

Environmental Monitoring Report

Project Number: 38412

Bi-Annual Report

Reporting Period: January – June 2014

IND: Assam Integrated Flood and Riverbank Erosion Risk Management Investment Program–Project 1

Prepared by the Flood and River Erosion Management Agency of Assam (FREMAA) for the State Government of Assam and the Asian Development Bank.

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BI-ANNUAL REPORT ON IMPLEMENTATION OF EMP

**Project No 38412
Loan No 2684-IND**

**India: Multitranche Financing Facility –
Assam Integrated Flood and Riverbank Erosion Risk
Management Investment Program**

Reporting Period – January 2014 to June 2014

Submitted by Executing Agency
Flood and River Erosion Management Agency of Assam (FREMAA)

Prepared for FREMAA by Project Management Consultancy (PMC-FREMAA)

This report has been submitted to ADB by the Flood and River Erosion Management Agency of Assam (FREMAA) and is made publicly available in accordance with ADB's public communications policy (2011). It does not necessarily reflect the views of ADB.

Asian Development Bank

**Bi-Annual Report on Implementation of Environmental Management Plan
January 2014 to June 2014**

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ABBREVIATIONS

ADB – Asian Development Bank
AIFRERMIP – Assam Integrated Flood and Riverbank Erosion Risk Management Investment Program
CBFRML – community based flood risk management and livelihood
EIA – environmental impact assessment
EMP – environmental management plan
EMoP – Environmental Monitoring Plan
FRERM – flood and riverbank erosion risk management
FREMAA - Flood and River Erosion Management Agency of Assam
MFF – multitranche financing facility
MIS – management information system
MoEF – Ministry of Environment and Forests
GOI – Government of India
NGOs – nongovernment organizations
PMU – project management unit
SEIA – summary environmental impact assessment
SGOA – state government of Assam
SIO – subproject implementation office
SPCB – State Pollution Control Board
UNDP – United Nations Development Program
WRD – Water Resources Department

LOAN PROCESSING HISTORY

Approval of PPTA 26 September 2008
Fact-finding Mission 27 January-7 February 2009
Management Review Meeting (MRM) 9 October 2009
Appraisal Mission-1 1-16 February 2010
Appraisal Mission (Final) 27 April – 10 May 2010
Staff Review Meeting (SRM) 29 July 2010
Loan Negotiations for MFF and Tranche 1 7-8 September 2010
Board Circulation 29 September 2010
Board Approval 19 October 2010
Project 1 Approval IV October 2010
Loan Agreement Signing November/December 2010
Loan Effectiveness December/January 2010
Physical Completion Date 31 March 2017
Loan Closing Date 30 September 2017

1. Introduction :

The Flood and River Erosion Management Agency of Assam (FREMAA) under the state government of Assam is responsible for the implementation of ADB-financed Assam Integrated Flood and Riverbank Erosion Risk Management Investment Program (AIFRERMIP), as agreed jointly between the SGOA, Government of India and ADB, and in accordance with government and ADB's policies and procedures. ADB staff is responsible to support implementation including compliance by FREMAA of their obligations and responsibilities for program implementation in accordance with ADB's policies and procedures.

Proposed structural works of the two subproject areas (Kaziranga Sub Project was not yet started) are :

Palasbari Sub Project:

The first tranche will retire 4.9 km of existing embankments supported by 7.0 km of revetment alongside the most erosion-prone reach

Dibrugarh Subproject

- (i) Raising & strengthening of 9.5 km town protection embankment,
- (ii) 1.8 km of bank protection through pro-siltation measures along the town protection dykes, and
- (iii) 2.4 km of bank protection near Oakland areas through sand-filled geotextile revetment.

The goal of the ADB's Safeguard Policy Statement (SPS) is to promote the environmental and social sustainability of ADB-supported projects by protecting people and their environment from potential adverse impacts and enhancing the benefits provided. This goal is integral to achieving environmentally sustainable and socially inclusive growth and poverty reduction in Asia and the Pacific, a defining element of ADB's Long-Term Strategic Framework, **Strategy 2020**.

In complying with the SPS requirements :

- (i) environmentally sustainable projects are primarily achieved through a good project design during project preparation and effective environmental management during project implementation;
- (ii) integrating environmental considerations into the project feasibility study and design calls for the incorporation of environmental assessment and management into the economic, financial, institutional, social, and technical analysis of a project; and
- (iii) good environmental assessment and management enables the continued improvement of environmental performance throughout the life of a project, and can lead to enhanced economic, financial, and social outcomes.

Assam Integrated Flood and Riverbank Erosion Risk Management Investment Program is likely to affect an area larger than the sites or facilities subject to physical works. The project under the program therefore comes under Category A. Overall, the two subprojects (Dibrugarh, Palasbari and Gumi) are needed primarily to safeguard the people, property and environment from frequent floods of the Brahmaputra River, and strongly supported by the stakeholders. The AIFRERMIP aims to integrate key Environmental Safeguards at all the levels of planning and implementation so that critical natural ecosystem. The flood plains of Brahmaputra and the resources, are not destroyed. Nevertheless, close monitoring will be operationalized so that any unforeseen impact will be detected and mitigation measures provided. Possible negative impacts include those associated with construction, which are temporary and can be mitigated through prescribed mitigation measures under the environmental monitoring and management plan to be operationalized under the Project, with the necessary capacity building of the executing agency and outsourcing. This will help in maintaining environmental sustainability along with inclusive economic growth.

