

Semi Annual Environmental Monitoring Report

January 2013

India: North Eastern Region Capital Cities
Development Investment Program – Shillong Solid
Waste Management Subproject (T-1)

Prepared by the State Investment Program Management and Implementation Unit (SIPMIU),
Urban Affairs Department, Government of Meghalaya.

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	—	Multitranches 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 Program Management and Implementation Units
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.

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.

Extent of the IEE Study

7. The IEE report was prepared on the basis of detailed screening and analysis of all environmental parameters, field investigations and stakeholder consultations to meet the requirements for environmental assessment process and documentation per ADB's Safeguard Policy Statement (SPS, 2009) and the Government of India's Environmental Impact Assessment (EIA) Notification of 2006.

ADB Policy

8. 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.

9. **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.
- (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.

10. **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.

11. **Public Disclosure.** ADB 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.

B. PROJECT PROFILE

Type, Category and Need

12. **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. Under T-1, only a short-term sanitary landfill is to be developed over an area of 6500 sqm to meet the waste disposal requirement of the city.

13. **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.

14. **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.

15. 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) in the interests of health and economic well being of the people of Shillong..

Location and Implementation Schedule

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

17. Although implementation was originally scheduled to start from 2010-2011, actual implementation could only start during March 2012. The completion period of the work is 18 months.

Description of the Subproject

1. Existing Solid Waste Management

18. **Management.** In GSPA, Solid Waste Management is managed by three different authorities 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 (km²). The Chief Executive Officer looks after the administration of SMB.
- (ii) The Dorbars – The 5 census towns of Shillong Urban Agglomeration (SUA) include Mawlai, Nongthymmai, Madanryting, Pynthorumkhrah and Nongmynsong. 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 km². 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).

19. **Waste Generation.** The solid waste generated in GSPA is 159 metric ton per day (MTD) with waste generation rate at 400 gram per capita per day. The major solid waste generation sources are households (56 %), markets (23 %), hotels & restaurants (7 %), construction waste (2 %), and street sweeping (7 %).

20. **Segregation.** Waste segregation is not practiced in Shillong. The absence of segregation poses problems to the operation of the existing compost plant located in Mawiong dumpsite.

21. 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 Mawiong dumpsite.

22. **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. Currently, SMB has 410 permanent workers and has appointed 50 people on Muster Roll basis for solid waste management.

23. House-to-house collection is at present in existence in a few Dorbars only. There are about 18 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 can only collect 57 MTD out of the generated 159 MTD. To facilitate collection, SMB has placed 60 masonry/reinforced cement concrete (RCC) dustbins of various capacities ranging from 1.8 to 4.5 cubic meters (m³) for areas not included in the house-to-house collection scheme. However, due to less coverage and delay of collecting vehicles, many households keep their waste on the streets, and dogs scatter these waste on the roads and create unhygienic, unhealthy conditions.

24. **Disposal.** The collected wastes are disposed at a disposal site located in Mawiong, 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.

25. The compost plant with a capacity of 100 MTD was constructed in the Marten, Mawiong dumpsite in 2002. It is currently proposed for rehabilitation and expansion to 150 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.

2. Subproject Component

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

Table 1: SUB PROJECT DETAILS

Sl. No.	Name of work	Location	Description	Changes if any from approved scope
1.	Development of a sanitary landfill site and associated works	Marten, Mawiong, Shillong	Development of a sanitary landfill site over 6500 sq m with leachate collection and treatment facility, supply of bulldozer and related landfill works	None

II. ENVIRONMENT ASSESSMENT & REVIEW FRAMEWORK

A. ENVIRONMENT LEGAL REQUIREMENT

EIA Notification (2006)

27. 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.

28. 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.

29. 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.

30. The only type of infrastructure provided by the NERCCDIP that is specified in the EIA Notification is solid waste management. For the proposed work in Tranche II, An environmental clearance is not required for Construction of Garage cum workshop shed & staff rest room at old landfill site, Marten, Mawiong.¹

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

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

32. 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.

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.

33. The CFE for the proposed landfill at Marten, Mawiong 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.

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

34. 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)

35. 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

36. 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 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.

37. 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.

38. 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.

39. 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.

40. 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.

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

TOWN	WORK PACKAGE	APPLICABLE LEGISLATION/ TYPE OF CLEARNACE	CLEARANCE GIVEN BY AND DATE	SUBJECT/ ISSUE	REMARK/ ACTION NEEDED
SHILLONG	Tranche I SWM Landfill site	EIA Notification 2006	SEIAA, Meghalaya 14 August 2009	Environmental Clearance	Already received
		Forest Conservation Act 1980	MOEF 21 November 2011	Forest Clearance	Already received
		Air Act 1981 and Water Act 1974	Meghalaya PCB 26 November 2009	Consent For Establish (CFE)	Already received

C. COMPLIANCE ON ENVIRONMENTAL LOAN COVENENTS

44. 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. GoI will prepare and submit annually 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

45. 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, this is the first Environmental monitoring report being prepared. The details of compliance with the environmental loan covenants are reflected in following Table-3.

Table 3: Compliance of Environmental Loan Covenants

Project Specific Covenants	Status/Issues
Preparation of IEE	Prepared and uploaded in SIPMIU website
Environmental Management Plan	Part of IEE report
Environmental budget	Part of IEE report
IEE to be part of bidding document	Incorporated
Annual environmental monitoring report	This is the first report being submitted

D. ENVIRONMENTAL ORGANISATION AND MANAGEMENT

1. Details of Environmental cells setup in SIPMIU and DSMC

46. 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.

