Semi Annual Environmental Monitoring Report

Project Number 35290-01
Loan 2528 - IND
(December, 2016)

India: North Eastern Region Capital Cities Development Investment Program – Shillong Solid Waste Management Subproject (Tranche-I, Shillong, Meghalaya) (July - December 2016)

Prepared by the State Investment Project Management and Implementation Unit (SIPMIU), Urban Affairs Department for the Asian Development Bank.

ABBREVIATIONS

ADB	—	Asian Development Bank
CBO	—	Community Building Organization
CLC	—	City Level Committees
CPHEEO	—	Central Public Health and Environmental Engineering Organization
CTE	—	Consent to Establish
CTO	—	Consent to Operate
DSMC	—	Design Supervision Management Consultant
EAC	—	Expert Appraisal Committee
EIA	—	Environmental Impact Assessment
EMP	—	Environmental Management Plan
GSPA	—	Greater Shillong Planning Area
GRC	—	Grievance Redress Committee
H&S	—	Health and Safety
IEE	—	Initial Environmental Examination
IPCC	—	Investment Program Coordination Cell
lpcd	—	liters per capita per day
MFF	—	Multi tranche Financing Facility
MOEF	—	Ministry of Environment and Forests
MSW	—	Municipal Solid Waste
NAAQS	—	National Ambient Air Quality Standards
NEA	—	National-Level Executing Agency
NER	—	North Eastern Region
NERCCDIP	—	North Eastern Region Capital Cities Development Investment Program
NGO	—	Nongovernmental Organization
NSC	—	National Level Steering Committee
O&M	—	Operation and Maintenance
PMIU	—	Project Management and Implementation Unit
PSP	—	Private Sector Participation
SEA	—	State-level Executing Agency
SEIAA	—	State Environment Impact Assessment Authority
SIPMIU	—	State-level Investment Project Management and Implementation Unit
SMB	—	Shillong Municipal Board
SPS	—	Safeguard Policy Statement
TOR	—	Terms of Reference
UD&PAD	—	Urban Development & Poverty Alleviation Department
UAD	—	Urban Affairs Department
UDD	—	Urban Development Department
ULB	—	Urban Local Body

I. INTRODUCTION

A. BACKGROUND

1. The North-Eastern Region Capital Cities Development Investment Program (NERCCDIP) envisages achieving sustainable urban development in the Project Cities of Agartala, Aizawl, Kohima, Gangtok and Shillong through investments in urban infrastructure sectors. Urban infrastructure and services improvement is proposed in the following sectors: (i) water supply; (ii) sewerage and sanitation; and (iii) solid waste management. The expected impact of NERCCDIP is increased economic growth potential, reduced poverty, and reduced imbalances between the North-Eastern Region (NER) and the rest of the country. The expected outcomes of the Investment Program will be an improved urban environment and better living conditions for the 1.65 million people expected to be living in the NERCCDIP cities by 2018. To this end, NERCCDIP will (i) improve and expand urban infrastructure and services in the cities, including slums; and (iii) strengthen urban institutional management and the financing capacity of the institutions, including the urban local bodies (ULBs). Based on considerations of economic justification, absorptive capacity and sustainability of the implementing agencies, subprojects have been identified in each city in the priority infrastructure sectors.

2. Though NERCCDIP aims to improve the environmental condition of urban areas, the proposed improvements of infrastructure facilities may exert certain adverse impacts on the natural environment. While developing urban infrastructure facilities, impacts during the construction stage are expected to be more severe than impacts during the operation phase, though for a short duration. Exceptions being some facilities such as solid waste landfills and sewage treatment plants, which may also exert adverse impacts during the operation phase, if due care is not taken.

3. NERCCDIP will be implemented over a six year period beginning in 2010, and will be funded by a loan via the Multitranche Financing Facility (MFF) of the Asian Development Bank (ADB). The Ministry of Urban Development (MOUD) is the national Executing Agency. State-level Investment Program Management and Implementation Units (SIPMIU) in each state are responsible for overall technical supervision and execution of all subprojects funded under the Investment Program. The SIPMIU is being assisted by design, management and supervision consultants (DMSC) who are designing the infrastructure, managing the tendering of contracts, and will supervise construction.

4. ADB requires the consideration of environmental issues in all aspects of the Bank's operations, and the requirements for Environmental Assessment are described in ADB's

Safeguards Policy Statement (SPS, 2009). This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, loans involving financial intermediaries, and private sector loans. ADB has provided on its part, a Project Preparatory Technical Assistance (TA 4348-IND) for the preparation of an urban sector profile of the North-Eastern states, followed by a Technical Assistance (TA 4779-IND) for Project Implementation and Urban Management in the North-Eastern Region (Phase I) to initiate the works under Tranche 1.

5. An Initial Environmental Examination (IEE) has been prepared for the Shillong Solid Waste Management Subproject as part of NERCCDIP -Tranche 1. Under the NERCCDIP Tranche-1 programme, the subproject covers construction of a short-term sanitary landfill site over an area of 6500 sqm.

Extent of the IEE Study

6. The IEE report covers the general environmental profile of Shillong and includes an overview of the potential environmental impacts and their magnitude on physical, ecological, economic, and social and cultural resources within the subproject's influence area during design, construction, and operation stages. An Environmental Management Plan (EMP) is also proposed as part of this report which includes mitigation measures for significant environmental impacts during implementation of the Project, environmental monitoring program, and the responsible entities for mitigation and monitoring.

ADB Policy

7. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for Environmental Assessment are described in ADB's SPS (2009). This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, loans involving financial intermediaries, and private sector loans.

8. **Screening and Categorization.** The nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impact are assigned to one of the following four categories:

(i) **Category A.** Projects could have significant adverse environmental impacts. An EIA is required to address significant impacts.

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(ii) **Category B.** Projects could have some adverse environmental impacts, but of lesser degree or significance than those in category A. An IEE is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.

(iii) **Category C.** Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.

(iv) **Category FI.** Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all Projects will result in insignificant impacts.

9. **Environmental Management Plan.** An EMP which addresses the potential impacts and risks identified by the environmental assessment shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the Project's impact and risks.

10. **Public Disclosure.** SIPMIU will post the following safeguard documents on its website so affected people, other stakeholders, and the general public can provide meaningful inputs into the project design and implementation:

(i) For environmental category A projects, draft EIA report at least 120 days before Board consideration;

(ii) Final or updated EIA and/or IEE upon receipt; and

(iii) Environmental Monitoring Reports submitted by SIPMIU during project implementation upon receipt.

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B. PROJECT PROFILE

Type, Category and Need

11. **Type.** This is a solid waste management subproject intended to improve the current situation in Shillong in terms of providing a disposal area, improving the collection system, and raising the awareness of the community of their responsibility to place their waste at collection points, and to segregate waste that is suitable for recycling.

12. **Category.** Environmental examination indicates the proposed subproject falls within ADB's environmental Category B projects. The Project components will only have small-scale, localized impacts on the environment, and can be mitigated. Under ADB procedures such projects require an IEE to identify and mitigate the impacts, and to determine whether further study or a more detailed EIA may be required.

13. **Need.**The subproject is needed because the present solid waste infrastructure in Shillong is inadequate for the needs of the growing population. There are too few collection points and people deposit their solid waste on open grounds where it creates unhealthy environment and produces health hazard. Although the municipality collects the waste from these areas periodically, the service is not systematic. Similarly for the final disposal of the waste generated by the city, although there is a 100 TPD compost plant in operation, there is no systematic and scientific way for the final disposal of the rejects from the compost plant.

14. The primary objective of the subproject is to adopt sanitary landfilling for ultimate disposal of the rejects from the compost plant as per Municipal Solid Waste (Management and Handling) Rule (MSW Rules) (2000) and the Solid Waste Management Rules 2016 in the interests of health and economic well being of the people of Shillong.

Location and Implementation Schedule

15. The subproject site is located on a vacant land within the existing landfill site at Marten about 8 km outside Shillong city.

16. Although implementation was originally scheduled to start from 2010-2011, actual implementation could only start during March 2012. The original completion period for the work was 18 months. However, due to change in design and quantum of work, the completion period was expected to be completed by April 2017. The change of design includes changes from masonry wall to RCC counterfort wall for more stability and increase of capacity by 27000 cubic meters. Water table is not available at 100 meters so drilling depth has been increased to 248 meters. The contractor was unable to complete the task within the

stipulated period and has been terminated due to non-performance. Fresh contractor B.D. Marbaniang has been selected for completion of remaining work of Tranche I.

Description of the Subproject

1. Existing Solid Waste Management

17. **Management.** Solid Waste Management is managed by three different authorities for each town and village viz. (i) the Shillong Municipal Board (SMB) within the municipal area (ii) the Dorbars, outside the municipal area, and (iii) The Shillong Cantonment Board, within the cantonment area. The Meghalaya Government oversees all solid waste management in GSPA.

(i) Shillong Municipal Board – The SMB is responsible for collection transportation and disposal of solid waste generated in Shillong city. The area covered by SMB is 10.25 square kilometers (km^2). The Chief Executive Officer looks after the administration of SMB.

(ii) The Dorbars – The 10 census towns of Shillong Urban Agglomeration (SUA) include Mawlai, Nongthymmai, Madanryting, Pynthorumkhrah, Nongmynsong, Mawpat, Umpling, Nongkseh, Umlyngka and Lawsohtun. Each town is divided into a number of Dorbar Shnongs and each Dorbar Shnong has a Headman. The Dorbar Shnong looks after the collection and transportation of solid waste generated in their respective localities.

(iii) Shillong Cantonment Board (SCB) - This is a military area covering 1.84 km^2. The solid waste generated in the Cantonment area is collected and transported, separately by cantonment vehicles. The Cantonment Executive Officer (CEO) looks after the administration of Shillong Cantonment Board (SCB).

18. **Waste Generation.** The solid waste generated in GSPA is 160 metric ton per day (MTD) with waste generation rate at 367 grams per capita per day in Shillong Urban Agglomeration (SUA) area and 270 grams per capita in the areas outside SUA but falling under GSPA. The major solid waste generation sources are households (56 %), markets (23 %), hotels & restaurants (7 %), construction waste (2 %), and street sweeping (7 %).

19. **Segregation.** Waste segregation is not practiced earlier in Shillong. The absence of segregation poses problems to the operation of the existing compost plant in Marten dumpsite. However, waste segregation at source have started on July 2015 in a few localities of Shillong Municipal Board with the initiative of the NERCCDIP Project. Now almost all the

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localities under SMB have started segregation at source with an overall success of around 65 %.segregation

20. However, as far as bio-medical waste is concerned, the system adopted by SMB is found to be satisfactory. The bio-medical waste is collected by a van designed for this purpose and the waste is disposed off at incinerator, installed at Marten dumpsite.

21. **Collection and Transportation System.** The Health and Conservancy Department (HCD) of SMB looks after the work of collection and transportation of solid waste generated within the SMB.

22. House-to-house collection is at present in existence in a few localities only. There are about 28 vehicles which would stop on particular location on the side of the road at a particular time and the households and shops handover the waste to these vehicles. Some of the vehicles are more than 10 years old and need urgent replacement. The SMB vehicles collects only from SMB area which generates about 70 MTD of waste out of the total generation of 160 MTD from GSPA SMB has provided 11 trucks, 3 compactors and 9 primary collection vehicles. 257 road sweepers, 5 conservancy supervisors, 6 sanitary inspectors and a chief medical and health officer. As per the SMB, there are 105 dustbins within the area of 10.8 sq. km. However, due to less coverage and delay of collecting vehicles, many households keep their waste on the streets, and dogs scatter theses waste on the roads and create unhygienic, unhealthy conditions.

23. **Disposal.** The collected wastes are disposed at a disposal site located in Marten, located about 8 km from the city. A 100 TPD compost Plant is in operation in the same site. The disposal site has been in existence since 1938. To improve the practice of dumping of rejects from the compost plant at the existing site and to comply with the requirements of MSW Rules, the component funded under NERCCDIP Tranche I is construction of an engineered landfill and associated infrastructures (leachate collection facilities, environmental protection measures etc.) in a portion of the site covering an area of 6500 sqm in Tranche-1.. The bid evaluation report for all the works under Tranche I has been approved by ADB on 12th March 2010 and the approval for issuance of acceptance letter for successful bidders has been issued on 1st April 2010. The actual work has started from March 2012.

24. A compost plant with a capacity of 100 MTD was constructed in the Marten dumpsite in 2002. It is currently proposed for rehabilitation and expansion to 170 MTD capacity by the private operator who has been operating this plant on private-public partnership basis. An average residual waste for disposal is estimated to be 50 to 60 MTD.

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2. Subproject Component

25. The subproject covers construction of a short-term sanitary landfill site with associated works over an area of 6500 sqm at Marten and as detailed in Table-1 below.

Table 1: Shillong Solid Waste Management Subproject Components

Component	Location	Function	Description	Remarks	
(i) Civil Works					
Development of emergency sanitary landfill measuring 6,500 m^2		Marten, Mawlai	Final disposal of the rejects/ inert materials of the waste collected from the city.	It is proposed to develop a sanitary landfill for an area of 6,500 sqm in Tranche – 1	No land acquisition required
Reinforced cement concrete (RCC) counterfort retaining wall		Marten, Mawlai	To protect the waste from sliding.	Height of retaining wall varies between 7.5 Mtr To 12.5 mtr	
Leachate holding and treatment system	Marten, Mawlai	To treat the leachate collected from the landfill area.	Capacity of the leachate holding tank and material proposed.		All required clearances and approvals obtained for 15,000 m^2 emergency landfill site including 6500 m^2.
Concrete drains for surface run off	Marten, Mawlai	As surface drains	250X250 (L= 150 meter)		
Approach Road	Marten Mawlai	Access	Length of approach road is 583 meter and width 3.5		
Construction of leachate holding	Marten Mawlai	Collection of leachate	1 No.		
Tube well with pumping main and pump set	Marten Mawlai	Water supply for maintenance and monitoring of ground water.	248m deep		
Construction of ground level service reservoir	Marten Mawlai	Storage of water for maintenance	1 lakh litres capacity (1no)		

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Table 2: Progress of work till date

Component and Location	Scheduled Start and Completion dates	Actual and targeted Physical and Financial Progress Remarks
(i) Civil Works		
Development of emergency sanitary landfill measuring 6,500 m^2 at Marten Mawlai.	March-2012 Revised completion April 2017	50.43% progress was achieved at the time of termination of contract. Contractor for Balance work has achieved 24.82% while financial progress is 23.21%

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II. ENVIRONMENT ASSESSMENT& REVIEW FRAMEWORK

A. ENVIRONMENT LEGAL REQUIREMENT

EIA Notification (2006)

26. The Government of India's EIA Notification of 2006 (replacing the EIA Notification of 1994), sets out the requirement for environmental assessment in India. This states that Environmental Clearance is required for specified activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts.

27. Category A projects requires Environmental Clearance from the National Ministry of Environment and Forests (MOEF). The proponent is required to provide preliminary details of the project in the form of a Notification, after which an Expert Appraisal Committee (EAC) of the MOEF prepares comprehensive Terms of Reference (TOR) for the EIA study, which are finalized within 60 days. On completion of the study and review of the report by the EAC, MOEF considers the recommendation of the EAC and provides the Environmental Clearance if appropriate.

28. Category B projects require environmental clearance from the State Environment Impact Assessment Authority (SEIAA). The State level EAC categorizes the project as either B1 (requiring EIA study) or B2 (no EIA study), and prepares TOR for B1 projects within 60 days. On completion of the study and review of the report by the EAC, the SEIAA issues the Environmental Clearance based on the EAC recommendation. The Notification also provides that any project or activity classified as category B will be treated as category A if it is located in whole or in part within 10 km from the boundary of protected areas, notified areas or inter-state or international boundaries.

29. The only type of infrastructure provided by the NERCCDIP that is specified in the EIA Notification is solid waste management.[1]

30. The Environmental Clearance has been received from SEIAA on 14th August 2009 for proposed landfill site at Marten dumpsite developed under Tranche 1.

[1] Per EIA Notification (2006) and also Annex 1 of the Project's Environmental Assessment and Review Framework, EC is required for preparation of land by the project management except for securing the land.