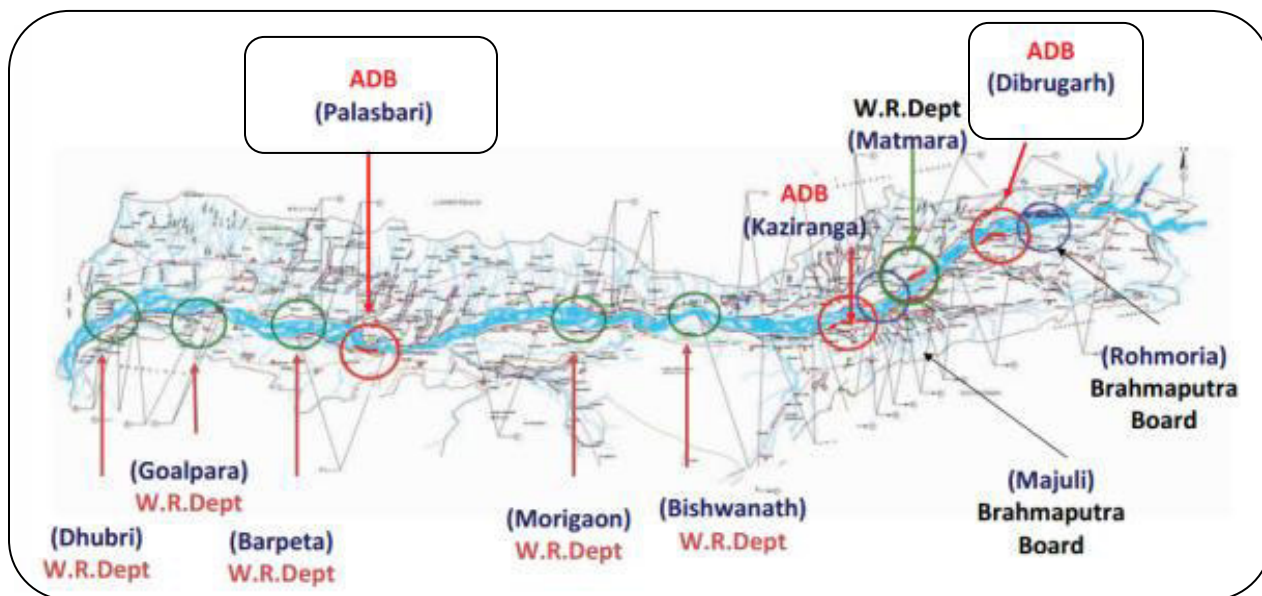
1.1. Report Purpose :

This project at two sub project sites (Dibrugarh, Palashbari and Gumi) in Assam is implemented by FREMAA through Water Resource Department, Assam in accordance with ADB's Environmental Policy 2002 and ADB's Safeguard Policy statement, 2009 so as to ensure that all environmental monitoring measures and when ever applicable Environmental mitigation measures as given in Environmental Impact Assessment and subsequent Environmental Management Plans incorporating all the Environmental concerns of the project.

The principle objectives of the report are to :

- To ensure environmentally compatible project implementation by avoiding and mitigation of negative impacts that are likely to arise from the project
- To ensure that EIA recommendations are adequately followed in EMP and EMoP to meet the Environmental Compliances of statutory requirements of MoEF, GOI.

Project sites in Assam along the river Brahmaputra



Map of areas taken up for erosion protection in Assam. Source– Assam 2011, A Development Perspective, published by Planning and Development Dept., Govt. of Assam.

1.2. Project Implementation Progress :

Although the effectiveness of the loan started from December, 2010 and January 2011, consideration of the environment safeguard of the project started in the early part of 2013. Construction works started in February-2012 in both the subprojects of Dibrugarh and Palasbari and Gumi. Kaziranga subproject could not be started as it still require clearance from the standing committee for National Board of Wildlife, MoEF, GOI. Several meetings, trainings and workshops were conducted jointly by PMC, ISC and FREMAA in the month of April, 2013 and in subsequent months for generating the awareness about the environmental safeguard and stipulations of the contract document on environment. The Semi Annual Report on the implementation of Environmental management Plan ending June, 2014 delineates Environmental Monitoring of the project from January 2014 to June, 2014 considering the environmental activities along with environmental compliances of statutory requirements of MoEF, GOI and agreement conditions. This report also highlights the gaps and deficiencies while executing the environmental management.

2. Incorporation of Environmental Requirements into Project Contractual Agreements

Manner by which EMP requirements are incorporated into contractual arrangements, such as with contractors or other parties.

An EMP is a plan of scheduled actions that follows directly from a completed EIA of a project. An EMP is the organized expression of the environmental safeguards for the project. In other words, an EIA and resultant EMP which are project-specific. Each project requires a suite of environmental safeguards defined by impact mitigations and environmental monitoring requirements that are specific to the project type, scale, activities, and location.

The key design considerations and elements of environmental monitoring are incorporated in the contract agreement enabling with ADB's Safeguard Policies and with environmental compliances of statutory requirements of MoEF, GOI.

FIDIC-BASED BID DOCUMENTS

GC 4.18 Protection of the Environment

Contractor shall protect the environment on and off site and limit damage/nuisance to public from water/soil/air pollution, noise and other adverse impacts.

Section 6, Clause 2.1 - Environment

Contractor must submit EMP for approval, employ full time environmental inspector, and submit monthly reports to Engineer and monitor impacts and the success of mitigation measures.

Section 6, Clause 2.3 – Safety Precautions & Medical Attendance

Contractor shall employ a full time safety inspector, provide safety and first aid equipment, access to nurse and doctor, etc

In terms of allowable pollutant values and occupational health and safety, the laws, standards and regulations in force in India will be the references to be adhered to by the Contractor.

Following the above clause of the ADB contract document were prepared.

• Environmental Management Plan (EMP) Compliance as per Bid Document

Procurement of Works, Section 6 - Employers Requirements, Subsection 2

2. Environmental Management Plan and Safety at the Site

2.1 Environment

2.1.1 Inspector:

“The Contractor shall employ one fulltime inspector for supervising compliance with the environmental management plan. The environmental inspector shall keep one set of current environmental standards and regulations at the site at all times,

available for consultation. The environmental inspector shall submit an Environmental Management Plan and a monthly environmental report. The report shall be written in English language in a format acceptable to the Engineer."

2.1.2 Air and Noise:

"The Contractor shall regularly spray water on dry surfaces to reduce dust problems. The Contractor shall regulate vehicle emission and noise in accordance with current legislation of India. The Contractor shall avoid unnecessary noise, especially at night."

2.1.3 Land Use:

"The Contractor shall remove and store topsoil for replacement after construction. The Contractor shall restore the surface vegetation in his work areas to the level found before the start of work. This includes the replacement of topsoil removed before construction."

2.1.4 Pollution:

"The Contractor shall prevent spills of oil and lubricants from vehicles, engines, etc. Used engine oil must be removed in an environmentally acceptable manner in accordance with current legislation of India."

