*	BDL*	BDL*
Nickel (mg/l)		BDl*	BDL*	BDL*	BDL*
Manganese(mg/l)		BDl*	BDL*	BDL*	BDL*
Total Coliform (MPN/100ml)	9221 B	150	120	110	94

*BDL – Below Detectable Limit

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"Arden", Lumpyngngad, Shillong -793014
TEST REPORT

Certificate No: TC-5577

Report No: WQ/2019/120

1.	Issue Date	:	16.4.2019
2.	Name of the Project	:	River Water Quality
3.	Sample matrix	:	Water
4.	Date of sample collection	:	4.3.2019
5.	Samples collected by	:	MSPCB
6.	Date of sample receipt	:	5.3.2019
7.	Date of sample analysis	:	5.3.2019-22.3.2019
8.	Sample Registration No.	:	G/58/19/1-4
9.	Sample plan reference	:	-
10.	Report sent to (Name & Address)	:	Mines Manager, Lafarge Umiam Mining Pvt. Ltd
11.	Deviation, if any	:	-
12.	Method of sampling	:	IS-3025-Part I
13.	Remarks	:	-

Parameters	Test Method: APHA 21st Ed. No.	Sampling Code/Location			
		G/58/19/1 LWQ1	G/58/19/2 LWQ2	G/58/19/3 LWQ3	G/58/19/4 LWQ4
pH	4500-H$^+$ B	7.7	7.8	8.2	8.1
Conductivity (µmho/cm)	2510 A	110.0	125.0	240.0	250.0
Turbidity (NTU)	2130 B	4.8	5.0	5.5	4.9
Total Suspended Solids (mg/l)	2540D	6.0	7.0	5.0	7.0
Total Dissolved Solids (mg/l)	2540C	78.0	108.0	96.0	116.0
Chloride (mg/l)	4500-Cl B	7.0	7.0	8.0	8.0
Total Hardness (mg/l)	2340 C	40.0	42.0	122.0	126.0
Alkalinity (mg/l)	2320 B	38.0	40.0	116.0	120.0
Nitrate-N (mg/l)	4500-NO_3^- D	0.4	0.44	0.48	11.4
Nitrite-N (mg/l)	4500NO2-B	BDL*	BDL*	BDL*	BDL*
Iron (mg/l)	3500-Fe B	0.18	0.1	0.16	0.2
Flouride (mg/l)	4500-F-D	0.06	0.05	0.07	0.06
Dissolved Oxygen (mg/l)	4500-O C	7.8	7.8	6.9	6.7
Biochemical Oxygen Demand (mg/l)	IS-3025 (P-44)	1.0	1.2	2.2	2.3
Calcium as $CaCO_3$ (mg/l)	3500-CaB	24.0	28.0	80.0	82.0
Magnesium as $CaCO_3$(mg/l)	3500-MgB	16.0	14.0	42.0	44.0

Potassium (mg/l)	3500-KB	2.5	2.2	2.2	2.6
Sodium (mg/l)	3500-NaB	5.4	5.0	5.2	5.7
Ammonia Nitrogen (mg/l)	4500-NH3A&C	0.11	0.12	0.1	0.12
Phosphates (mg/l)	4500-P D	0.01	0.01	0.03	0.03
Sulphates (mg/l)	4500-SO4-2E	6.5	6.7	7.2	9.2
Sulphides (mg/l)	4500-S^{2-}	BDL*	BDL*	BDL*	BDL*
Arsenic (mg/l)	3500 As B	BDL*	BDL*	BDL*	BDL*
Copper (mg/l)	3030 E,3111B	BDL*	BDL*	BDL*	BDL*
Lead (mg/l)		BDL*	BDL*	BDL*	BDL*
Chromium (mg/l)		BDL*	BDL*	BDL*	BDL*
Zinc (mg/l)		BDL*	0.01	0.01	BDL
Cadmium (mg/l)		BDL*	BDL*	BDL*	BDL*
Nickel (mg/l)		BDL*	BDL*	BDL*	BDL*
Manganese(mg/l)		BDL*	BDL*	BDL*	BDL*
Total Coliform (MPN/100ml)	9221 B	140	110	120	93

*BDL – Below Detectable Limit

Statement:

1. *The results are reported based on the materials received*
2. *Sample will be destroyed after one month from the date of issue of the report.*
3. *The report shall not be reproduced except in full, without the written approval of the laboratory.*

Scientist C

Sr. Scientist