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Water (Prevention and Control of Pollution) Act (1974)

31. Any component of urban infrastructure project having potential to generate sewage or trade effluent will come under the purview of the Water (Prevention and Control of Pollution) Act, 1974. Such projects have to obtain Consent for Establishment (CFE) under Section 25 of the Act from Meghalaya State Pollution Control Board before starting implementation and Consent to Operate (CTO) before commissioning. The Water Act also requires the occupier of such subprojects to take measures for abating the possible pollution of receiving water bodies.

32. The CFE for the proposed landfill at Marten dumpsite to be developed under Tranche I has been received from MSPCB on 26th November 2009 with validity till October 2010 which is further is extended by MSPCB till 31st October 2017.

Air (Prevention and Control of Pollution) Act (1981)

33. The subprojects having potential to emit air pollutants into the atmosphere have to obtain (CTE under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 from Meghalaya State Pollution Control Board before starting implementation and CTO before commissioning the project. The occupier of the project/facility has the responsibility to adopt necessary air pollution control measures for abating air pollution. If stone crushers, generators and other air pollution sources are to be established as part of the subproject, they will fall under the purview of the Air Act.

Municipal Solid Waste (Management and Handling) Rules (2000)

34. The Government of India notified Municipal Solid Waste (Management and Handling) Rules (2000) in exercise of the powers conferred by Sections 3, 6 and 25 of the Environment (Protection) Act (1986) with the objective of regulating the management and handling of the municipal solid waste. Under the Rules, the municipal authority is required to take all steps to ensure that the municipal solid wastes generated in their jurisdiction are handled and disposed of without causing any adverse impact on human health or environment. This subproject is required to obtain authorization for setting up waste processing and disposal facility (including landfills) from Meghalaya State Pollution Control Board.

Forest Legislation

35. Forest legislation in India dates back to enactment of the Indian Forest Act, 1927. This Act empowers the State Government to declare “any forest land or waste-land, which is the property of Government or over which the Government has proprietary rights or to the whole or any part of the forest produce of which the Government is entitled”, a reserved forest or

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protected forest. The State Government may assign to any village-community the rights of Government over a reserved forest - those are called village-forests. Act also allows Government control over forest and lands not being the property of Government.

36. Acts like clearing or break up of any land for cultivation or for any other purpose, damage to vegetation/trees and quarrying or removing any forest produce from reserved forest is prohibited. All these are also applicable to village-forests. For protected forests, with the provision of the Act, the State Government makes rules to regulate activities like cutting of trees and removal of forest produce, clearing or breaking up of land for cultivation or any other purpose, and for protection and management of any portion of protected forest.

37. The Government of India's Forest (Conservation) Act, 1980 (amended in 1988) restricts the deforestation of forests for use of non-forest purposes. According to the Act, State Government requires prior approval of the Government of India for the use of forest land for non-forest purposes (means the breaking up or clearing of any forest land) or for assigning least to any private person or agency not controlled by government. The Forest (Conservation) Rules, 2003 issued under this Act, provide specific procedures to be followed for conversion of forest land for non-forest purposes.

38. Conversion of forest lands that are part of National Parks/Sanctuaries and Tiger Reserve areas (notified under Indian Wildlife [Protection] Act, 1972) is not permitted. In exceptional case, the State Government requires consent of the Indian Board of Wildlife for obtaining approval of the State Legislature for de-notification of the area as a sanctuary.

39. Cutting of trees in non-forest land, irrespective of land ownership, also requires permission from the Meghalaya Forest and Environment Department (MFED). Afforestation to the extent of two trees per each tree felled is mandatory. The SMB with the assistance of the State Government has made a payment of INR 78,76,400/- to the State Forest Department for compulsory afforestation and net present value as per directive of the Govt. of India.

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Table 2: Present status of environment& forest and other clearances

Town	Work Package	Applicable Legislation/ Type Of Clearance	Clearance Given By And Date	Subject/ Issue	Remark/ Action Needed
SHILLONG	Tranche I SWM Landfill site	EIA Notification 2006	SEIAA, Meghalaya14 August 2009	Environmental Clearance	Already received and valid till end of the project.
		Forest Conservation Act 1980	MOEF 21 November 2011	Forest Clearance	Already received and valid till end of the forest
		Air Act 1981 and Water Act 1974	Meghalaya PCB 26 November 2009	Consent To Establish (CTE)	Already received and valid.

C. COMPLIANCE ON ENVIRONMENTAL LOAN COVENENTS

40. The Environment Loan Covenants under NERCCDIP requires the design, construction, operation and implementation of all sub-project facilities is carried out in accordance with the environmental assessment and review procedures and Initial Environmental Examinations (IEEs) for core sub-components agreed upon between the Government and ADB, and complies with the Government's environmental laws and regulations and ADB's Environment Policy (2002). Any adverse environmental impacts arising from the construction, operation and implementation of sub-component facilities will be minimized by implementing the environmental mitigation and management measures, and other recommendations specified in environmental assessment reports (e.g., IEEs). The Government will ensure environmental requirements will be incorporated in bidding documents and civil works contracts. . Issuance of bid documents will be made after review and clearance of IEE/EIA by ADB and SEIAA or MOEF. SIPMIU/DSMC will prepare and submit semi-annual report to ADB an environmental monitoring report that describes progress in implementation of the EMP and EARP and issues encountered and measures adopted; and compliance with the relevant assurances and loan covenants.

41. The sub project in Shillong is categorized as "B" and accordingly an IEE report has been prepared. The IEE maps the potential environmental impacts and mitigation measures and also specifies an environmental budget for environmental mitigation measures, monitoring requirements and capacity building at various stages of project implementation. IEE was made a part of the bidding document. In view of the fact that the actual implementation of the sub project has started in March 2012. The details of compliance with the environmental loan covenants are reflected in following Table-3.

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Table 3: Compliance of Environmental Loan Covenants

Project Specific Covenants	Status/Issues
Preparation of IEE	Prepared and uploaded in SIPMIU website http://sipmiu.nic.in/iee_report.html
Environmental Management Plan	Part of IEE report
Environmental budget	Part of IEE report
IEE to be part of bidding document	Incorporated
Semi-annual environmental monitoring report	To be submitted in January 2017.

D. ENVIRONMENTAL ORGANISATION AND MANAGEMENT

1. Details of Environmental cells setup in SIPMIU and DSMC

42. An Environmental Expert with intermittent input has been provided in DSMC with assistance being provided by an Engineering Assistant. SIPMIU has posted an Assistant Environmental expert being assisted by an administrative staff.

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1.	**Sri Biswajit Dutta**	**Project Director**	---	b_dutta59@yahoo.co.in
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3.	**Shri. L. C. J. Lyngdoh**	**Assistant Environment Specialist, SIPMIU**	9774591279	carrylaw85@gmail.com
4.	**Prasad Joshi**	**Deputy Team Leader**	9402197676	prasad.joshi@mottmac.com
5.	**Anjay Kumar**	**Environmental Specialist, DSMC**	9313329631	anjay.kumar@mottmac.com

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2. Responsibilities for supervision of environmental matters

43. To ensure proper compliance of environmental safeguards, the Environmental Experts of DSMC and Environmental Officer SIPMIU monitors environmental matters and reports to the Project Manager who advises the Project Director.

3. Responsible for carrying out mitigation measures

44. During construction stage, implementation of mitigation measures is the construction contractor's responsibility while during operation stage, Government will decide agency that will be responsible for of maintenance or repair works after completion of construction and start of operation of Landfill.

45. To ensure implementation of mitigation measures during the construction period, contract clauses for environmental provisions will be part of the civil works contracts. Contractors' conformity with contract procedures and specifications during construction will be carefully monitored by SIPMIU and DSMC.

4. Responsible for carrying out monitoring measures

46. During construction, Environmental Specialist (ES) of DSMC and the Assistant Environmental Specialist (AES) of SIPMIU will monitor the construction contractor's environmental performance.

47. During the operation stage, monitoring will be the responsibility of an operator appointed by authority as well as Meghalaya Pollution Control Board.

5. Responsible for reporting

48. DSMC will submit periodic monitoring and implementation reports to SIPMIU, who will take follow-up actions, if necessary. SIPMIU will submit monitoring reports to the PD who will then submit to ADB. SIPMIU will also prepare semi-annual monitoring reports for IPCC and assist IPCC in preparing an semi-annual monitoring report to ADB. The annual report is to focus on the progress of implementation of the EMP and EARP and issues encountered and measures adopted, follow-up actions required, if any, as well as the status of Program compliance with subproject selection criteria, and relevant loan covenants. IPCC will seek clearance for submission and disclosure of the annual environmental monitoring report to ADB.

6. Third Party Agency for EMP

49. No Third Party Agency has been engaged.

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7. GRIEVANCE REDRESS MECHANISM

50. Grievance redressal is being handled by SIPMIU. Grievances not redressed by the SIPMIU will be brought to the Independent Grievance Redress Committee (IGRC) set up to monitor project implementation in Shillong. The IGRC, is chaired by Principal Secretary, Urban Affair Department with representatives from the ULB, state government agencies, community-based organizations (CBOs) and NGOs. The IGRC will determine the merit of each grievance, and resolve grievances within 10 days of receiving the complaint. Grievance not redressed by the IGRC will be referred to the appropriate courts of law. The DSMC will keep records of all grievances received including: contact details of complainant, date that the complaint was received, nature of grievance, agreed corrective actions and the date these were effected, and final outcome. The grievance redress process is shown in Annexure-2.

51. There have been no complaints or grievance reported on the sub project till date.

52. All costs involved in resolving the complaints will be borne by the SIPMIU. The IGRCs will continue to function throughout the project duration.

III. EMP COMPLIANCE STATUS

53. Following Table 4 reflects the requirement and status of implementation of the Environmental Management Plan.

Table 4: Compliance with Environmental Monitoring Plan

Description of Impact	Monitoring of Mitigation	Frequency of Monitoring	Monitoring Conducted by	Compliance Status
Top soil conservation & Adequate Drainage arrangements within / around the disposal site	Stockpiles of earth not to be higher than 2 and side slopes shall not be more than 1:2. Proper Drainage arrangements to prevent any water logging within / around the site especially in the area around the leachate pits.	Quarterly verification with site activities	DSMC / SIPMIU	Complied. Steps are being taken for conservation of soil.
Sources of Materials	Construction Contractor documentation	Quarterly submission for construction contractor As needed for DSMC	DSMC / SIPMIU	Complied. Material being sourced from the local market.
Air Quality	(i) Location of stockpiles; (ii) complaints from	Twice a year for checking	Contractor/ DSMC /	Complied. Meghalaya Pollution

Description of Impact	Monitoring of Mitigation	Frequency of Monitoring	Monitoring Conducted by	Compliance Status
	sensitive receptors; (iii) heavy equipment and machinery with air pollution control devices; (iv) ambient air for respirable particulate matter (RPM) and suspended particulate matter (SPM); (v) vehicular emissions such as sulphur dioxide (SO2), nitrous oxides (NOx), carbon monoxide (CO), and hydrocarbons (HC)	records	SIPMIU	Control Board has conducted the Ambient Air Quality Testing in the month of January 2016 its results are given in **Annexure 5**.
Surface Water Quality	(i) Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) number of silt traps installed along drainages leading to water bodies; (iii) records of surface water quality inspection; (iv) effectiveness of water management measures; (v) for inland water: suspended solids, oil and grease, biological oxygen demand (BOD), and coliforms.	Thrice a year	Contractor/ DSMC/SIPMIU	Complied. No such instances found on the site. Meghalaya Pollution Control Board has collected samples in the month of January 2016 its results are given in **Annexure 5**.
Noise Levels	(i) Complaints from sensitive receptors; (ii) use of silencers in noise-producing equipment and sound barriers; (iii) Equivalent day and night time noise levels	Twice a year	Contractor/ DSMC/ SIPMIU	Complied. Meghalaya Pollution Control Board has conducted of Environmental Monitoring in the month of January 2016 its results are given in **Annexure 5**.
Landscape and Aesthetics	i) Waste Management Plan; (ii) complaints from sensitive receptors; (iii) SIPMIU/DSMC to report in writing that the necessary	Quarterly	DSMC/ SIPMIU	Complied. There is no sensitive receptor at the construction site.
Socio-Economic - Employment	(i) Employment records; (ii) records of sources of materials	Quarterly	DSMC/ SIPMIU	Complied. All laborers are from the local area.
Occupational Health and	(i) Site-specific Health and Safety (H&SH&S)	Quarterly	Contractor/ DSMC/	

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Description of Impact	Monitoring of Mitigation	Frequency of Monitoring	Monitoring Conducted by	Compliance Status
Safety	Plan; (ii) Equipped first-aid stations; (iii) Medical insurance coverage for workers; (iv) Number of accidents; (v) Supplies of potable drinking water; (vi) Clean eating areas where workers are not exposed to hazardous or noxious substances; (vii) record of H&SH&S orientation trainings (viii) personal protective equipment; (ix) % of moving equipment outfitted with audible back-up alarms; (x) sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal.		SIPMIU	
Community Health and Safety	(i) Traffic Management Plan; (ii) complaints from sensitive receptors	Quarterly	Contractor/ DSMC/ SIPMIU	Complied. There is no intervention from any community with the project. While local community has complains about the odor from existing landfill operation. While mitigation measure as spray of biological de-odorizer is being explored to mitigate the odour problem.
Quarry Sites and Borrow Pits	i) List of approved quarry sites and borrow pits; (ii) SIPMIU/DSMC report in writing that all necessary environmental restoration work has	Quarterly		Complied. Materials are procured from the local market. So, there is no borrow

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Description of Impact	Monitoring of Mitigation	Frequency of Monitoring	Monitoring Conducted by	Compliance Status
	been adequately performed before acceptance of work.			pits and quarry site.
Work Camps	(i) Complaints from sensitive receptors; (ii) water and sanitation facilities for employees; and (iii) SIPMIU/DSMC report in writing that the camp has been vacated and restored to pre-project conditions	Quarterly	Contractor/ DSMC / SIPMIU	Labour camp has not been constructed but sheds for day time rest and shelter during rainfall has been provided.

OBSERVATION RECOMMENDATION AND ACTION TAKEN

54. The work under the sub project has started in March 2012 and expected completion was April 2017. The new contractor began his work on April 2016 .

55. The facility like drinking water, toilets, houses for rainfall shelters with first aid facility and fire extinguishers have been provided at the site.

56. The excavated soil was transported to a privately owned land situated near the National Highway which being used by the landowner themselves for levelling their land. Some part of the excavated soil is used as back fill at the construction site of Garage cum workshop. Photographs are given in the Annexure-4.

Ambient Air Quality

57. Ambient Air Quality monitoring is being conducted at 2 locations. Meghalaya State Pollution Control Board has been engaged in compliance to the conditions of Environmental Clearance granted by the state level Environmental Impact Appraisal Committee. Particulate Matter (PM_{10}), SO_2, NO_x parameters have been selected for monitoring by MSPCB.

58. Ambient Air Quality monitoring at the landfill site was conducted on 28 January 2016. The concentration of Particulate Matter (PM_{10}) is well within the permissible limit of 100 µg/m^3. The 24 hour average concentration is 31.4 µg/m^3 near proposed Garage-cum-workshop area and 61.6 µg/m^3 near Emergency landfill site.

59. Comparing to the baseline condition of Particulate matter (PM_{10}) which varies from 42.1 to 53.3 µg/m^3 in the summer season of May and June 2010 and samples collected at the backside and middle of landfill site. While the construction stage monitoring results is acceptable comparing to the baseline condition..

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60. The concentration of sulphur dioxide and oxides of nitrogen are also well within the permissible limit of 80 microgram per cubic meter. The 24 hour average observed concentration of sulphur dioxide (SO_2) is 2 µg/m^3.

61. Comparing to the baseline condition of sulphur dioxide of concentration varies from 2 to 6.2 microgram per cubic meters. While observed value of the construction time in January 2016, June 2014 and June 2015 is 2 µg/m^3. Oxides of nitrogen vary from 19.9 to 34.8 microgram per cubic meters in baseline condition while observed concentration during construction time is 10.1 in January 2016, 9.4 µg/m^3 in June 2014 and 8.9 µg/m^3 in June 2015.