2.1.5 Disruption of Agricultural Activities:

"The Contractor shall minimize the disruption of any agricultural activities within the flood embankments. To the extent possible, land outside the flood embankments used for construction purposes shall consist of WRD property. Any disruption of private agricultural land used shall be compensated by the Contractor at the current market value."

2.2 Access Routes

2.2.1 Navigation

"There are important navigation routes along the proposed site. It is the sole responsibility of the Contractor not to block navigation routes, to minimize interference with riverine traffic, and to get all necessary clearances from competent authorities for the construction of riverbank protection works. All of the Contractor's floating equipment shall follow navigation and safety standards applicable in India. The Contractor shall coordinate any dredging operation with WRD and Inland Waterways Authority as far as it could concern river navigation routes."

2.2.3 Excavation and Filling of Earth in Slope Protection:

"Earth excavation and filling activities shall take place after the area has been surveyed and inspected by the Engineer. The Contractor shall submit a map indicating the areas of planned earth excavation and filling activities; together with cross-sections showing earth cut and fill areas, based on the results of the baseline survey, within one week of survey completion. All earth excavation and fill volumes

must be confirmed and revised during the subsequent pre-work survey, before actual excavation and filling work can proceed.”

2.2.4 Sand Excavation:

“Sand excavation shall take place in suitable areas inspected by the Engineer prior to the start of the excavation activities and after written approval. The Contractor shall submit a map indicating the areas of planned sand excavation activities, within three weeks of being awarded the contract, and at least one week before starting the work. Sand excavation close to the work site and char inhabitants shall be avoided.”

2.3 Safety Precautions and Medical Attendance

2.3.1: “Safety precautions shall include, but are not limited to sound design and measures of Temporary Works, adequate illumination for night operations, instruction in accident prevention for all employees of the Contractor, adequate life protection and life saving equipment (including but not limited to safety helmets and life jackets), adequate traffic control and sign boards, guards, walkways, scaffolds, ladders, bridges, gangways and other safety devices and equipment as may be necessary to prevent accidents or injuries.”

2.3.2: “The Contractor shall at all times maintain adequate first aid attendance on the Site including a first-aid nurse. In addition the Contractor shall make necessary arrangements with a qualified medical doctor to be called to the Site when required for routine or emergency consultation. The Contractor shall provide health inspection and vaccination against acute contagious diseases to workers as the situation may warrant.”

2.3.3: “The Contractor shall promptly, but in any case within twenty-four (24) hours of the occurrence of any accident at or about the Site, or in connection with the execution of the Works under the Contract, report all accidents to the Engineer or his Representative. The Contractor shall also report all accidents to the competent Authority, whenever such a report is required by law.”

2.3.4: “The Contractor shall employ one full time safety inspector. The inspector shall keep one set of current safety standards and regulations at the site at all times, available for consultation. The Safety Inspector shall supervise the adoption of appropriate safety measures at the construction site and on all floating equipment in compliance with standards and regulations of India. The safety inspector shall submit monthly safety reports. The reports shall be written in the English language in a format acceptable to the Engineer.”

2.4. Site Installations

2.4.1: The Contractor’s preparation of the construction site and of all working and

storage areas inside or outside the premises, and transport and assembly of all plant and equipment, complete, as required for the satisfactory execution and completion of the works, shall include but is not limited to the following.

- i) clearing obstructions, grading and improvement of working and storage areas
- ii) protection of existing structure
- iii) protection of trees for their preservation
- iv) construction of temporary road as required
- v) building of furnishing/outfitting of all required offices, workshops, testing laboratories, stores, material sheds, and sanitary facilities
- vi) installation of power, lighting, water, telephone, and any other supply lines, as well as radio communication
- vii) fencing of the site areas and the fixing of all required safety and warning signs, etc
- viii) transport and assembly, ready for use, of all land and water based construction equipment. Survey and diving equipment, generators spare equipment tools, etc.

2.4.2 *“The Contractor must submit to the Engineer on his demand, detailed compilations of all land and water based planned construction equipment with pertinent layout drawings on its set-up location, as well as drawings on the layout of storage and working areas with their approaches.”*

2.4.3 *“The Contractor must provide and maintain reasonable sanitary facilities, proper lighting and adequate protection of the Site against accidents, theft and the like. The Contractor shall organize the disposal of wastes in an environmentally acceptable manner, in accordance with environmental standards and regulations of India.”*

2.4.4 *“The Engineer or his Representative is authorized to check the Site installation at any time, and if required, to demand extensions, additions and special repair or maintenance measures.”*

2.5 Compliance with Environmental Management Plan.

2.5.1: *“The Contractor shall work in strict compliance with the principles of the Environmental Management Plan. No part of the work shall be started before environmental and safety inspectors and first aid nurse are present at the site. No part of the work shall be started, or if defects are found later, continued or restarted before complying with all conditions of Sub-section 2 in this Section.”*

2.5.2 *“The Contractor shall remedy any damages resulting from non-compliance of stipulations of this Sub-section 2 at his own cost. All work shall be stopped until compliance is assured.”*

2.5.3 *“If the Contractor is not able or unwilling to start remedial work within five working days after detection of any defect or omission, the Engineer can order*

remedial works through third parties. The cost for third-party services are to be borne by the Contractor and shall be deducted from the Contractor's invoices or from the Retention Money."

2.6 Measurement and Payment.

2.6.1 Protecting the Environment:

"The Bill of Quantities contains a separate line item to include all costs for protecting the environment. Cost for complying with all requirements related to construction of labour camps/ancillary sites, strengthening and/or repair of roads, rehabilitation of ancillary sites etc. are deemed to be included in the bill of quantities. Cost for specific activities related to the work, such as stripping and replacing top soil (agricultural soil), dust suppression, water supply, sanitation facilities, camp site waste disposal, control of pollution from leakage and spill of oils and lubricants, safety and warning signs/signals etc., should be included in this line item in the bill of quantities. Payments will be made on the basis of available market rates and prevailing schedule of rates of Government of Assam."

- **Preparation of site specific EMPs :**

Following the contract stipulations Environmental Inspectors prepared the site specific EMPs following the EIA and the EMP on Palasbari Embankment was approved by the concerned SIO.