2. Responsibilities for supervision of environmental matters

47 To ensure proper compliance of environmental safeguards, the Environmental Experts of DSMC and Environmental Officer SIPMIU will monitor environmental matters and report to the Project Manager who shall advise the Project Director.

Responsible for carrying out mitigation measures

- 48 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 the conduct of maintenance or repair works.
- 49 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.

Responsible for carrying out monitoring measures

- 50 During construction, Environmental Specialist (ES) of DSMC and the Environmental Officer (EO) of SIPMIU will monitor the construction contractor's environmental performance.
- 51 During the operation stage, monitoring will be the responsibility of an operator appointed by authority as well as Meghalaya Pollution Control Board.

Responsible for reporting

- 52 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 annual monitoring reports for IPCC and assist IPCC in preparing an 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.

Third Party Agency for EMP

- 53 No Third Party Agency has been engaged.

3. GRIEVANCE REDRESS MECHANISM

- 54 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 the Principal Secretary², Urban Affairs 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

² The Secretary, Urban Affairs Department with the Secretaries of all the concerned departments as members, will chair the Independent Grievance Redress Committee (IGRC). The Program Director would be the Secretary of the Committee. The IGRC will be responsible to take decisions in all matters related to grievance redressal of the Project.

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**.

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

56 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

56 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	Mitigation measures proposed	Monitoring methods & frequency	Monitoring conducted by	Compliance Status
Location and Design stage				
NA				
Construction stage				
Top soil conservation & Adequate Drainage arrangements within / around the disposal site	Visual inspection to check separate stockpiling of topsoil. Monitoring includes checking siltation caused during construction and the use of silt fences. 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.	Monthly verification with site activities	Contractor/ DSMC / SIPMIU	Being complied. Steps are being taken to prevent any water logging.
Operation and Maintenance Stage				
NA				

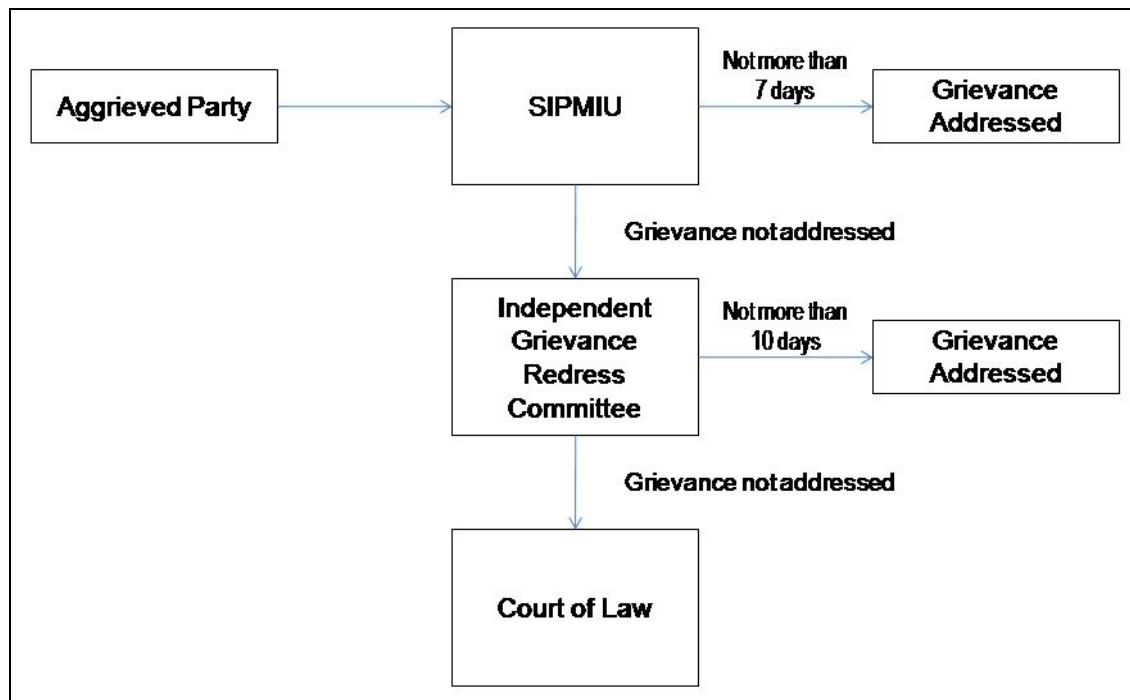
IV. OBSERVATION RECOMMENDATION AND ACTION TAKEN

The work under the sub project has started in March 2012 and the contractor has been made to understand that he has to comply strictly with all the EMP mitigation measures as indicated in the IEE report. The contractor has taken all steps and precautions in complying with the same. However, it has been observed that this being a first ADB project in the State, the procedures for compliance have to be explained properly to the contractors. Further, getting experienced personnel to guide the project on environmental matters in the DSMC as well as the EA is difficult. Only recently the EA has been able to deploy an Assistant Environment Specialist to look into environmental matters.

Annexure – 1: Environment Monitoring Team Details.

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

S.NO.	Officer's Name	Designation	Mobile No.	Email Address
1	Shri. F. B. Chyne	Project Manager and Solid Waste Management Specialist, SIPMIU.	9436100719	f.b.chyne@gmail.com
2	Shri. L. C. J. Lyngdoh	Assistant Environment Specialist, SIPMIU	9774591279	carrylaw85@gmail.com
3	Mr.Komal Pujara.	Environmental Specialist, DSMC.	09879742707	hukamal@gmail.com
4	Mr.Kapil Kishore	Engineering Assistant, DSMC.	08729939259	kapil.kishore@mottmac.com

Annexure 2: Grievance Redress Mechanism

SIPMIU= State-level Investment Program Management and Implementation Units.

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.