Noise level

62. Noise level testing has been conducted at 2 locations first one near the emergency SLF site at the gate and second at near the proposed Garage-cum-workshop at SLF at Marten. The proposed construction site is surrounded by a reserved forest and encircled by the Guwahati-Shillong road National Highways on one side and on the other side lies the old Guwahati Shillong road.

63. The discussion being presented here are of sampling conducted in the month of January 2016, June 2015 and June 2014. Noise level presented in dB(A) of 24 hour sampling has been segregated in day and night time samples. The results have been compared with Ambient Noise Level under category of residential zone. While residential habitations are sufficiently away from the project site to get adverse impact. The noise recipients are the workers of the emergency landfill and construction workers only. The local habitations are not impacted due to noise generated from the construction activity at Emergency Landfill site of Mawiong. Although noise levels at the sampling site are beyond the limit specified for residential zone, the source of noise is traffic of national highways.

64. The ambient noise level near the construction site of RCC counterfort wall has been conducted on 28 January 2016, 11/12 June 2015 and 25/26 June 2014. The average of two years data of one day sampling of same season has been discussed here. The average day time noise level near emergency land fill site at Marten is 52.7 dB(A) while night time is 43.3 dB(A). The day time noise level is below the permissible limit specified for residential zone of 55dB(A) and also commercial area of 65 dB(A). The night time noise level is higher than permissible limit of residential zone of 45 dB(A) but lesser than commercial zone of 55 dB(A)

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Water Quality

65. Samples of all location have pH value, total dissolved solids (TDS), total suspended Solids (TSS), dissolved oxygen, Chlorides, Zinc. Total Hardness and nitrates are within the desirable limits or permissible limits. Heavy metals tested for Lead, Arsenic, Copper, Cadmium and Nickel are below detectible limits (BDL). The observed monitoring values are consistent with the baseline conditions observed in the 2010.

66. Water sampling conducted at three streams near Marten Landfill site. All the parameters are within the permissible limits specified in Water (Prevention and Pollution) Act 1974. The parameters are also consistent with baseline condition. It is assessed during the monitoring there is no impact on water environment due to construction work at the landfill site. The impact which is estimated is due to the operation of Landfill at Marten.

Leachate Testing

67. Marten landfill site is operating since 1938. It does not have leachate treatment facility and leachate collection system. Leachate sample has been collected from the bottom of the Landfill. The parameters tested for the untreated leachates are beyond the permissible limited but consistent with the baseline condition

68. Total Dissolved Solids (TDS) in leachate collected in January 2016, June 2015 and June 2014 are 18620, 17043 and 9870 mg/l. The permissible limit for disposal of leachate having TDS concentration as per Municipal Solid Waste (Management and Handling) Rule 2000 is 2100 mg/l. Disposal of such high concentration is neither safe for environment nor Municipal Solid Waste Rule 2000 allows.

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Annexure – 1: Environment Monitoring Team Details.

City: Shillong
Office Address: Urban Affairs Complex, Dhankheti, Shillong

Sl. No.	Officer's Name	Designation	Mobile No	Email Address
1.	Sri Biswajit Dutta	Project Director	---	b_dutta59@yahoo.co.in
2.	Shri. F. B. Chyne	Project Manager and Solid Waste Management Specialist, SIPMIU.	9436100719	f.b.chyne@gmail.com
3.	Shri. L. C. J. Lyngdoh	Assistant Environment Specialist, SIPMIU	9774591279	carrylaw85@gmail.com
4.	Shri Prasad Joshi	Deputy Team Leader, DSMC	9402197676	prasad.joshi@mottmac.com
5.	Anjay Kumar	Environmental Specialist, DSMC	9313329631	anjay.kumar@mottmac.com

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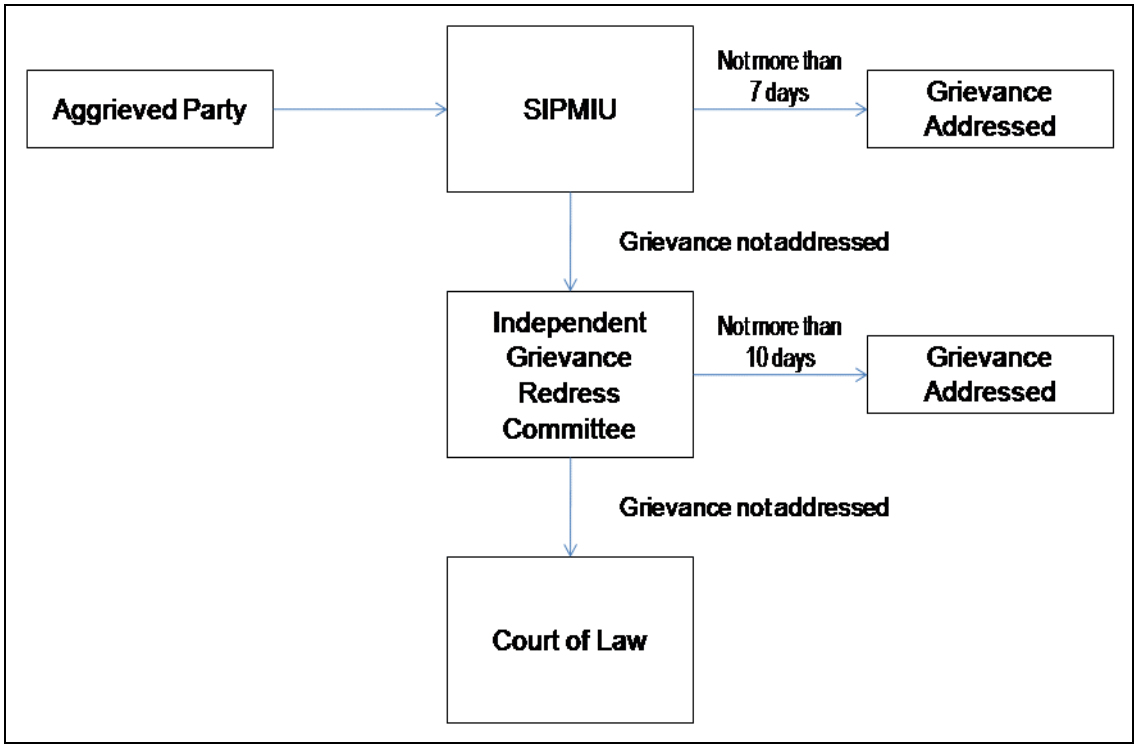
Annexure 2: Grievance Redress Mechanism



SIPMIU= State-level Investment Project Management and Implementation Unit.

Annexure 3: Contractor Environment Implementation Plan Requirements.

The contractor is required to ensure that the following activities are complied with during the construction period:

1. All the vehicles used for the construction shall comply with relevant environmental standard. Worker to be provided with PPE's like earplugs to minimize the health impacts. Construction in the night time to be restricted to the extent possible.
2. Re-use excavated material in this project wherever possible (eg bunds), Retain soil for covering waste when landfill is operating.
3. Remove waste soil for disposal as soon as it is excavated; Spray stockpiled soil and working areas in windy weather.
4. Conduct all excavation in the dry season.
5. Do not store toxic materials at or near the landfill site; include accident & spill prevention in Method Statement.
6. Contractor should employ at least 50% of workforce from communities in vicinity of work sites if possible.
7. Prepare and implement a site Health and Safety Plan that includes measures to: Exclude the public from all construction sites; Ensure that workers use Personal Protective Equipment; Provide Health & Safety Training for all personnel; Follow documented procedures for all site activities; Keep accident reports and records.
8. Regular water sprinkling to be ensured to minimize the impact. Worker to be provided with PPE's like dust masks.
9. The Design consideration will take care of temporary silt runoff due to construction. Silt fences will be used to mitigate siltation impacts.

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Annexure 4 – Project Photographs

Photo 1: Construction site of construction of RCC counterfort wall at Marten dated 11.12.2015

Photo 2: Drinking Water facility at construction work camp

Photo 3: First Aid box provided in the construction camp

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Photo 4 Gents Toilet facility at construction work camp

Photo 5: Ladies Toilet provided at the construction camp

Photo 6 Safety Signs along the old G S Road leading to Construction site.

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Photo – 7 – Air Quality Sample collection near Landfill site of Marten on June 2015

Photo 8 – Noise Samples collection at Marten on June 2015

Photo 9: Samples of Leachate collection from Marten Landfill Site

Photo 10: Water Sample collection at Marten Landfill Site

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Annexure – 5 – Environmental Testing Analysis and Results

Water Quality Testing

Last Water Sampling was also conducted at the same locations as done in January 2016 and compared with historic results. The concentration does not vary significantly. The results are given below.

SL No.	Parameters	Downstream 800 meters 28.01.2016	Downstream 800 meters 11.6.2015	Downstream 800 meters 25.6.2014	Middle Stream 200 meters 28.1.2016	Middle Stream 200 meters 11.6.2015	Middle Stream 200 meters 25.6.2014	Spring 1 km from landfill site 28.1.2016	Spring 1 km from landfill site 11.6.2015	Spring 1 km from landfill site 25.6.2014	Spring 100 meters 28.1.2016
1	pH	8.3	7.6	7.3	8.4	7.2	7.2	7	6	6.2	7.7
2	Total Dissolved Solids (TDS) (mg/l)	102	66	68	68	102	115	33	54	55	60
3	Total Suspended Solids (mg/l)	100	5	20	15	25	15	10	10	10	10
4	Chlorides (mg/l)	17	7	6	18	13	15	13	6	5	20
5	Total Hardness (CaCO3) (mg/l)	108	38	36	90	56	62	24	26	26	46
6	Sulphate (mg/l)	2	13.8	9.8	1	15.7	23.6	2.3	3.8	8.9	15.1
7	Nitrate (mg/l)	0.26	0.44	0.6	0.19	5.3	5.95	1.4	1.4	1.6	5
8	Dissolved Oxygen (mg/l)	7.9	4.8	7.5	7.3	6.2	7.1	5.8	6.6	7	8.5
9	Lead (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10	Chromium (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11	Zinc (mg/l)	0.05	BDL	0.06	0.05	BDL	BDL	0.04	BDL	0.06	0.08
12	Copper (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13	Cadmium (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14	Manganese (mg/l)	0.02	0.08		0.02	0.14		0.03	0.13		0.03
15	Nickel (mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16	Arsenic 9mg/l)	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

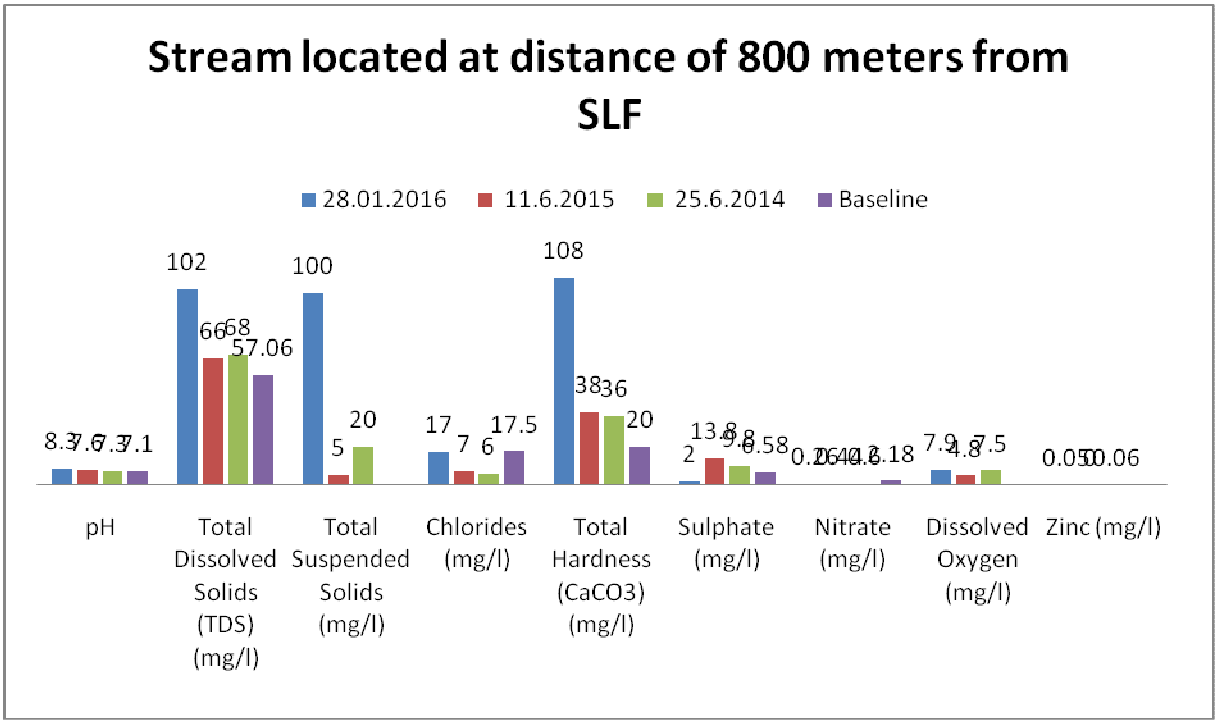
Water sampling conducted at three streams near Marten Landfill site. All the parameters are within the permissible limits specified in Water (Prevention and Pollution) Act 1974. The parameters are also consistent with baseline condition. It is assessed during the monitoring there is no impact on water environment due to construction work at the landfill site. The impact which is estimated is due to the operation of Landfill at Marten Mawiong. The analysis is given below.

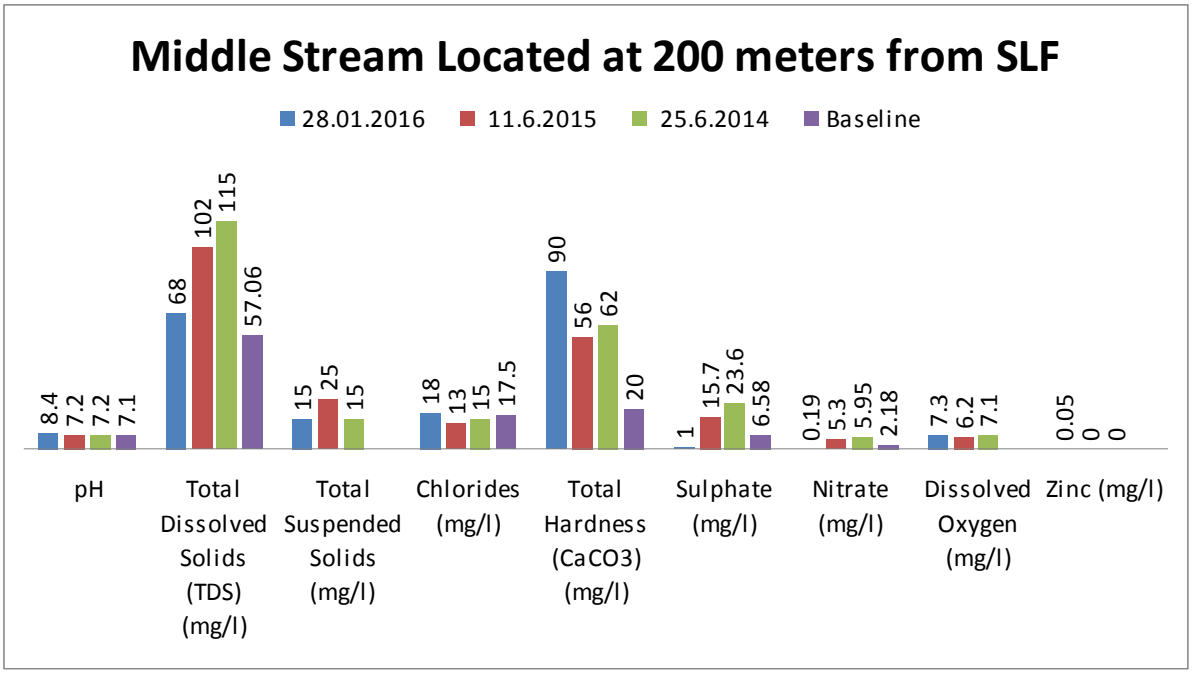
The trend of concentration of TDS, total hardness and Sulphates indicates the influence of landfill. The baseline condition shows that TDS, total hardness and Sulphates are 57.06 mg/l, 20 mg/l and 6.58 mg/l. Samples have been taken from different streams at different distances.