- Status of the mechanisms present for the Implementation of EMP

Table :1. Implementation of EMP

	Sub Projects according to the contract packages	Environmental Inspector appointed	EMP prepared	EMP approved by SIO	EMoP	Safety Inspector appointed	First aid Nurse engaged	SIO monitor the Implementation of EMP
1	Palasbari Embankment	√	√	X	√	X – will appoint soon	√ - Agreement has been made with the local Pharmacy	√
2	Gumi	√	√	√	√	X– will appoint soon	√- Agreement has been made with the local Pharmacy	√
3	Palasbari Dyke (Work not started)	X	X	X	X	X	X	
4	DTP Dyke	X – will appoint soon	X- EMP finalized by the contractor and will be submitted soon to SIO	X- after submission SIO will review the EMP before approval	X – will submit soon	X– will appoint soon	X– will appoint soon	Overall monitoring, including the environment is being carried out. EMP will improve the scenario.
5	Mothola Oakland	X- will appoint soon	X- EMP finalized by the contractor and will be submitted soon to SIO	X- after submission SIO will review the EMP before approval	X- will submit soon	X– will appoint soon	X– will appoint soon	Overall monitoring, including the environment is being carried out. EMP will improve the scenario.
6	Porcupine Lot-3	Not required	X- will submit	X	X	Not required	Not required	
7	Porcupine Lot-4	Not required	X- will submit	X	X	Not required	Not required	

3. Summary of Environmental Mitigation and Compensation Measures Implemented

Based on EMP, may include measures related to air quality, water quality, noise quality, pollution prevention, biodiversity and natural resources, health and safety, physical cultural resources, capacity building and others.

Table -2: Environmental Clearances during Construction Stage

Sl. No	Description	Approval from Assam Forest Department	Approval from SIO, WRD	Approval from Pollution Control Board, Assam	Responsibility	Status
1	Camp Site	X	√	X	Contractor	Obtained
2	Borrow area for soil	X	√	X	Contractor	Obtained
3	Stone from Quarry	√	X	X	Contractor	Obtained
4	Borrow area for sand	√	√	X	Contractor	Obtained
5	Top soil monitoring	X	√	X	Contractor	Obtained
6	DG set noise and oil spill monitoring	X	X	√	Contractor	Obtained
7	PUC certificate for Vehicles	X	X	√	Contractor	Obtained
8	Loss of agricultural land	X	√	X	Contractor	Monitored
9	Environment Monitoring	√	√	√	Contractor, SIO, FREMAA	Obtained
		Required	√	Not Required	X	

4. Summary of Environmental Monitoring

4.1. Compliance Inspectors (if relevant)

Following the contract stipulations Compliance Inspectors in the form of Environmental Inspector were deployed by few contractors and Safety Inspectors are in process of recruitment by all the contractors.

4.1.1. Summary of Inspection Activities

Environmental Inspectors monitors the day to day environmental safeguards at the site and reports to the SIO. Moreover, FREMAA along with PMC also monitors the implementation of the EMP (Table- 3).

Table 3. Showing the site inspections by FREMAA and PMC during January, 2014 to June, 2014.

Date	Site inspected, Meeting	FREMAA	PMC
01.04.14	Dibrugarh Sub Project (1) Mothola-Auckland, (2) slab casting unit and (3) MaijanGaon near DTP dyke	SIO	√
22.05.14	Baragaon, Guwahati (To the construction site of Lot-III porcupine)	√, SIO	√
30.05.14	Palasbari Embankment works	SIO	√
06.06.14	Palasbari Embankment works	√, SIO	√
11.06.14	Gumi	√, SIO	√
27.06.14	Dibrugarh Sub Project (1) Mothola-Auckland (2) slab casting unit and (3) MaijanGaon near DTP dyke	√, SIO	√

- Inspection activities on Environmental Safeguards are done in several stages :
 - Monthly Environmental Reporting Formats were developed at PMC to check the compliance. These reports are to be complied by the Environmental Inspector and to be submitted to the SIO for his approval (Form-1).
 - Site Engineers of PMC also monitor the Environmental Safeguards (Form-2).
 - SIO also monitor the implementation of EMP during their inspection (Form-3)

Form-1

Assam Integrated Flood and Riverbank Erosion Risk Management Investment Program	
Tranche-1	Sub Project :
Contractor :	Project No : 38412
Date of Agreement :	Contract Period :
Target Date of Completion :	Extended upto :
Name of the Environmental Inspector :	Month : Year:

Monthly Environmental Report			
		Status	Remarks
	Environment		
1	Sources of materials		
1.a	Use quarry sites and sources permitted by Government		
1.b	Verify suitability and approval by SIO		
1.c	Submission of monthly documentation of all material sources		
2	Air		
2.a	Spray water on dry surface to reduce dust in the air		
2.b	Use tarpaulins to cover sand and other loose materials where transported by vehicles		
2.c	Clean wheels and undercarriage of vehicles while leaving the site		
2.d	Certificates on Vehicular Emission of all the vehicles used in the site		
2.e	Checked air quality by PCB approved lab		
3	Noise		
3.a	Plan activities in consultation with SIO, community to reduce noise level		
3.b	Provide information to public about work schedule		
3.c	Horns not used, unless essential		
3.d	Minimize the noise by silencers		
3.e	Do not allow workers to an exposure of 80 dBA or above without ear plug		
3.f	Use of heavy vehicles from to		
3.g	Use of Generators KV from to		
3.h	Checked Noise level by PCB approved lab		
4	Surface water quality		
4.a	Avoid stockpiling of earth fill, especially during monsoon unless covered by tarpaulin or plastic sheets		
4.b	Install temporary silt traps or sedimentation basins along the drainage leading to water bodies		
4.c	Store fuel and lubricants away from the drains		
4.d	Checked surface water quality by PCB approved lab		
5	Land Use		
5.a	Has the contractor preserved the top soil for replacement after construction		
5.b	Status of the surface vegetation on the construction site prior to the initiation of the work (Detail report with number of trees cut and initial photographs of the area)		
5.c	Borrow pit – Rehabilitation of the borrow pit was done		
6	Pollution		
6.a	Spills of oils on the site and on river regularly checked		
6.b	Necessary measures taken to stop it		
6.c	What measures taken to remove the Used engine oils		
6.d	Surface discharges monitored		
7	Disruption of Agricultural activities		
7.a	Any agricultural activity in the flood embankment		
7.b	Any measures taken to minimize the impact on agricultural activity in the flood embankment		
7.c	Land used outside the flood embankment belongs to WRD or private		
7.d	If private agricultural land is used proper compensation is made by the Contractor at current market value		
	Access routes (River)		
a	Whether the Navigation routs are blocked ?		
b	How interference with the riverine traffic is minimized ?		
c	All the floating equipments following navigation standards applicable in India.		

d	All the floating equipments following safety standards applicable in India.		
e	Any dredging operation done ?		
	Road		
a	All the access roads inspected for their appropriateness for moving construction equipments		
b	If found inappropriate, strengthened by Contractor		
c	Due to the movement of the heavy vehicles, the access road is degraded more than normal use		
d	Contractor repaired the degraded access road		
e	Access road for the fringe community is used / blocked and alternate route provided		
f	Conduct the work during light traffic		
	Excavation and filling of Earth in Slope Protection		
a	Whether the area has been surveyed, inspected and approved by the SIO after the identification of excavation and filling site.		
b	Whether contractor has submitted a map indicating the area of earth excavation and filling activities showing the earth cut and fill areas, based on the baseline survey.		
	Sand Excavation		
	Whether the sand excavation area was approved by the SIO in writing.		
b	Whether contractor has submitted a map indicating the area of planned sand excavation		
c	Whether the sand excavation area is close to the work site or to char inhabitants		
	Site Installations		
a	Protection of trees for their preservation		
b	Whether temporary roads were constructed ?		
c	Whether environmental friendly waste disposal system properly monitored and executed in the work sites ?		
	Labour Camps		
a	Consult SIO and fringe community for establishing the temporary office shed, camp and plant		
b	Minimize the removal of vegetation and donot allow cutting of trees		
c	Provide safe drinking water to the camp inhabitants		
d	Sanitation facility to the camp inhabitants		
e	Solid waste management practiced in the camps		
f	Report SIO and fringe community before vacating the camp after the work		
	Agricultural Land and Crop Loss		
a	Any loss or damage of agricultural land and crops due to project construction activities		
	Homestead Loss		
a	Any home stead loss (including loss of trees, ponds, shifting of any other installations)		Addressed by RAP
	Drainage from Adjacent Area		
a	Natural drainage system blocked or disrupted.		
	Wildlife		
a	Sighting of Dolphin (National Aquatic Animal)		
	Fish productivity		
a	Fish productivity increased or decreased (survey in the boat ghats)		
b	Landing facility- Change of Boat Ghats		
	Display Materials		
a	Signs like "Only Staff", "Restricted Area" displayed in relevant area		
b	Safety (including traffic signs), notice board is available		
	Health and Safety		
a	Provision of First Aid and medical service available		
<i>Provide GPS coordinates for most of the descriptions so that map can be prepared.</i>			
5	Additional comments or actions required :		
	Signature by Environmental Inspector	Accepted/ Approved by SIO	
	Date :	Date :	
	Contact Details :	Contact Details :	

Form-2**Environmental Safeguards : Monitoring at site**

Location : _____ Month : _____

(Give ✓ as applicable)

	Item	Yes	No	Remarks
1	Environmental Inspector present in all the works carried out at site			
2	EMP			
3	EMoP			
4	Baseline information of environment are present at site office			
5	Relevant Acts and Rules are available at site camps			
6	Air, water and Noise standards present at site			
7a	Air water and noise test results are kept in the site office			
7b	If Yes, Name the company performing the test			
7c	Test conducted			
8	Vehicles are checked in the camp before the work			
9	Oil seepage are checked for generators and motors of boats daily			
10	Oils are stored safely (to avoid soil & water contamination)			
11	Solid waste management practiced at the site			
12	Measures taken to reduce the dust pollution			
13	Access roads and navigation routes obstructed			
14	Access road maintained by the contractor			
15	Sand collected from the chars which are not inhabited			
16	Borrow pit rehabilitation done			
17	Loss of agricultural area if any			
18	Sanitation facility at campus is adequate			
19	Quality of drinking water tested			
20	Quantity of drinking water is sufficient.			
21	Record kept for cutting of trees			
22	Sitting of dolphin, If yes give dates and mention site			
23	Register checked weekly (attendance of Environmental Inspector, PUC certificate of all the vehicles used at site)			
24	Meeting related to awareness on environmental safeguards carried out during the month			
25	Any grievances lodged / discussed during the meeting related to Environment			
26	Monthly environmental report submitted to SIO . If submitted give the date.			

Remarks:

*Take photographs of the important events with date and location,

**Mention any other measures taken to protect the environment and the people.

Date :

Signature

Form-3

SIO CHECKLIST FOR ENVIRONMENTAL SUPERVISION AND MONITORING DURING CONSTRUCTION

Contractor's Name : _____

Month : _____ Dates of Inspection : _____

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

1. Is the Environmental Management Plan being implemented during the construction phase of the river bank protection work ? Yes No
2. Environmental Inspector present during the construction work ? Yes No
3. Are there sufficient measures incorporated in the subproject to prevent water pollution of nearby water bodies ? Yes No
4. Are there adequate erosion control measures to prevent erosion and sedimentation during the riverbank protection works ? Yes No
5. Is the project taking adequate measures to control dust and noise pollution ? Yes No
6. Is the project providing adequate alternative traffic routes (diversion/temporary access roads, etc) during the riverbank protection work ? Yes No
7. Is the subproject avoiding mining of sand from locations adjacent to inhabited char land areas, where applicable ? Yes No
8. Has the contractor used permitted sites for collection of materials (Boulders, Soil, etc) Yes No
9. Has the project resolved issues related to land accusation and compensation under the RAP ? Yes No
10. Have the Labour Camps and project Site Office and storage areas been constructed with sufficient sanitation and water supply facilities and other environmental and social associates with the construction ? Yes No
11. Is the sub project taking adequate measures to avoid spills of oil/lubricants smoke and noise pollution ? Yes No
12. Is the composite generated waste / garbage being disposed in an environmentally acceptable manner ? Yes No
13. Is there sufficient safety looked after by Safety Inspector at the work place and health care facilities (First Aid Nurse, and regular visit by Physician) or clinic close by to composites ? Yes No
14. Is the construction contractor adequately prepared to handle emergency situations like accidents and illness ? Yes No
15. Is the contractor keeping the records of the trees destroyed during the construction work ? Yes No
16. Is the subproject taking adequate measures to preserve the topsoil for later replacement ? Yes No
17. Are there adequate measures to avoid disturbances to the habitat of fish and other aquatic fauna and flora ? Yes No
18. Do the vehicles used in the site has valid PUC certificates ? Yes No
19. Is there any complaints lodged by the local community on environmental issues ? Yes No
20. **Major observations, Conclusion, Recommendations :**

Contractor or his representative

Name and Signature of the Supervisor

Designation _____

Date _____

4.1.2. Mitigation Compliance :

Following measures were taken to meet the compliance.