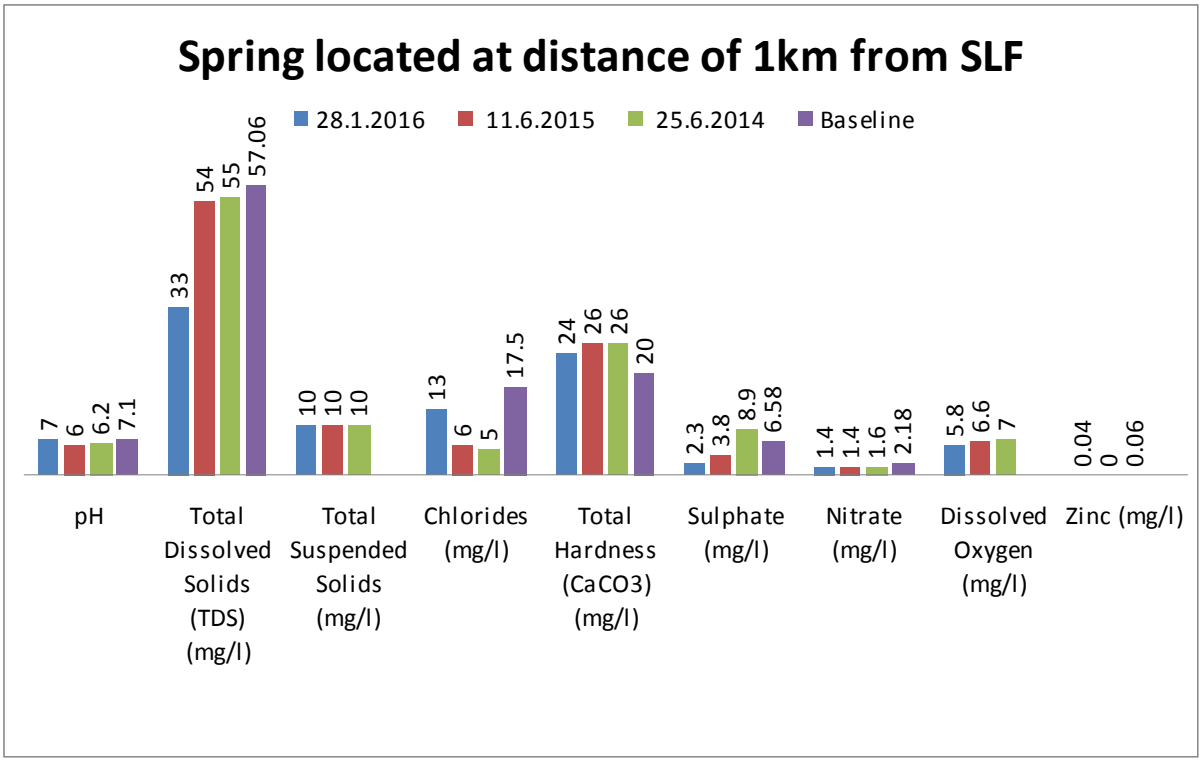
The value of TDS is highest in sample closest to Landfill at distance of 200 meter which is 102 and 115 mg/l in2016, 2015 and 2014. This decreases to 66 and 68 mg/l at distance of 800 meters from the landfill. TDS comes down to 54 and 55 mg/l in samples collected at a distance of 1 km.

Total Hardness is also highest in sample closest to Landfill at distance of 200 meter which is 56 and 62 mg/l in 2015 and 2014. This decreases to 38 and 36 mg/l at distance of 800 meters from landfill. It comes down to 33 mg/l in samples collected at a distance of 1 km.

Sulphate is also highest in sample closest to Landfill at distance of 200 meter which is 15.7 and 23.6 mg/l in 2015 and 2014. This decreases to 1 mg/l with increase of distance of 800 meters from landfill. It comes to the 3.8 and 8.9 mg/l in samples collected at a distance of 1 km.

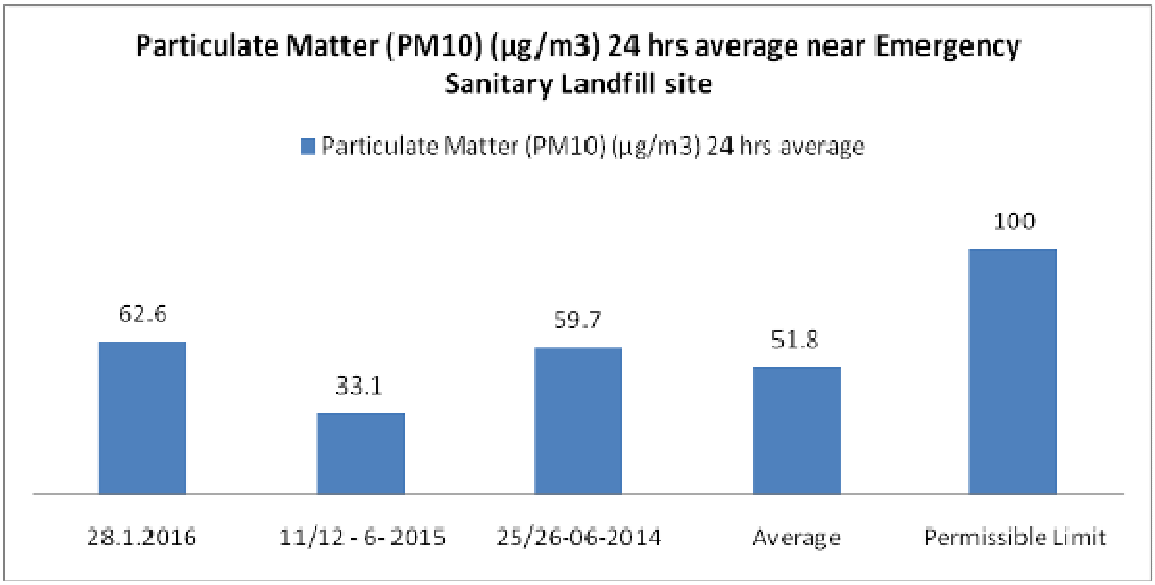


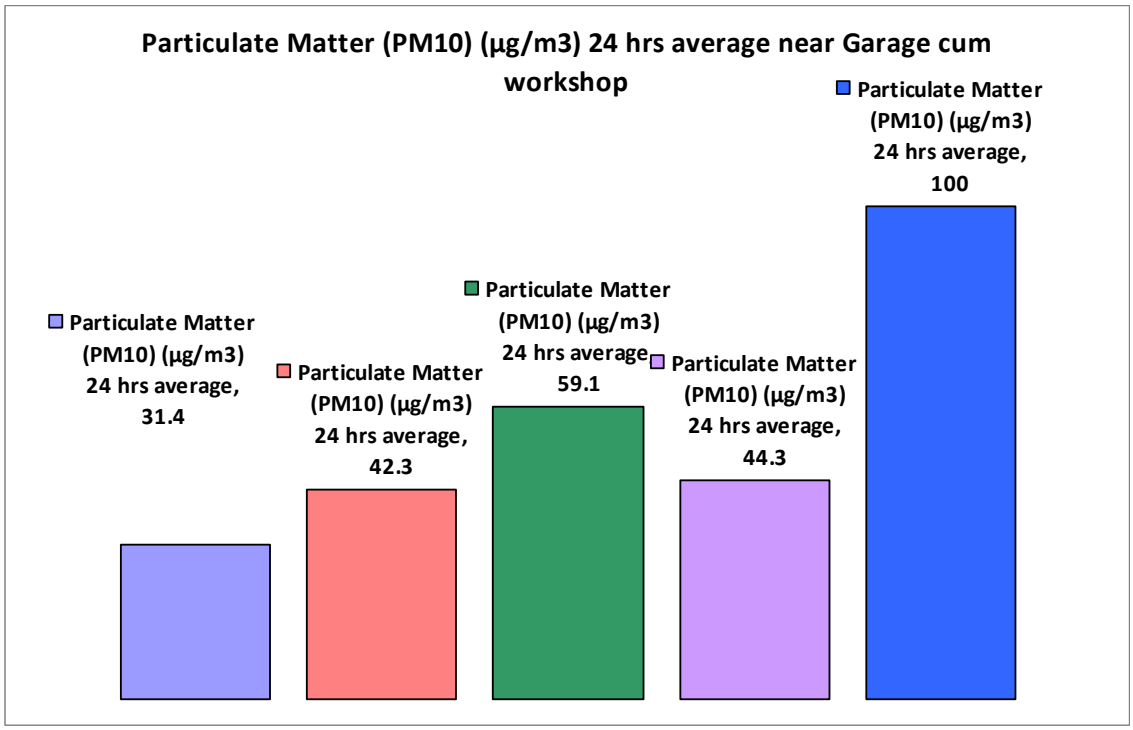

Middle Stream Located at 200 meters from SLF
28.01.2016
11.6.2015
25.6.2014
Baseline
8.4
7.2
7.2
7.1
68
102
115
57.06
15
25
15
18
13
15
17.5
90
56
62
20
1
15.7
23.6
6.58
0.19
5.3
5.95
2.18
7.3
6.2
7.1
0.05
0
0
pH
Total Dissolved Solids (TDS) (mg/l)
Total Suspended Solids (mg/l)
Chlorides (mg/l)
Total Hardness (CaCO3) (mg/l)
Sulphate (mg/l)
Nitrate (mg/l)
Dissolved Oxygen (mg/l)
Zinc (mg/l)


Spring located at distance of 1km from SLF
28.1.2016
11.6.2015
25.6.2014
Baseline
7
6
6.2
7.1
33
54
55
57.06
10
10
10
13
6
5
17.5
24
26
26
20
2.3
3.8
8.9
6.58
1.4
1.4
1.6
2.18
5.8
6.6
7
0.04
0
0.06
pH
Total Dissolved Solids (TDS) (mg/l)
Total Suspended Solids (mg/l)
Chlorides (mg/l)
Total Hardness (CaCO3) (mg/l)
Sulphate (mg/l)
Nitrate (mg/l)
Dissolved Oxygen (mg/l)
Zinc (mg/l)

.

Ambient Air Quality





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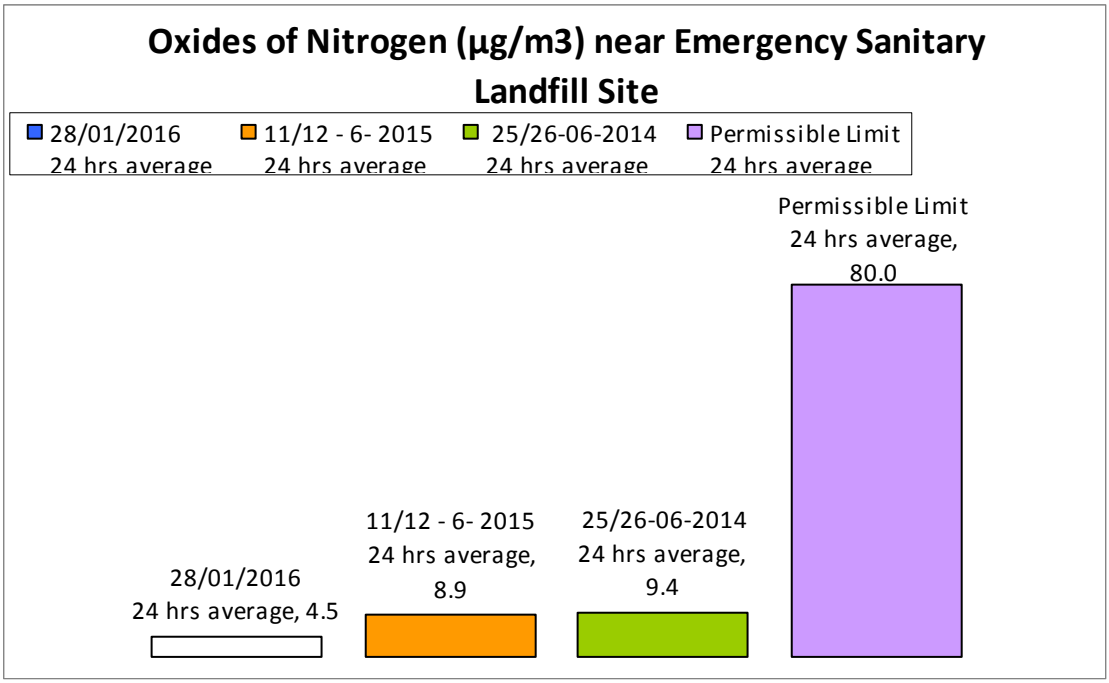
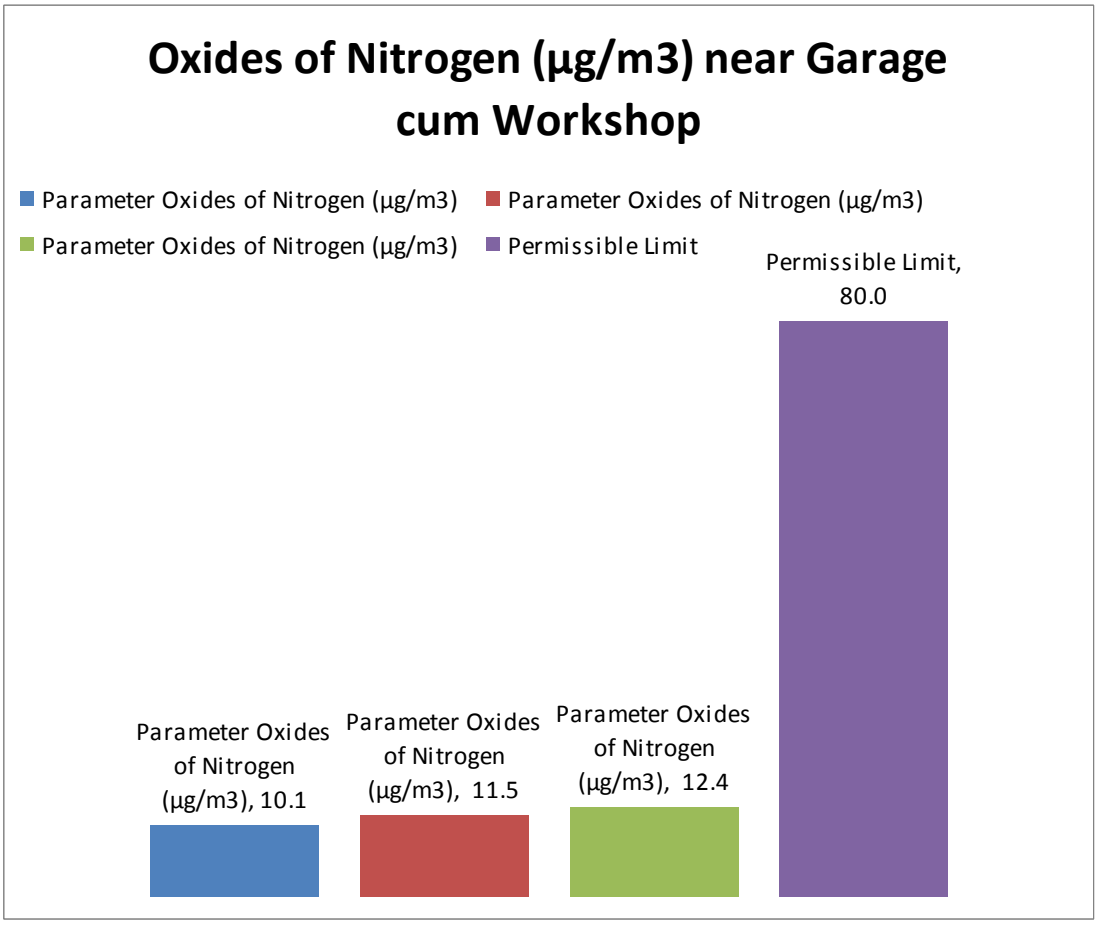
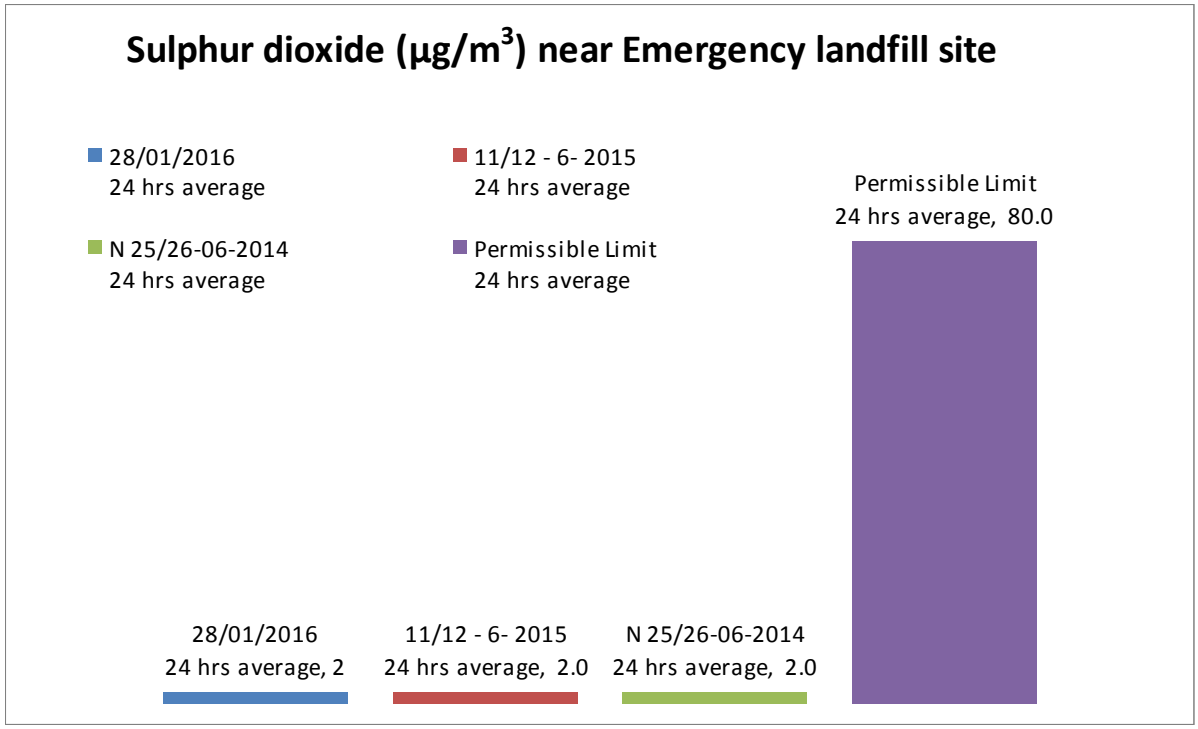
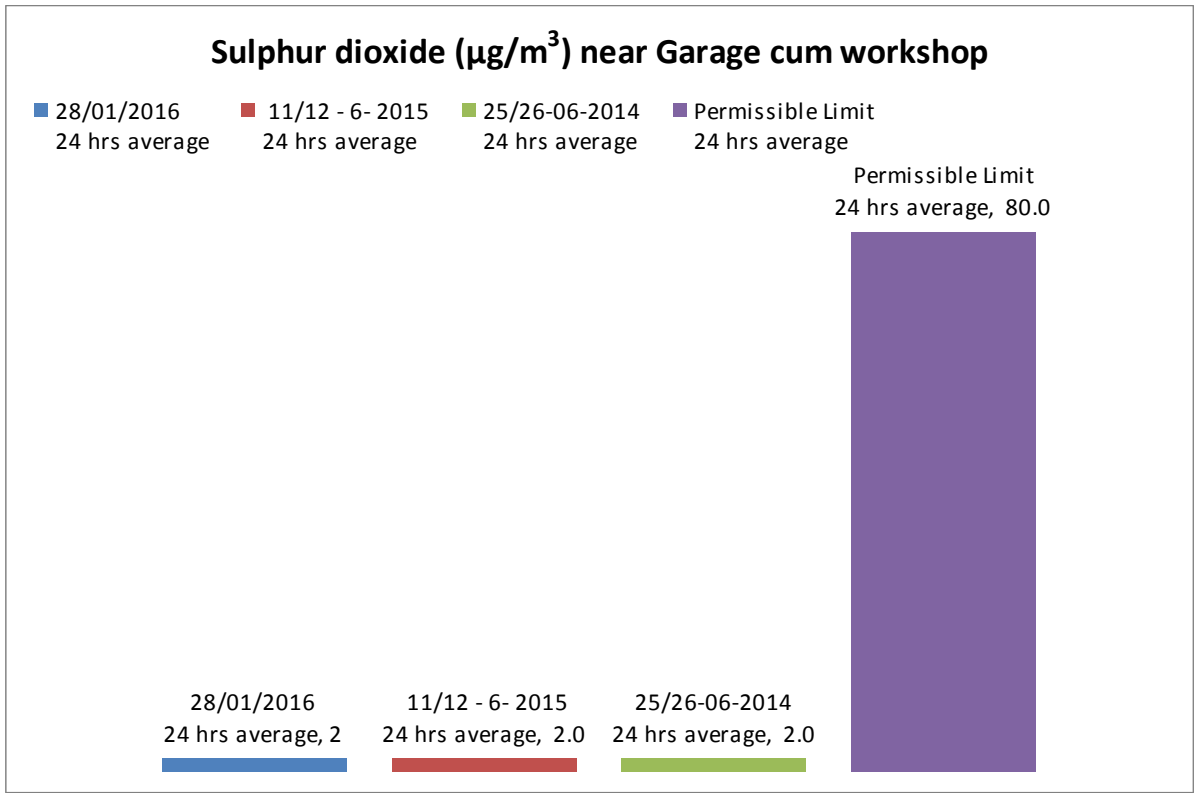