Construction Site Set-Up

- Contractor shall comply with Section 6, Clause 2.4 – Site installations for construction camp, and all working and storage areas
- Safe drinking water and adequate sanitation facilities to be provided.

Waste Materials

- solid waste were either reused or recycled when practical,
- waste lubricant oils and spent oils will be stored in proper containers in a designated area until recycled or properly disposed offsite.
- general waste (metal, paper, cardboard, plastics, etc) are stored in bins and removed to suitable disposal site
- no hazardous wastes are anticipated to be generated from the site.

Noise

- Major construction activities shall be scheduled during normal daylight working hours and consistent with applicable standards.
- Contractor use equipment that is operated with appropriate noise muffling devices resulting in the least possible noise.

Air Quality and Emissions Management

- all transport vehicles moving soil, granular material and rock to and from the site were covered
- The Contractor implement dust control measures at the source of emissions. The standard method is to wet dry surfaces, over which traffic passes; and encouraged natural re-vegetation or replant as early as practical after the completion of construction
- suitable emission controls and exhaust systems for all equipment will be maintained, and regular inspection and maintenance of trucks were conducted to control pollutants from exhaust fumes

Spills Prevention

- specific sites with barrier protection and impervious pads for fuelling and servicing were established at sites
- fuel, lubricants and chemical products to be kept in special, water tight area, without drainage exit to the river; material to be kept in drums or safe tanks
- use only appropriate pumps and nozzles for refueling. Disconnected hoses will be placed in containers to prevent spills of residual fuel
- off-site spent lubricants will be collected and safely disposed
- storm water that collects in secondary containment areas will be inspected before release

		Explanatory comments
Overall Compliance	Good	<ul style="list-style-type: none"> • Sanitary toilets are installed in all the site camps. As most of the labours are local, sanitary toilets are not present at the labour camps. Suggestions has been made to develop the facility in the labour camps particularly at the 'char areas' (Sand bars) in the next working season. • Safe drinking water used in all the site camps. • Awareness meeting has been carried out on solid waste management in all the camps • Generators are used during the daylight hours • Contractors use dust control measures • Soil and granular materials are covered by tarpaulin during transport • Fuel and lubricants are kept far away from river • Oil checks of the vehicles and generators are done regularly • The environmental standards (Central Pollution Control Board, MoEF, GOI) applicable for the sites are kept at the site for reference.

4.1.3. Mitigation Effectiveness

To monitor the mitigation effectiveness the following parameters are monitored.

Table-4 :Mitigation Effectiveness during January to June, 2014

(Details of the tests and the frequency as per EMP are described in 4.3)

	Palashbari– Embankment* Date of Test and location : Dokhola(Test Results in Annex-1)	Gumi* Date of Test and location : Zahirpur(Test Results in Annex-1)	Palash bari - Dyke	Dibrug arh – DTP Dyke	Dibrug arh – Mothola	Porcu pine (Lot-3)
Ambient Air quality	Within the permissible limit (30.05.15)	Within the permissible limit(31.05.15)	Works yet to start	Tests are being carried out	Tests are being carried out	Tests are being carried out
Surface Water Quality	Within the permissible limit (2.06.14)	Within the permissible limit(2.06.14)				
Ground Water Quality	Within the permissible limit (2.06.14)	Within the permissible limit (2.06.14)				
Noise level	Within the permissible limit (31.05.14)	Within the permissible limit (31.05.15)				
Pollution level of the vehicles used at site	PUC certificates present (attached with monthly Environmental Reports)	PUC certificates present(attached with monthly Environmental Reports)				
Complain lodged by the local residents on Environmental pollution by the construction activity. January to June, 2014	No complaints lodged	No complaints lodged		No compla ints lodged	No complai nts lodged	No compl aints lodged

* During January, 2014 to June Tests were conducted on 30th May, 2014, 2nd June, 2014 at Palasbari and on 31st May, 2014; 2nd June, 2014 at Gumi

		Explanatory comments
Mitigation Effectiveness	Good	<ul style="list-style-type: none"> No complaints were lodged to SIO on environmental pollution by any of the fringe villagers, NGO's or other institutions Results of the ambient environmental tests were within the permissible limit of Central Pollution Control Board, MoEF, GOI.

4.2. Emission Discharge (Source) Monitoring Program (if Relevant)

Not relevant to this project..

4.3. Ambient Monitoring Program (if Relevant)

To monitor the ambient environment the following parameters are to be monitored with the frequencies described in the SEIA. All the tests were performed from the Pollution Control Board, Assam.

- **For AirQuality :**
SPM, RSPM, SO₂, NO_x, CO, Pb - Within 100 m of Hot mix plant, construction camp, crusher and near sensitive locations/ settlement – Continuous 24- hourly, twice a week, for two weeks once every year (summer).
- **For Dust & Smoke :**
Details of water sprinkling and frequency of sprinkling per day
- **Vehicular pollution :**
Emission records of vehicular pollution of all the vehicles used
- **Surface Water :**
pH, BOD, COD, TDS, TSS, DO, Oil and Grease – from Brahmaputra River - Once during the dry season.
- **Ground water :**
pH, BOD, DO, total coliform, As, Cd, Mn and Ground Water levels – Construction site, Rehabilitation site, service areas, - Once at the start of construction
- **Noise :**
Noise Level in dB (A) – Near the construction sites and sensitive locations close to embankment – One day hourly measurement, once in six months

As mentioned in the report, The contractors and SIO's were not acquainted with the safeguard norms of the ADB. Training and workshop were conducted by PMC in association with FREMAA to apprise the contractors and SIO's about the ADB's safeguard procedures. Moreover, meetings were conducted during the field visits about the environmental safeguards including the implementation of EMP (Ref. minutes of the meetings - Appendix-2).