Oxides of Nitrogen (µg/m3) near Emergency Sanitary Landfill Site
28/01/2016 24 hrs average
11/12 - 6- 2015 24 hrs average
25/26-06-2014 24 hrs average
Permissible Limit 24 hrs average
Permissible Limit 24 hrs average, 80.0
11/12 - 6- 2015 24 hrs average, 8.9
25/26-06-2014 24 hrs average, 9.4
28/01/2016 24 hrs average, 4.5


Oxides of Nitrogen (µg/m3) near Garage cum Workshop
Parameter Oxides of Nitrogen (µg/m3)
Parameter Oxides of Nitrogen (µg/m3)
Parameter Oxides of Nitrogen (µg/m3)
Permissible Limit
Permissible Limit, 80.0
Parameter Oxides of Nitrogen (µg/m3), 10.1
Parameter Oxides of Nitrogen (µg/m3), 11.5
Parameter Oxides of Nitrogen (µg/m3), 12.4


Sulphur dioxide (µg/m3) near Emergency landfill site
28/01/2016
24 hrs average
11/12 - 6- 2015
24 hrs average
N 25/26-06-2014
24 hrs average
Permissible Limit
24 hrs average
Permissible Limit
24 hrs average, 80.0
28/01/2016
24 hrs average, 2
11/12 - 6- 2015
24 hrs average, 2.0
N 25/26-06-2014
24 hrs average, 2.0


Sulphur dioxide (µg/m3) near Garage cum workshop
28/01/2016
24 hrs average
11/12 - 6- 2015
24 hrs average
25/26-06-2014
24 hrs average
Permissible Limit
24 hrs average
Permissible Limit
24 hrs average, 80.0
28/01/2016
24 hrs average, 2
11/12 - 6- 2015
24 hrs average, 2.0
25/26-06-2014
24 hrs average, 2.0

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Noise Level Testing

69. Noise level testing has been conducted at 2 locations first one near the emergency SLF site at the gate and second at near the proposed Garage-cum-workshop at SLF at Mawiong. The proposed construction site is surrounded by reserved forest and encircled by road. Onside is Shillong Guwahati National Highways and other side is old Shillong Guwahati road.

70. The discussion being presented here are of sampling conducted in the month of January 2016, June 2015 and June 2014. Noise level presented in dB(A) of 24 hour sampling has been segregated in day and night time samples. The results have been compared with Ambient Noise Level under category of residential zone. While residential habitations are sufficiently away from the project site to get adverse impact. The noise recipients are the workers of the emergency landfill and construction workers only. The local habitations are not impacted due to noise generated from the construction activity at Emergency Landfill site of Mawiong. Although noise levels at the sampling site are beyond the limit specified for residential zone, the source of noise is traffic from the National highway.

71. The ambient noise level near the construction site of RCC counterfort wall has been conducted on 28 January, 11/12 June 2015 and 25/26 June 2014. The average of three years data of one day sampling of same season has been discussed here. The average day time noise level near emergency land fill site at Marten is 52.72 dB (A) while night time is 43.30 dB (A) if odd value of 2014 is excluded otherwise it is 53.82 dB (A). The day time noise level is below the permissible limit specified for residential zone of 55 dB(A) and also commercial area of 65 dB(A). The night time noise level is higher than permissible limit of residential zone of 45 dB(A) but lesser than commercial zone of 55 dB(A)

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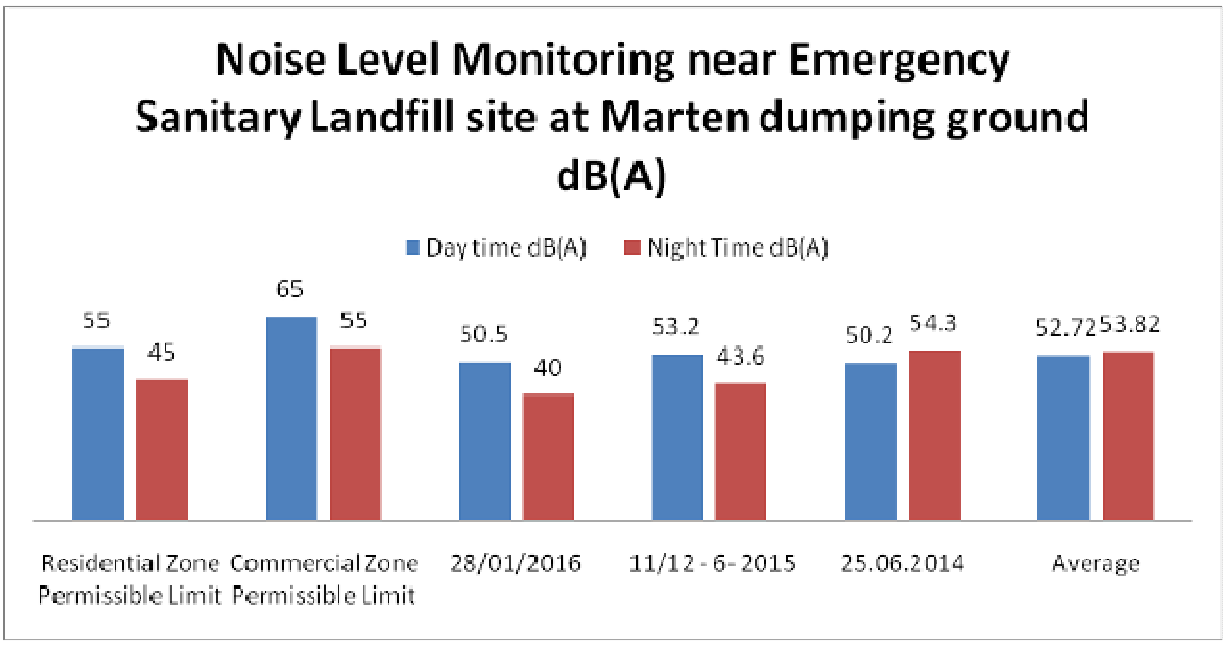
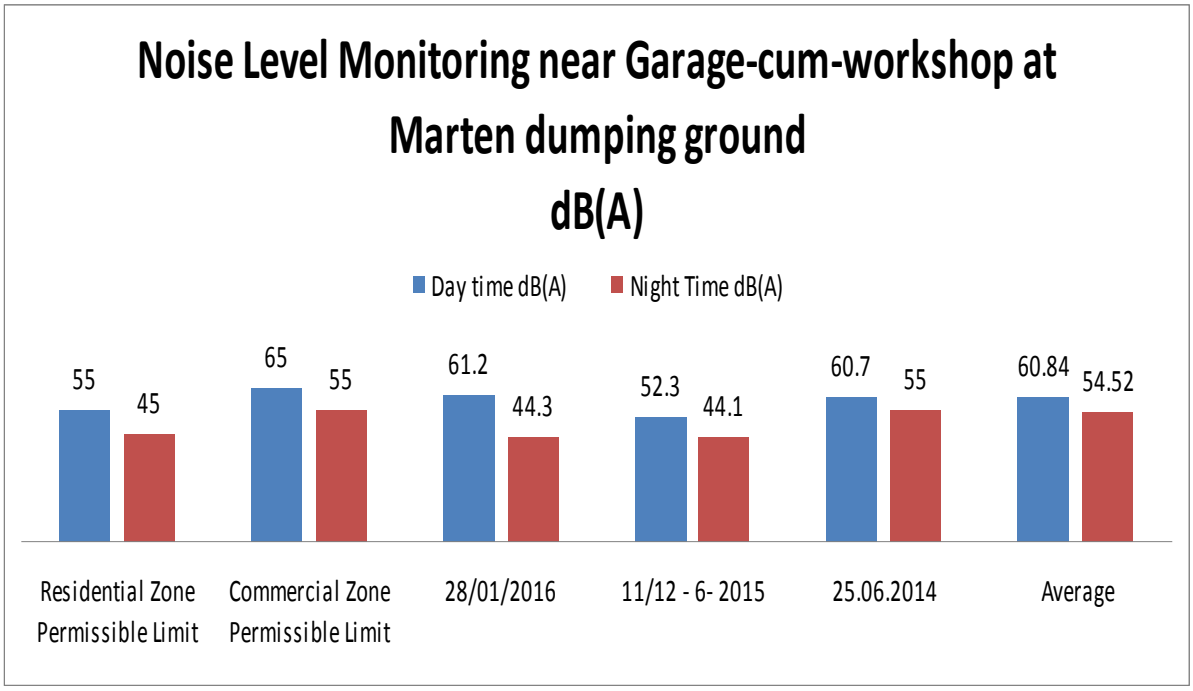
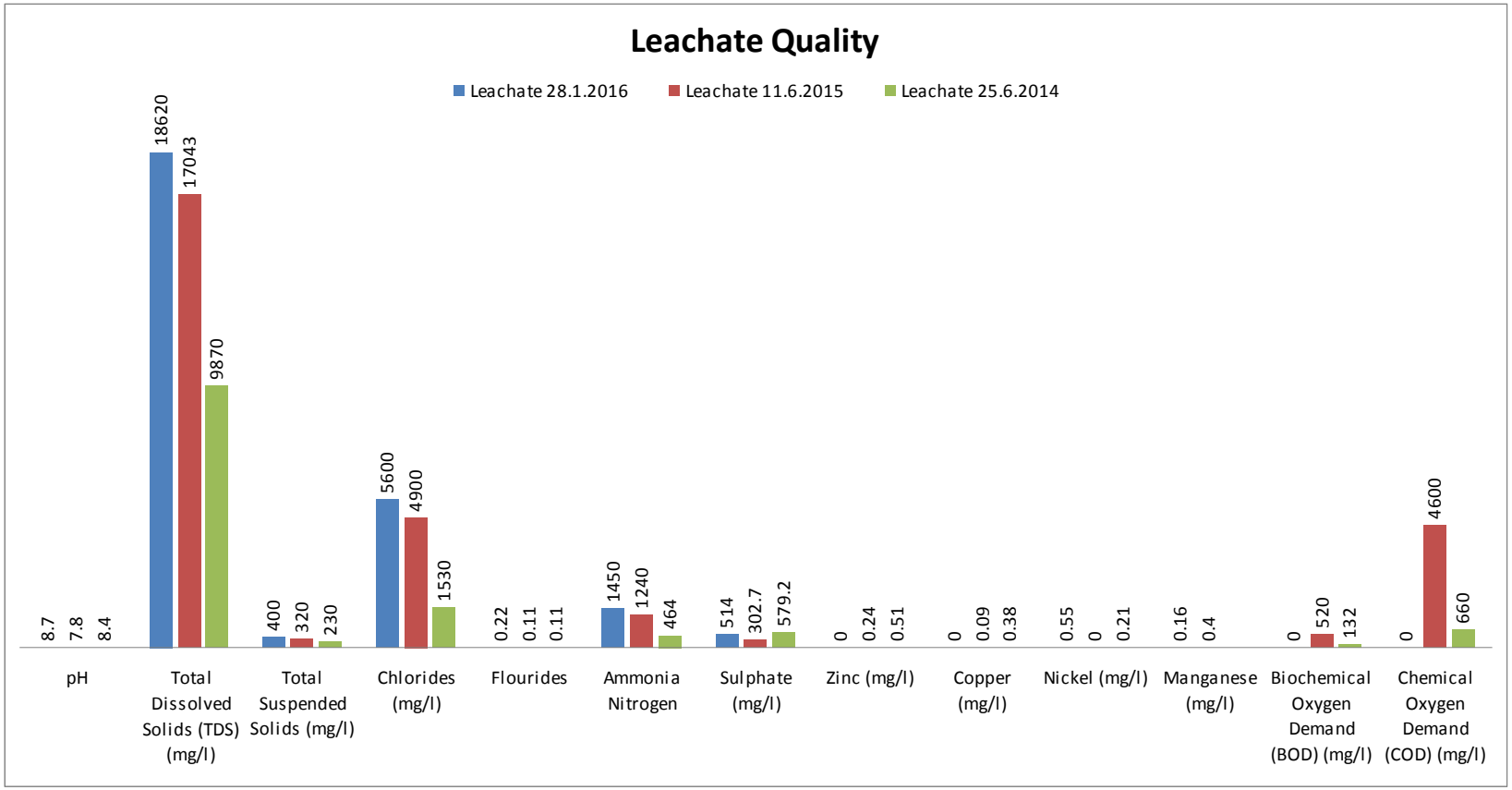

Noise Level Monitoring near Emergency Sanitary Landfill site at Marten dumping ground
dB(A)
Day time dB(A)
Night Time dB(A)
55
45
65
55
50.5
40
53.2
43.6
50.2
54.3
52.72
53.82
Residential Zone Permissible Limit
Commercial Zone Permissible Limit
28/01/2016
11/12 - 6- 2015
25.06.2014
Average


Noise Level Monitoring near Garage-cum-workshop at Marten dumping ground
dB(A)
Day time dB(A)
Night Time dB(A)
55
45
65
55
61.2
44.3
52.3
44.1
60.7
55
60.84
54.52
Residential Zone Permissible Limit
Commercial Zone Permissible Limit
28/01/2016
11/12 - 6- 2015
25.06.2014
Average

Leachate Testing Report

Marten Mawiong landfill site is operating since 1938. It does not have leachate treatment facility and leachate collection system. Leachate sample has been collected from the bottom of the Landfill.
Total Dissolved Solids (TDS) in leachate collected in June 2014 is 9870 mg/l and leachate collected in 2015 is 17043. The permissible limit for disposal of leachate having TDS concentration as per Municipal Solid Waste (Management and Handling) Rule 2000 is 2100 mg/l. Disposal of such high concentration is neither safe for environment nor Municipal Solid Waste Rule 2000 allows.



Chemical oxygen demand (COD) and Chlorides are also higher in concentration compare to the standards specified in Municipal Solid Waste Management Rule 2000 of 600 mg/l for chlorides.

MEGHALAYA STATE POLLUTION CONTROL BOARD
(FOREST & ENVIRONMENT DEPARTMENT, GOVT. OF MEGHALAYA)
'ARDEN' LUMPYNGNGAD,
SHILLONG – 793014

email : megspcb@rediffmail.com
website : www.megspcb.gov.in

PHONE : 0364 - 2521533
2522802
2521514
2522728
TELEFAX : 0364 - 2521217
2521764

A. BILL FOR ANALYSIS OF WATER QUALITY

Lab. Ref. No: B/01/16 to B/05/16

Sl No	Parameters	Rates in Rs.	No. of samples	Amount in Rs.
1.	pH	60.00	5	300
2.	Total Dissolved Solids (mg/l)	100.00	5	500
3.	Total Suspended Solids (mg/l)	100.00	5	500
4.	Dissolved Oxygen Demand (mg/l)	100.00	4	400
5.	Biological Oxygen Demand (mg/l)	600.00	1	600
6.	Chemical Oxygen Demand (mg/l)	350.00	1	350
7.	Chloride (mg/l)	100.00	5	500
8.	Fluoride (mg/l)	200.00	1	200
9.	Ammonia (mg/l)	200.00	1	200
10.	Sulphate (mg/l)	150.00	5	750
11.	Lead (mg/l)	300.00	5	1500
12.	Arsenic (mg/l)	300.00	5	1500
13.	Chromium (mg/l)	300.00	5	1500
14.	Zinc (mg/l)	300.00	5	1500
15.	Copper (mg/l)	300.00	5	1500
16.	Cadmium (mg/l)	300.00	5	1500
17.	Nickel (mg/l)	300.00	5	1500
18.	Manganese (mg/l)	300.00	5	1500
19.	Metals Processing/pre-treatment charge per sample	500.00	5	2500
20.	Sampling	550.00	5	2750
21.	Service charge	1000.00		1000.00
			Net Total	22540

(Rupees Twenty two thousand five hundred forty) only

MEMBER SECRETARY
MSPCB, SHILLONG

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"ARDEN", LUMPYNGNGAD, SHILLONG – 793014

ANALYSIS REPORT

1.	Sender's name & address	Collected by MSPCB, Shillong
2.	Name of source & place of Collection of sample	Downstream (800m from Landfill side)
3.	Purpose of analytical study	Physical & Chemical
4.	Date of receipt of the sample	28.01.2016
5.	Laboratory reference	B/01/16

Sl No	Parameters	Results	Desirable Limits for drinking water (IS : 10500-2012)
1.	pH	8.3	6.5-8.5
2.	Total Dissolved Solids (TDS) (mg/l)	102.0	500.0
3.	Total Suspended Solids (mg/l)	100.0	-
4.	Chlorides (mg/l)	17.0	250.0
5.	Total Hardness ($CaCO_3$)(mg/l)	108.0	300.0
6.	Sulphate (mg/l)	2.0	200.0
7.	Nitrate (mg/l)	0.26	45.0
8.	Dissolved Oxygen (mg/l)	7.9	-
9.	Lead (mg/l)	BDL	0.01
10.	Chromium (mg/l)	BDL	0.05
11.	Zinc (mg/l)	0.05	5.0
12.	Copper (mg/l)	BDL	0.05
13.	Cadmium (mg/l)	BDL	0.003
14.	Manganese	0.02	0.1
15.	Nickel (mg/l)	BDL	0.02
16.	Arsenic (mg/l)	BDL	0.05

Sr. Scientist
Meghalaya State Pollution Control Board,
Shillong

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"ARDEN", LUMPYNGNGAD, SHILLONG – 793014

ANALYSIS REPORT

1.	Sender's name & address	Collected by MSPCB, Shillong
2.	Name of source & place of Collection of sample	Middle stream (200m from Landfill side)
3.	Purpose of analytical study	Physical & Chemical
4.	Date of receipt of the sample	28.01.2016
5.	Laboratory reference	B/02/16

Sl No	Parameters	Results	Desirable Limits for drinking water (IS : 10500-2012)
1.	pH	8.4	6.5-8.5
2.	Total Dissolved Solids (TDS) (mg/l)	68.0	500.0
3.	Total Suspended Solids (mg/l)	15.0	-
4.	Chlorides (mg/l)	18.0	250.0
5.	Total Hardness ($CaCO_3$)(mg/l)	90.0	300.0
6.	Sulphate (mg/l)	1.0	200.0
7.	Nitrate (mg/l)	0.19	45.0
8.	Dissolved Oxygen (mg/l)	7.3	-
9.	Lead (mg/l)	BDL	0.01
10.	Chromium (mg/l)	BDL	0.05
11.	Zinc (mg/l)	0.05	5.0
12.	Copper (mg/l)	BDL	0.05
13.	Cadmium (mg/l)	BDL	0.003
14.	Manganese	0.02	0.1
15.	Nickel (mg/l)	BDL	0.02
16.	Arsenic (mg/l)	BDL	0.05

Sr. Scientist
Meghalaya State Pollution Control Board,
Shillong

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"ARDEN", LUMPYNGNGAD, SHILLONG – 793014

ANALYSIS REPORT

1.	Sender's name & address	Collected by MSPCB, Shillong
2.	Name of source & place of Collection of sample	Spring (100 m from Landfill side)
3.	Purpose of analytical study	Physical & Chemical
4.	Date of receipt of the sample	28.01.2016
5.	Laboratory reference	B/03/16

Sl No	Parameters	Results	Desirable Limits for drinking water (IS : 10500-2012)
1.	pH	7.7	6.5-8.5
2.	Total Dissolved Solids (TDS) (mg/l)	60.0	500.0
3.	Total Suspended Solids (mg/l)	10.0	-
4.	Chlorides (mg/l)	20.0	250.0
5.	Total Hardness ($CaCO_3$)(mg/l)	46.0	300.0
6.	Sulphate (mg/l)	15.1	200.0
7.	Nitrate (mg/l)	5.0	45.0
8.	Dissolved Oxygen (mg/l)	8.5	-
9.	Lead (mg/l)	BDL	0.01
10.	Chromium (mg/l)	BDL	0.05
11.	Zinc (mg/l)	0.08	5.0
12.	Copper (mg/l)	BDL	0.05
13.	Cadmium (mg/l)	BDL	0.003
14.	Manganese	0.03	0.1
15.	Nickel (mg/l)	BDL	0.02
16.	Arsenic (mg/l)	BDL	0.05

Sr. Scientist
Meghalaya State Pollution Control Board,
Shillong

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"ARDEN", LUMPYNGNGAD, SHILLONG – 793014

ANALYSIS REPORT

1.	Sender's name & address	Collected by MSPCB, Shillong
2.	Name of source & place of Collection of sample	Spring (1 km from Landfill side)
3.	Purpose of analytical study	Physical & Chemical
4.	Date of receipt of the sample	28.01.2016
5.	Laboratory reference	B/04/16

Sl No	Parameters	Results	Desirable Limits for drinking water (IS : 10500-2012)
1.	pH	7.0	6.5-8.5
2.	Total Dissolved Solids (TDS) (mg/l)	33.0	500.0
3.	Total Suspended Solids (mg/l)	10.0	-
4.	Chlorides (mg/l)	13.0	250.0
5.	Total Hardness ($CaCO_3$)(mg/l)	24.0	300.0
6.	Sulphate (mg/l)	2.3	200.0
7.	Nitrate (mg/l)	1.4	45.0
8.	Dissolved Oxygen (mg/l)	5.8	-
9.	Lead (mg/l)	BDL	0.01
10.	Chromium (mg/l)	BDL	0.05
11.	Zinc (mg/l)	0.04	5.0
12.	Copper (mg/l)	BDL	0.05
13.	Cadmium (mg/l)	BDL	0.003
14.	Manganese	0.03	0.1
15.	Nickel (mg/l)	BDL	0.02
16.	Arsenic (mg/l)	BDL	0.05

Sr. Scientist
Meghalaya State Pollution Control Board,
Shillong

MEGHALAYA STATE POLLUTION CONTROL BOARD
CENTRAL LABORATORY
"ARDEN", LUMPYNGNGAD, SHILLONG – 793014

ANALYSIS REPORT

1.	Sender's name & address	Collected by MSPCB, Shillong
2.	Name of source & place of Collection of sample	Leachate (Back of Marten, foothill of the main dumping side)
3.	Purpose of analytical study	Physical & Chemical
4.	Date of receipt of the sample	28.01.2016
5.	Laboratory reference	B/05/16

Sl No	Parameters	Results	Standards for Land Disposal as per Municipal Solid Waste (Management & Handling) Rules 2000
1.	pH	8.7	5.5-9.0
2.	Total Dissolved Solids (TDS) (mg/l)	18620.0	2100.0
3.	Total Suspended Solids (mg/l)	400.0	200.0
4.	Chlorides (mg/l)	5600.0	600.0
5.	Flourides (mg/l)	0.22	-
6.	Ammonia Nitrogen (mg/l)	1450.0	-
7.	Sulphate (mg/l)	514.0	-
8.	Lead (mg/l)	BDL	-
9.	Chromium (mg/l)	BDL	-
10.	Zinc (mg/l)	0.55	-
11.	Copper (mg/l)	0.16	-
12.	Cadmium	BDL	0.01
13.	Nickel (mg/l)	BDL	-
14.	Manganese (mg/l)	0.72	-
15.	Arsenic (mg/l)	BDL	0.2
16.	Biochemical Oxygen Demand (BOD) (mg/l)	520.0	100.0
17.	Chemical Oxygen Demand (COD) (mg/l)	4600.0	-

Sr. Scientist
Meghalaya State Pollution Control Board,
Shillong

MEGHALAYA STATE POLLUTION CONTROL BOARD
'ARDEN' LUMPYGNGNGAD, SHILLONG-14

AMBIENT NOISE LEVEL TESTING REPORT

Name & Address of Industry		State Investment Project Management & Implementation Unit(SIPMIU), Shillong.	
Location of Sampling		1 (Near BMW Incenerator) Marten Dumping Ground, Mawiong.	
Date of Sampling		28.01.16 – 29.01.16	
Category of Area		Industrial	
Laboratory Reference		N/ 01/2016	
	Time	**Observed value**	**Prescribed Standard**
Ambient Noise Level dB(A) Leq	**Day**	61.2	75.0
	Night	44.3	70.0
Other observations	The sampling location is about 25 meters (approx) away from the main road (National Highway). Traffic noise is a major contribution to the overall noise monitored at the location.		

Remarks: Ambient Noise levels monitored during day and night time was found to be within the limit of standards for Industrial Area as prescribed vide EPA Notificatiion [GSR 1063 (E), Dated 26th Dec. 1989].

Dated:

Senior Scientist
Meghalaya State Pollution Control Board
Shillong

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mspcb

CENTRAL LABORATORY
MEGHALAYA STATE POLLUTION CONTROL BOARD

AMBIENT AIR QUALITY ANALYSIS REPORT

1.	Name of the Project	:	Ambient Air Quality		
2.	Sample matrix	:	Ambient Air		
3.	Date & time of sample collection	:	28.1.16		
4.	Samples collected by	:	Shri. W.Marbaniang		
5.	Date & time of sample receipt	:	1.02.16		
6.	Date of sample analysis	:	1.02.16		
7.	Sample Registration No.	:	A/01/16, A/02/16		
8.	Date of Issue	:	9.3.2016		
9.	Test method reference	:	-		
10.	Deviation, if any	:	-		
11.	Name & Address of Industry/Sampling Location	:	State Investment Project Management & Implementation Unit, Shillong.		
12.	Distance between the industry and sampling station	:	Within premises		
13.	Time duration of sampling	:	24 hrs (8 hrs interval for rspm , 4 hrs interval for gaseous)		
14.	Meteorological Parameters				
	Weather condition	:	Partially Clear		
	Temperature (°C)	:	Min: 4.2	Max: 12.1	
	Relative Humidity (%)	:	Min: 88	Max: 93	
	Wind Speed (km/hr)	:	Min: -	Max: -	Avg: -
	Wind Direction (most prevailing)	:	-		
	Rainfall (mm)	:	Sum: Nil		

Parameters	Permissible Limits (24 hours average) EPA Notification GSR 826(E), dated New Delhi, the 16th Nov. 2009.	Test method	Sampling Station Code/Name 1 A/01/16 Dumping Site (Near Incinerator) (24 hours average)	2 A/02/16 New Landfill site (24 hours average)
Particulate Matter (PM_{10}) ($\mu g/m^3$)	100	ISC (3rd Edn. 98)	62.6	31.4
Sulphur dioxide ($\mu g/m^3$)	80	IS:5182 (Pt-2)	2.0	2.0
Nitrogen dioxide ($\mu g/m^3$)	80	USEPA,EQN-1277-26	10.1	4.5

Remarks: All parameters tested were found to be within the permissible limits of Ambient Air Quality Standards as per EPA Notification GSR 826(E), dated New Delhi, the 16th Nov. 2009, at both the stations.

Sr. Scientist
MSPCB

Annexure – 6 – Environmental Clearance, Forest Clearance and Consent to Establish obtained for the current period.