Frequency of the tests to check the ambient environment will be followed as per EMP recommendations in all the subprojects in future and this has been recorded in the minutes.

4.3.1. Summary of Monitoring

Table-5 : Ambient Environment Monitoring Plan

Attribute	Parameter	Special Guidance	Standards	Frequency	Duration	Location	Implementation
Air	SO ₂ , NO _x , SPM, RSPM, CO, Pb	High volume sampler to be located 50m from the river bank site Downwind direction. Use method specified by PCB, Assam for analysis	Air (prevention and Control of Pollution) Rules, CPCB, 2009	Six times	24 hours Sampling	Along the river bank area	Contract or
Surface Water	pH, BOD, COD, TDS, TSS, DO	Grab sample collected from source and Analyse as per Standard Methods for Examination of Water	Indian Standards for Inland Surface Waters (IS: 2296, 1982	Two times including baseline	Grab Sampling	Along the Surface water sources	Contract or
Ground Water	pH, BOD, DO, Total Coliform, As, Cd, Mn			Two times including baseline			Contract or
Noise	Noise levels on dB (A) scale	Equivalent noise levels using an integrated noise level meter kept at a distance of 15 m from the river bank construction area.	MoEF Noise Rules, 2000	One time including baseline	Leq in dB(A) of day time and night time	Along the river bank	Contract or

4.3.2. Results (During January 2014 to June 2014 one set of tests were conducted in Palasbari and one set of tests in Gumi were done.)

Table-6. Quality of ambient Air at the site during January- June, 2014

Parameter	Palashbari– Apron(30.05.14 & 02.06.14)	Gumi(31.05 .14 & 02.06.14)	Dibrugar h- DTP Dyke	Dibruga rh- Mothola	Porcup ine (Lot-3)
PM10 ($\mu\text{g}/\text{m}^3$)	56	54	Tests are being carried out	Tests are being carried out	Tests are being carried out
NO2($\mu\text{g}/\text{m}^3$)	33	27			
SO2($\mu\text{g}/\text{m}^3$)	13	14			
Pb($\mu\text{g}/\text{m}^3$)	0.049	0.056			
Weather	clear	clear			

Table-7. Quality of Surface Water at the site during January- June, 2014

Parameter	Palashbari–Apron (30.05.14 & 02.06.14)	Gumi(31.0 5.14 & 02.06.14)	Dibruga rh- DTP Dyke	Dibruga rh- Mothola	Porcup ine (Lot-3)
pH	7	7.1	Tests are being carried out	Tests are being carried out	Tests are being carried out
Temperature	25 C	25 C			
DO (mg/l)	7	6.8			
BOD(mg/l)	0.8	0.8			
COD(mg/l)	2.86	2.86			
TDS(mg/l)	194	105			
TSS(mg/l)	43	45			
Oil & Grease	BDL	BDL			

BDL=Below Detectable Limit

Table-8. Quality of Ground Water at the site during January- June, 2014

Parameter	Palashbari– Apron (30.05.14 & 02.06.14)	Gumi (31.05.14 & 02.06.14)	Dibrugar h- DTP Dyke	Dibruga rh- Mothola	Porcup ine (Lot-3)
pH	6.2	6.3	Tests are being carried out	Tests are being carried out	Tests are being carried out
Temperature	26 C	24 C			
DO(mg/l)	0.7	0.8			
BOD(mg/l)	1.1	1.2			
As(mg/l)	BDL	BDL			
Cd(mg/l)	BDL	0.001			
Total Coliform (/ml)	NIL	NIL			

BDL=Below Detectable Limit

Table-9. Quality of Noise at the site during January- June, 2014 (specific date of test)

Parameter		Palashbari– Apron (30.05.14 & 02.06.14)	Gumi (31.05.14 & 02.06.14)	Dibrugarh- DTP Dyke	Dibrugarh- Mothola	Porcupine (Lot-3)
Noise levels on dB (A) scale	At Geo-Bag Dumping Site 10Mtr (Working Activities on)	54.1	55.9	Tests are being carried out	Tests are being carried out	Tests are being carried out
	At Geo-Bag Dumping Site 10Mtr (Working Activities off)	47.2	48.1			

		Explanatory comments
Ambient Environment condition	Good	<ul style="list-style-type: none"> For those site where the tests are being conducted, the results are within the prescribed limits of the Central Pollution Control Board, MoEF, GOI. As the surface water at the working site contains grease and oils below the detectable level, it indicates that the contractor is following the environmental norms prescribed to reduce water pollution. All the works are limited within daylight hours.

4.3.3. Assessment

Table-10.Comparison of ambient Air, Surface water, Ground water and Noise at the site with the baseline data and National Standards.

	Parameter	National Standard	Palashbari (30.05.14 & 02.06.14)	Gumi (31.05.14 & 02.06.14)
Air	PM10	100 µg/m ³	56	54
	NO2	80 µg/m ³	33	27
	SO2	80 µg/m ³	13	14
	Pb	1.00 µg/m ³	0.049	0.056
	Weather		clear	clear
Surface Water	pH	6.5-8.5	7	7.1
	Temperature		25 C	25 C
	DO	Not less than 5mg/l	7	6.8
	BOD	2 mg/l	0.8	0.8
	COD		2.86	2.86
	TDS (IS 10500)	500 mg/l	194	105
	TSS	25 mg/l	43	45
	Oil & Grease		BDL	BDL
Ground Water	pH	6.5 - 8.5	6.2	6.3
	Temperature		26 C	24 C
	DO		0.7	0.8
	BOD	3 mg/l or less	1.1	1.2
	As	0.05	BDL	BDL
	Cd	0.01	BDL	0.001
	Total Coliform	10 /100 ml	NIL	NIL
			Results- Class A	
Noise on dB (A) scale	At Geo-Bag Dumping Site 10Mtr (Working Activities on)	75 Industrial area in daytime 55 residential area in daytime	54.1	55.9
	At Geo-Bag Dumping Site 10Mtr (Working Activities off)		47.2	48.1

		Explanatory comments
Ambient Environment condition	Good	<ul style="list-style-type: none"> Noise pollution on the barge during the geobag damping work was 0.9 higher than the prescribe limit of the standards of residential area. But noise level on the bank which is 15 to 20 m apart, was less. Surface Water quality of the river during construction was under category –A (unfiltered Public water supply after approved disinfection) Air quality was within the prescribed standards of residential or rural area.