Environmental Clearance

ANNEXURE - VII

STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY
'ARDEN' LUMPYNGNGAD, SHILLONG – 793 014

No. SEIAA/PROJECT-13/2009/8 Dated Shillong, the 14th August 2009

To:

The Chief Executive Officer
Shillong Municipal Board

Sub: *Sanitary Landfill site for Non-biodegradable Municipal Solid Waste Disposal and Compost Plant rejects at Marten, Mawiong, East Khasi Hills District – Environmental Clearance -Regarding*

Dear Sirs,

This has a reference to your application No. SMB/PW/163/08/09/11 Dtd. 09-03-2009 and subsequent letter from the Director, Urban Affairs & Project Director, State Investment Project management & Implementation Unit vide No. SIPMIU/MEG/NERCCDIP/B/2009/7 Dtd. 22-05-2009 seeking prior Environmental Clearance for the above project under the EIA Notification, 2006. The proposal has been appraised as per prescribed procedure in the light of provisions under the EIA Notification, 2006 on the basis of the mandatory documents enclosed with the application viz. Form I, Techno-Economic Feasibility Report, Detailed Project Report, EIA, EMP and the additional clarifications furnished in response to the Terms of Reference for the purpose of carrying out the cumulative Impact Assessment issued by the State Expert Appraisal Committee.

2. It is, interalia, noted that the project involves a sanitary landfill site for solid waste disposal on a plot of existing area of 5.25 acres. The existing power available is 125 KVA which is sufficient to meet the requirement. Total cost of the Project is Rs 76.60 million INR. The project is expected to benefit 0.16 million persons and above 0.032 million households in Shillong Municipal Board area directly.

3. The State Expert Appraisal Committee after due considerations of the relevant documents submitted by the project proponent and additional clarifications furnished in response to its observations have recommended for Environmental Clearance as per the provisions of Environmental Impact Assessment Notification – 2006 and its subsequent amendments, subject to strict compliance of the terms and conditions as follows: -

A. SPECIFIC CONDITIONS

i) Given the amount of rainfall that is experienced in the region that would harbor the landfill site and the likelihood of pollution of land and water if a landfill is subjected to flooding, the applicant shall ensure that the surface water drains at the site are adequate to retain and dispose of the heaviest rains. Further, storm drains shall be constructed around the landfill site of the kind capable of withstanding heaviest monsoons.

ii) Appropriate leachate capturing measures shall be implemented. Drainage interceptors shall be constructed to capture direct runoff from the landfill site such as to redirect the runoff into

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(iv) Monitoring plan as envisaged by the applicant in the DPR shall be scrupulously followed without any deviation.

(v) A separate Environmental Management Cell equipped with adequate laboratory facilities shall be set up to carry out the environmental management and environmental quality monitoring functions.

(vi) Implementation of the project vis-à-vis environmental action plans would be monitored by the Regional Office, Ministry of Environment & Forests and SEIAA / SEAC duly assisted by the SPCB. A six monthly compliance status report shall be submitted to the latter institutions apart from posting the same on the website of the applicant.

(vii) The lease terms issued by the State Forest Deptt. vide Notification No. FOR.76/99/16 Dtd. 25th February 2000 need to be strictly adhered to.

(viii) All provisions under Solid Waste (Management & Handling) Rules, 1999 should be strictly complied with.

(ix) In the light of condition 10 under Schedule III of Municipal Solid Waste (Management & Handling) Rules, 1999, for site selection, the Government may consider the appropriateness of obtaining the approval of the Airport Authority if the location is within 20 kms. of the nearest Airport.

The Regulatory Authority may revoke or suspend the clearance on the recommendation of the SEAC, if implementation of any of the above conditions is not satisfactory.

The Regulatory Authority may on the recommendation of SEAC reserve the right to stipulate additional conditions, if found necessary. The Shillong Municipal Board in a time bound manner shall implement these conditions too.

The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and Hazardous Wastes (Management & Handling) Rules, 2003 along with their amendments and Rules.

MEMBER SECRETARY
State Environment Impact Assessment Authority
Meghalaya, Shillong

Forest Clearance

MINISTRY OF ENVIRONMENT & FORESTS
NORTH EASTERN REGIONAL OFFICE
LAW-U-SIB, LUMBATNGEN
NEAR M.T.C. WORKSHOP, SHILLONG-793021
PHONE NO: 0364-2537609
FAX NO: 0364-2536041
GRAM: PARYAVARAN, SHILLONG.

No. 3-MG C 074/2010-SHI/2991-92 — 21th November 2011

To

The Commissioner & Secretary
Forest & Environment Department
Government of Meghalaya
Shillong

Sub: Proposal under the Forest (Conservation) Act, 1980 for diversion of 7.28 ha of Reserve Forest land for construction of Sanitary System for disposal of Shillong City Garbage in East Khasi Hills District, Meghalaya.

Sir,

Please refer to the State Government's letter No. FOR.76/99/244 dated 13.04.2011 on the subject mentioned above, seeking approval of the Central Government in accordance with Section 2 of the FCA, 1980, and to say that the proposal has been examined by the State Advisory Group Committee, approval was granted vide this office letter of even number dated 21.07.2011 subject to fulfillment of certain conditions. The State Government has furnished compliance report in respect of the conditions stipulated in the in-principle approval and has requested the Central Government to grant final approval.

In this connection, I am directed to say that on the basis of the compliance report furnished by the State Government vide letter No. FOR.76/99/257 dt. 03.11.2011, final approval of the Central Government is hereby granted under Section-2 of the Forest (Conservation) Act, 1980 for diversion of 7.28 ha of Reserve Forest land for construction of Sanitary System for disposal of Shillong City Garbage in favour of Chief Executive Officer, Municipal Board, Shillong in East Khasi Hills District, Meghalaya, subject to the following conditions:

(i) Legal status of the Forest land shall remain unchanged.

(ii) Compensatory afforestation shall be carried out over 14.56 Ha identified at Umdiker proposed Protected Forest in one compact Block as per the fund deposited by the User Agency.

(iii) In addition to the above normal compensatory afforestation, Penal Compensatory Afforestation equivalent to above CA i.e. 14.56 Ha. is to be carried over the identified land for raising Penal C.A..

(iv) Tree felling shall be done only when it is unavoidable under strict supervision of the State Forest Department.

(v) No damage to the flora and fauna of the surrounding area shall be caused.

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(vi) The forest land shall not be used for any purpose other than that specified in the proposal.

(vii) No labour camps shall be established either inside the diverted area or other forest land.

(viii) The forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person either through lease or otherwise.

(ix) The layout of the plan of the proposal shall not be changed without the prior approval of the Central Government.

(x) The matter of violation of F (C) Act, 1980 has been kept presently in abeyance as the Govt. of the State is in urgent need of land for the sake of public health and sanitation; but this approval shall be subject to the final decision of the competent authority in the matter of related violation of F (C) Act, 1980.

(xi) Any other conditions as may be found appropriate in future for the betterment of environment & wildlife, may be imposed by CCF (C), North Eastern Regional Office.

Yours faithfully,

(B. S. Kharmawphlang)
Conservator of Forests (C)

Copy to:

1. Principal Chief Conservator of Forests & Head of Forest Force, Department of Forests & Environment, Government of Meghalaya, Shillong

Conservator of Forests (C)

MEGHALAYA STATE POLLUTION CONTROL BOARD

'ARDEN' LUMPYNGNGAD,
SHILLONG – 793014

email : megspcb@rediffmail.com

PHONE : 0364 - 2521533
2522802
2521514
2522726
TELEFAX : 0364 - 2521217
2521764

No. MPCB/CON-8(2009)/2015-2016/44 Dtd. Shillong, the 2nd April, 2015

RENEWAL OF CONSENT TO ESTABLISH

CONSENT TO ESTABLISH under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974, as amended and under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981, as amended (to be referred as Water Act and Air Act respectively).

CONSENT is granted to M/s SHILLONG MUNICIPAL BOARD vide T.O. No. MPCB/CON-8(2009)/2009-2010/12, dtd: 26/11/2009 for Setting up a SANITARY LANDFILL over an area of 5.2503 acres at MARTEN, MAWIONG, East Khasi Hills District under the following **terms and conditions**:

General Conditions:

1. This Consent has been accorded based on the particulars furnished by the applicant on behalf of M/s SHILLONG MUNICIPAL BOARD and subject to addition of further or more conditions if so warranted by subsequent developments. The Consent will automatically become invalid if any change or alteration or deviation is made in actual practice;

2. The Consent to Establish is valid for a period upto 31st **OCTOBER 2015** unless otherwise suspended or revoked. The validity period shall be extended if necessary till such time the industry is commissioned for commercial production;

3. This Consent may be modified, suspended or revoked by the Board in whole or in part during its term for cause including, but not limited to the following: -

   (a) Violation of any Terms and Conditions of this Consent;
   (b) Obtaining the Consent by misrepresentation or failure to disclose fully all relevant facts;
   (c) A change in any condition that requires temporary or permanent reduction or elimination of the authorized discharge/emission.;

4. This Consent does not convey any property right in either real or personal property or any exclusive privileges, nor does it authorizes any injury to private property or any invasion of personal rights, nor any infringement of Central, State or Local Laws or Regulation;

5. Applications for Consent to Operate (in prescribed Forms) and Authorisation (in prescribed Form)under Municipal Solid Wastes (Management and Handling) Rules, 2000 shall have to be submitted at least 3(three)months prior to commissioning of the Landfill;

6. No air, water and soil pollution shall be created by the Landfill beyond the prescribed permissible limits;

SHILLONG MUNICIPAL BOARD
Rec No. 1356
Date 10.4.15
Collection

MEGHALAYA STATE POLLUTION CONTROL BOARD

'ARDEN' LUMPYNGNGAD,
SHILLONG – 793014

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2522802
2521514
2522726
TELEFAX : 0364 - 2521217
2521764

3. The SMB should ensure that the liner system at the base and sides of the landfill are efficient enough to prevent migration of leachate or gas to the surrounding soil;

4. Final cover system at the top of the landfill should be such that it enhances surface drainage, prevents infiltrating of water and supports surface vegetation.

MEMBER SECRETARY
Meghalaya State Pollution Control Board,
Shillong

Copy to: -

1. The Director, Urban Affairs, Meghalaya, Shillong for kind information.
2. The CEO, M/s SHILLONG MUNICIPAL BOARD, Bishop Cotton Road, Opp. Sherwood Bungalow, Shillong - 793001 for information and necessary action.
3. RCTE-2015

Annexure 7

Public Consultation and Capacity Building Programme under SWM

Regular public consultations were conducted among the local people. Two way consultations about the project activity and its progress are shared with the local community. The awareness of solid waste management is done through these consultations, pumplets are distributed, pledges are taken and Bins are also distributed.

Following a persistent effort to get the goodwill and cooperation of the headmen of different localities of Shillong city in the implementation of the NERCCDIP, most headmen eventually came forward to support the project. The President of the "Headmen Collective" who was taken into confidence was quite favourable and he helped in telling his colleagues of about 100 headmen to cooperate in the efforts for better waste management in Shillong. From April 2012 the Community Team started to regularly organize Public Consultation Meetings at various levels like locality level, or Cluster of Localities levels and other stakeholders.

Since then about 631 public events, including Public Consultation Meetings, Gender Related Trainings and consultations, Locality Level Awareness Training on best practices, household bins distribution, and livelihood enhancement training programmes were conducted. Today on the whole the people of Shillong are extending their co-operation in the implementation of the NERCCDIP. We provide a brief highlight of all the outcomes of our different efforts in Shillong.

During the reporting period the CPPA team made various efforts under capacity building programme for SWM. The various programmes organised ranges from monitoring of SWM activities, task force management etc. The various programmes organised during the reporting period may be seen from the highlighted sections of following table 6. From the table 6 it can be seen that 96 capacity building and monitoring has taken place during the reporting period regarding segregation and collection of solid waste.

Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
1	Awareness training for taxi drivers	16	7/1/2016	3:00pm	CPPA, Taxi drivers	Awareness training on zero littering campaign	DSMC office
2	Public Distribution of Bins	291	7/2/2016	8:30am	SMB, CPPA, Upland Road Dong	Awareness tarining to residents and distribution of household waste bins	St Margaret School Premises,Upland Road

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
3	Meeting with headman of Madanryting	3	7/8/2016	10:00am	Madanryting headman and secretary and CPPA staff	Discussion on tripartite agreement documents for areas outside SMB	Dorbar Shnong Office
4	Meeting with Red FM radio	4	7/18/2016	1:00pm	FM Radio Staff	Script for airing online	DSMC office
5	Monitoring at Laitumkhrah	10	7/20/2016	6:00am	Mrs Ampareen Lyngdoh, EC of Laitumkhrah, CPPA	Monitoring of defaulters dumping waste iun the open	Laitumkhrah Locality
6	Monitoring at Laitumkhrah	6	7/20/2016	6:30pm	Mrs Ampareen Lyngdoh, EC of Laitumkhrah, CPPA	Monitoring of defaulters dumping waste iun the open	Laitumkhrah Locality
7	Monitoring at Laitumkhrah	3	7/21/2016	6:30pm	Mrs Ampareen Lyngdoh, EC of Laitumkhrah, CPPA	Monitoring of defaulters dumping waste iun the open	Laitumkhrah Locality
8	Monitoring at Laitumkhrah	3	7/22/2016	5:30pm	Mrs Ampareen Lyngdoh, EC of Laitumkhrah, CPPA	Monitoring of defaulters dumping waste iun the open	Laitumkhrah Locality
9	Task Force formation meeting	30	7/22/2016	6:30pm	EC members and CPPA team	Task force formation and awarenes straining on NERCCDIP programme	Nepali School, Lawjynriew
10	Public Distribution of Bins	100	7/30/2016	8:30am	Residnets of Bishnupur	Distribtution fo bins	Community Hall, Bushnupur
11	Locality Level Awareness tarining	104	8/1/2016	5:00pm	Residents of Lapalang	Awareness training programmes on SWM	Community Hall, Lapalang
12	Meeting with the Headman of Mawlai	3	8/2/2016	9:30am	Headman of Iewrynghep	Discussion on institution develoepmt for Mawlai town dorbar on SWM	Headman's Residence

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
13	Meeting With Mr West	3	8/2/2016	11:00am	CPPA and SCSTE	Discussion on Swachh Bharat Mission. Open Defecation free	PHE Office Chamber, Lachaumiere
14	Meeting with Headman of Iewrynghep, Mawlai	3	8/3/2016	11:00am	CPPA and headman	Discussion on institution develoepmt for Mawlai town dorbar on SWM	Headman'S Residence
15	Meeting with Secretary of Lawjynriew	2	8/3/2016	11:30am	CPPA and Secetary	Discussion on organising LLAT's and delivering of letter to DSMC	DSMC Office
16	Meeting with EC members of R&R Colony	4	8/3/2016	12:00noon	CPPA and EC Members	Discussion on new SWM system and operating of Garbage Vehicles	DSMC Office
17	Meeting with EC members of R&R Colony	11	8/5/2016	5:00pm	CPPA and EC Members	Discussed on the new stytem of SWM and O&M	Community Office, R&R Colony
18	Meeting with EC members of Umpling	8	8/5/2016	7:00pm	EC members and CPPA	Clarification on tripartite agreement	Community Hall, Umpling
19	Visit to Marten	10	8/5/2016	10:30am	SMB, CPPA, SHG, Bethany Society	Inspection of the indegenous mini compost plant	Marten, Mawiong
20	Locality level arareness training at Lawjynriew	114	8/6/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Iaikyntiew College, Lawjynriew
21	Locality level arareness training at Lawjynriew	75	8/13/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Iaikyntiew College, Lawjynriew
22	Visit to Marten	10	8/13/2016	10:30am	SMB, CPPA, SHG, Bethany Society	Inspection of the indegenous mini compost plant	Marten, Mawiong

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
23	Locality level arareness training at Lawjynriew	117	8/20/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Iaikyntiew College, Lawjynriew
24	Visit to Marten	4	8/20/2016	10:30am	Bethany Society and CPPA staff	Inspection of the indegenous mini compost plant	Marten, Mawiong
25	Meeting with Self Help Group	24	8/20/2016	11:00am	SHG, Betany Society and CPPA team	Review meeting- inputs on operating and managing the mini compost plant at Marten	Marten, Mawiong
26	Meeting with the EC members of Lumsohphoh	15	8/23/2016	8:30am	EC members and CPPA	Clarification on the new SWM system and tripatite agreement	Community Hall, Lumsohphoh
27	Presentation on Swachhta at NEHU	300	8/24/2016	12:00noon	NSS students, organisers, teachers and CPPA team	Awareness on Swacchta and best prtactices	Community Hall, NEHU
28	Locality level arareness training at Lawjynriew	72	8/27/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Iaikyntiew College, Lawjynriew
29	Meeting with PD	5	8/29/2016	11:00am	PD, APD, SMB, CPPA	Discussion on new system system	PD'office chamber
30	Presentation on composting technologies to BSF Deputy Commandants	9	9/1/2016	4:00pm	BSF and CPPA Staff	Awarenes son composting technology and best practices of Solid waste management	Deputy Commandant's Office Chember
31	Locality level awareness training at Lumkut, Lawjynriew	72	9/3/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Iaikyntiew College, Lawjynriew

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
32	Meeting with Project Director	7	9/5/2016	12:00noon	PD, APD, CEO. EE, SMB, CPPA	Discussion on way forwrad to improve the services of the Municipal board	Raitong Building, Urban Affars Department
33	Presention on NERCCDIP progamme for Shillong City	22	9/6/2016	3:00pm	Students and Staff from University of Bhopal	Presentation on best practices of waste management in Shillong City	Raitong Building, Urban Affars Department
34	Meeting with Headman of Mawlai Twon Dorbar	4	9/7/2016	11:00am	Headman and CPPA Staff	Discussion on revised financial plan, budget for Maintaining a Mini SWM committee at the Dorbar	Hedman's Residence
35	Orientation training to MLCU studnets	25	9/8/2016	10:00am	1st Sem students from MLCU and CPPA staff	Orientation of best practices of waste management	DSMC Office
36	Locality level awareness training at Lumbhalang, Lawjynriew	118	9/10/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Iaikyntiew College, Lawjynriew
37	Awareness training for taxi drivers	30	9/12/2016	11:00am	CPPA, Taxi drivers	Awareness training on zero littering campaign	Taxi Stand, Iew Mawlong
38	Awareness training for taxi drivers	476	9/13/2016	10:30am	CPPA, Taxi drivers	Awareness training on zero littering campaign	Taxi Stand, Police Bazaar
39	Joint inspection at Marten	10	9/15/2016	10:30am	Bethany Socirty, CPPA, SHG, Contractor	Inspection of the Mini compost plant at Marten. Progress of work	Marten. Mawiong
40	Consultation with Mawlain Town Dorbar	37	9/16/2016	8:30am	EC memebrs of Mwlai Town Dorbar & CPPA	Presentation on best practices of waste management	Community Hall, Mawlai

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
						in Shillong City	
41	Meeting with Supplier of SMB uniforms from Kolkata	4	9/16/2016	12:30pm	R C Enterprise, SMB & CPPA	Discussion on SMB unifrms supplied to SMB	SMB Office
42	Locality level awareness training at Lumbhalang, Lawjynriew	75	9/17/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Iaikyntiew College, Lawjynriew
43	Inspection to Marten	6	9/20/2016	9:00am	SMB, Bethany Society, DSMC	Inspection of the Mini compost plant at Marten. Progress of work	Marten, Mawiong
44	Meeting with Mr Bhalanf Dhar	3	9/23/2016	2:30pm	MUDA, CPPA	Discussion on new SWM system for Lawjynriew Dorbar Shnong	Office Chamber, MUDA Complex
45	Locality level awareness training at Golden Estate, Lawjynriew	106	9/24/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Nepali School, Lawjynriew
46	SMB Headmen Collective Meeting	51	9/27/2016	3:00pm	Headmen of all Localities	Presentation and discussion on NERCCDIP programme	Raitong Building, Urban Affairs Department
47	Distribution of SMB Uniforms	226	9/28/2016	3:00pm	Urban Minister, CEO, EE, UAD Director, SMB Workers, CPPA Staff	Distribution of Uniforms to SMB workers as per the SWM rules 2016	Raitong Building, Urban Affairs Department
48	Meeting with Governor	9	9/29/2016	11:00am	Presentation on Activities under Swachh Bharat Mission	Interaction and discussion	Governor's House, Raj Bhavan

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
49	Open Defecation Campaign	40	9/30/2016	6:00pm	Residents of Naspatighari, CPPA, SMB	Awareness training on open defecation free campaign	Community Hall, Naspatighari Dorbar Shnong
50	Locality level awareness training at Golden Estate, Lawjynriew	88	10/1/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Nepali School, Lawjynriew
51	CM Clean and Green Campaign	500	10/2/2016	8:00am	Governor, Home Misnister, Police, SMB, UAD, Schools, Market Association, Hima Mylliem, CPPA, Cantonment Area	Cleaning drive of Market Area	Klieh Iew, Bara Bazaar
52	Meeting with Cantonment Board area CEO	5	10/3/2016	11:00am	CEO Cantonment, Engineer, Inspector and CPPA	Highlight on the NERCCDIP programme and palnning for an LLAT at the Area	CEO's, Office Chamber
53	Meeting with SHG Members	25	10/4/2016	10:00am	SHG and CPPA staff	Discussion and briefing on the opening day of the mini compost plant at Marten	Compost Plant, Marten
54	Inauguration of the Mini Compost Plant	35	10/5/2016	9:00am	Director- UAD, SMB, Bethany Society, SHG, CPPA	Opening of the compost plant	Compost Plant, Marten
55	locality level awareness training at Cantonment Board Area	316	10/5/2016	10:00am	Residents of Cantonment Board, CEO, CPPA	Locality Level Awareness Training	Community Hall, Cantonment Board
56	Lecture on best practices of waste managemtn	45	10/5/2016	10:00am	Teachers from different univeristies in the North East Region	Lecture on best practices of waste management	UGC Department, NEHU

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
57	Monitoring of work at Marten	30	10/6/2016	9:00am	SHG, Bethany Society, CPPA	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
58	Monitoring of work at Marten	30	10/7/2016	8:00am	SHG, Bethany Society, CPPA	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
59	Orientation of NERCCDIP programem	5	10/7/2016	10:00am	Orientation on NERCCDIP progarmme	Power point presentation	DSMC office
60	Locality level awareness training at Lumbasuk A, Lawjynriew	59	10/8/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Morning Star School, Lawjynriew
61	Monitoring of work at Marten	26	10/12/2016	11:00am	SHG, Bethany Society, CPPA	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
62	Monitoring of work at Marten	26	10/13/2016	11:00am	SHG, Bethany Society, CPPA	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
63	Monitoring of work at Marten	26	10/14/2016	11:00am	SHG, Bethany Society, CPPA	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
64	Locality level awareness training at Lumbasuk A, Lawjynriew	60	10/15/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Morning Star School, Lawjynriew
65	Monitoring of work at Marten	26	10/15/2016	11:00am	SHG, Bethany Society, CPPA	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
66	Monitoring of work at Marten	28	10/17/2016	10:00am	SHG, Bethany Society, CPPA	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
67	Monitoring of work at Marten	26	10/18/2016	10:00am	SHG, Bethany Society, CPPA	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
68	Monitoring of work at Marten	25	10/19/2016	10:00am	SHG, Bethany Society, CPPA	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
69	Awareness training for taxi drivers	34	10/19/2016	10:00am	CPPA, Taxi drivers	Awareness training on zero littering campaign	Taxi Stand, Bishnupur, Last stop, Jhalupara and Malki Point
70	Monitoring of work at Marten	21	10/20/2016	9:00am	SHG, Bethany Society, CPPA	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
71	Awareness training for taxi drivers	87	10/21/2016	10:00am	CPPA, Taxi drivers	Awareness training on zero littering campaign	Taxi Stand, Motphran and Stand Jeep
72	Monitoring of work at Marten	32	10/21/2016	11:30am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
73	Locality level awareness training at Jylli Shop, Lawjynriew	107	10/22/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Eriben School, Jylli Shop Dong, Lawjynriew
74	Monitoring of work at Marten	19	10/24/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
75	Monitoring of work at Marten	20	10/25/2016	9:30am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
76	Monitoring of work at Marten	20	10/26/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
77	SHG Management Training to Iahnehskhem SHG members	26	10/27/2016	10:00am	SHG, Bethany Society, CPPA	Training on SHG Management, procedures and system	Compost Plant, Marten
78	Monitoring of work at Marten	26	10/27/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
79	SHG training on Charcoal Making	26	10/28/2016	10:30am	SHG, Bethany Scoiety, MLCY Interns	Training on Charcol making from wheat husk	Compost Plant, Marten
80	Monitoring of work at Marten	26	10/28/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
81	Locality level awareness training at Jylli Shop, Lawjynriew	117	10/29/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Eriben School, Jylli Shop Dong, Lawjynriew
82	Monitoring of work at Marten	22	10/31/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique by the SHG	Compost Plant, Marten
83	Meeting at Nongthymmai	6	11/1/2016	8:30am	Nongthymmai President, Secy, APD, Rangbah Dong, CPPA	Formation of SWM Unit	Headman's Residence, Lumiablot
84	Monitoring of work at Marten	22	11/1/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Vertical Composting by the SHG	Compost Plant, Marten
85	Meeting with Executive Committee Mmebers	7	11/1/2016	1:30pm	EC Members Umpling, APD, CPPA	Discussion on Tripartite Agreement	SIPMIU Office

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
86	Monitoring of work at Marten	19	11/2/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Vertical Composting by the SHG	Compost Plant, Marten
87	Monitoring of work at Marten	25	11/3/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Vertical Composting by the SHG	Compost Plant, Marten
88	Meeting with Additional Director, Agriculture Dept	3	11/3/2016	1:30pm	Additional Director, CPPA	Discussion on tesing of compost produced by the SHG members Marten	Office Chamber, Agriculture Department
89	Monitoring of work at Marten	25	11/4/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten
90	Meeting at Bethany Society	3	11/4/2016	2:00pm	CPPA, Bethany Society	Discussion on follow up plans of the mini compot plant	Office Chamber, Bethany Society
91	Meeting with Bah Chyne	4	11/4/2016	3:30pm	CPPA, SMB, APD	Discussion on Swachh Bharat Mission Campaign and updateing of NERCCDIP reports	
92	Locality level awareness training at Jylli Shop, Lawjynriew	39	11/5/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Eriben School, Jylli Shop Dong, Lawjynriew

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
93	Monitoring of work at Marten	25	11/5/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten
94	Meeting at Mawlai Nongkwar	4	11/5/2016	10:00am	Convenor SWM society, CPPA	Carry forward the SWM society plan	Residence of Convenor, Nongkwar
95	Meeting with Rangbah Shnong of Kynton Masar	5	11/5/2016	11:00am	EC of Kynton Massar and CPPA	Carry forward the SWM society plan	Rangbah Shnong Office, Kynton Massar
96	Monitoring of work at Marten	25	11/8/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten
97	Meeting with Headman of Mawlai Town Dorbar	5	11/9/2016	9:15am	President mawlai town dorbar and sub committee on SWM	Discussion on formation of the SWM Committee	President Residence
98	Monitoring of work at Marten	25	11/9/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten
99	Locality level awareness training at Lumbasuk B, Lawjynriew	38	11/12/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Nepali School, Lumbasuk B, Lawjynriew
100	Monitoring of work at Marten	21	11/14/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
101	Monitoring of work at Marten	26	11/15/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten
102	Monitoring of work at Marten	21	11/16/2016	10:00am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten
103	Monitoring of work at Marten	32	11/18/2016	10:30am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten
104	Locality level awareness training at Lumbasuk B, Lawjynriew	104	11/19/2016	7:30am	Residents of Lawjynriew and CPPA	Awareness training programmes on SWM	Nepali School, Lumbasuk B, Lawjynriew
105	Monitoring of work at Marten	21	11/24/2016	10:30am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten
106	Thematic Seminar on Approaches to better waste management	65	11/25/2016	10:00am-4:00am	UAD, East and West Khasi Hills, Jaintia Hills Disatricts, Line Departments, Interns, SMB, SIPMIU, DSMC	Thematic Seminar On approaches to best practices of waste management	Conference Hall, Brookdene, Cleve Colony
107	Street Play on "Stop Abusing the Environment"	17	11/26/2016	11:00am	DSMC, MLCU Interns	Enacted a Street Play on saving the environment and to stop abusing the environment	Streets of Police Bazaar

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Sl No	Training /Capacity Building	No of Participants	Date	Timings	Participants Category	Contents	Venue /Place
108	Monitoring of work at Marten	16	11/28/2016	10:30am	SHG, Bethany Society, CPPA & IAS officers	Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten
109	Meeting with Headaman of Wahdienglieng	3	11/28/2016	7:00pm	CPPA, Headman of Wahdienglieng		Headmans Residence
110	Monitoring of work at Marten	15	11/29/2016	10:30am	SHG, Bethany Society, CPPA & IAS officers	Sieving of Compost Monitoring indigenous composting technique Bokashi Composting by the SHG	Compost Plant, Marten
111	Meeting in Bethany Society	3	11/30/2016	10:30am	CPPA, Bethany Society	Discussion on testing of compost from Marten and its parameters	Bethany Society Office

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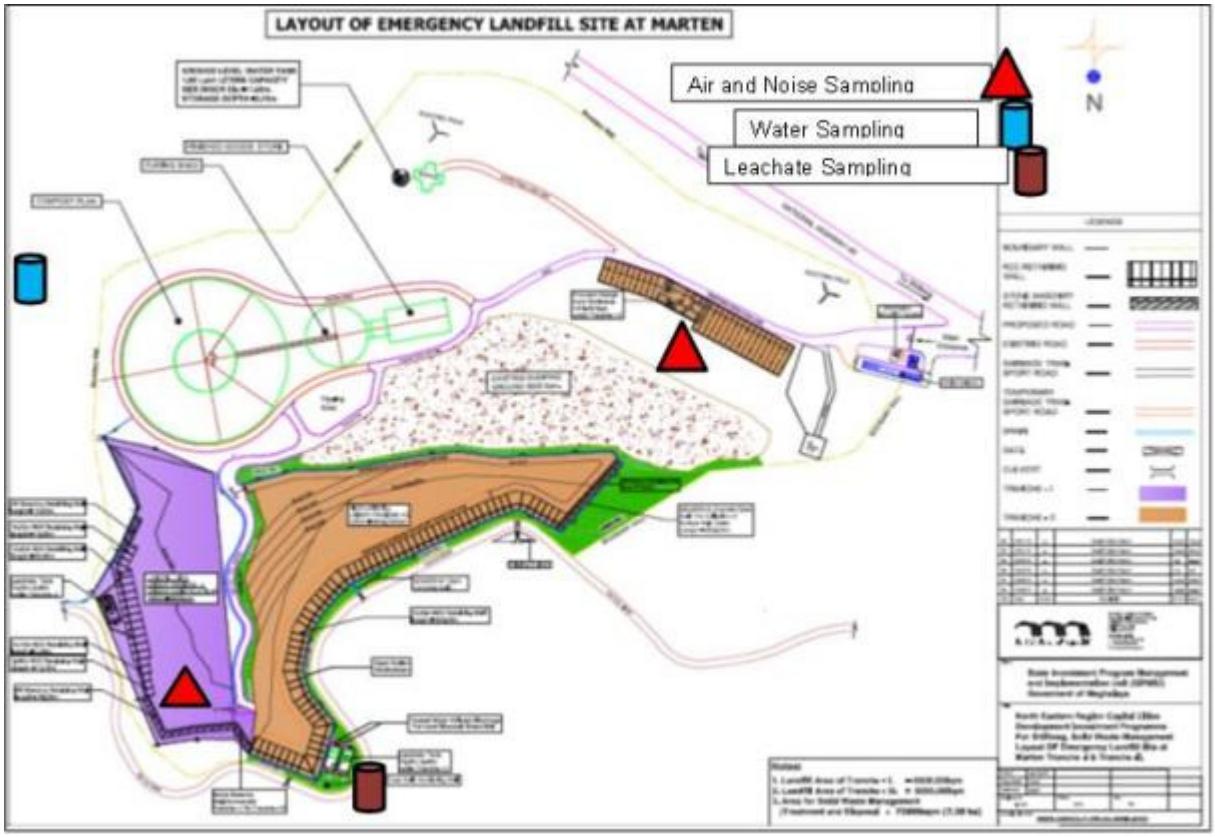
Annexure 8 – Map Showing Environmental Sampling Location



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