5. Key Environmental Issues

5.1.1. Key Issues Identified

- Environmental Inspector was not recruited by the contractor on time.
- Contractors usually do not go through the environment section of the contract document thoroughly.
- Contractors were not aware of the tests to be conducted to know the ambient air quality, surface water quality ground water quality and noise levels.
- Frequency of monitoring (particularly the Test frequency) were not as described in EMP, which is an serious issue of concern.

5.1.2. Action Taken

- Several meetings and training were organized to aware the contractors on the environmental safeguard of ADB (Strategy and directions), stipulations of the contract document, testing of selected environmental parameters, national environmental standards, acts and rules of MoEF, GOI and Government of Assam.
- In the training workshop and in all the meetings with contractors and SIO's during field visits and review meetings it has been emphasized to carry out the required numbers of tests as per EMP. Moreover, special efforts has been made so that that the contractors adheres to the EMP norms.

5.1.3. Additional Action Required

- Constant monitoring and providing suggestions on the implementation of the EMP by FREMAA and PMC.

6. Conclusion

6.1. Overall Progress of implementation of Environmental Management Measures

		Explanatory comments
Overall Project implementation measures	Good	<ul style="list-style-type: none">• After the training the contractors become aware about the importance of the environmental safeguards.• The contractors after few trainings developed perceptions on the National Acts and Rules and standards.• 2 of them prepared the EMP and rest 3 has also prepared the EMP.• Monthly environmental reporting on the implementation of EMP has started. 2 of the contractors in Palasbari and Gumi already prepared the Monthly Environmental Report. Under Dibrugarh subproject 3 contractors are in the process of preparation• Test frequency should be improved and it should be as per EMP. Contractors now understood the importance of the tests for physical environment and will follow the EMP.• They also developed few mitigation measures like spraying or water, covering the sand and soil with tarpaulin while transport.

6.2. Problems Identified and Actions Recommended

Problems

- Awareness about the importance of environmental safeguards in the construction works, particularly in this part of India is very poor
- Local people have less knowledge on the environmental issues and environmental standards

- Within 1 meter of the 30 KVA DG Set on the stationary boat (barge) the level of noise is 76.2 at Palasbari and at Gumi it is 75.6 which is slightly higher than 75 prescribed for industrial area.
- Test Frequency are not as per EMP on the physical environment.

Actions Recommended

- Awareness Training on Environmental Safeguards required for the contractors
- Awareness required for the implementing officers on the ADB's safeguard policy statements
- Awareness and training required to incorporate basic ideas on current environmental safety issues and relate it with the development and economy.
- Use of special enclosures and critical grade silencers will be used to reduce the noise level during geo bag damping.
- SIO's to monitor the test frequencies of the physical environment along with the quality check of the structural measures.

Appendix 1

Ambient Monitoring Results

Scanned copy of the reports from the Pollution Control Board, Assam.

POLLUTION CONTROL BOARD, ASSAM **BAMUNIMAIDAM, GUWAHATI-781021**

Analysis Report of B. Tech-15/14

1. Source : Tube well (Base line area) project site of Brahmaputra Infrastructure Ltd. *Palashbari*
2. Date of collection : 02.06.2014 at 5.00 PM
3. Date of Receipt : 03.06.2014
4. Collected by : Sri R. Bordoloi, ES & Sri K. Nath, ES

PHYSICAL PARAMETERS:

pH : 6.2
Temperature : 24 °C

CHEMICAL PARAMETERS: (mg/l)

DO : 0.7
BOD : 1.1
As : BDL
Cd : BDL
Total Coliform : Nil

BDL: Below Detectable Limit



Addl. Chief Env. Scientist

POLLUTION CONTROL BOARD, ASSAM
BAMUNIMADAM, GUWAHATI-781021

Analysis Report of B. Tech-14/14

1. Source : Brahmaputra river at Polashbari (Up stream of project site) Brahmaputra Infrastructure Ltd.
2. Date of collection : 02.06.2014 at 4.35 PM
3. Date of Receipt : 03.06.2014
4. Collected by : Sri R. Bordoloi, ES & Sri K. Nath, ES

PHYSICAL PARAMETERS:

pH : 6.8
Temperature : 25 °C

CHEMICAL PARAMETERS: (mg/l)

DO : 7.1
BOD : 0.6
COD : 2.86
TDS : 178.0
TSS : 38.0
Oil & Grease : BDL

BDL: Below Detectable Limit


Addl. Chief Env. Scientist

POLLUTION CONTROL BOARD, ASSAM
BAMUNIMADAM, GUWAHATI-781021

Analysis Report of B. Tech-16/14

1. Source : Brahmaputra river at Polashbari (Down stream of project site) Brahmaputra Infrastructure Ltd.
2. Date of collection : 02.06.2014 at 5.00 PM
3. Date of Receipt : 03.06.2014
4. Collected by : Sri R. Bordoloi, ES & Sri K. Nath, ES

PHYSICAL PARAMETERS:

pH : 7.0
Temperature : 25 °C

CHEMICAL PARAMETERS: (mg/l)

DO : 7.0
BOD : 0.8
COD : 2.86
TDS : 194.0
TSS : 43.0
Oil & Grease : BDL

BDL: Below Detectable Limit



Addl. Chief Env. Scientist

POLLUTION CONTROL BOARD, ASSAM
BAMUNIMADAM, GUWAHATI-781021

Analysis Report of B. Tech-18/14

1. Source : Tube Well (Base line area) project site of
Brahmaputra Infrastructure Ltd., Gumi Chaygaon
2. Date of collection : 02.06.2014 at 3.05 PM
3. Date of Receipt : 03.06.2014
4. Collected by : Sri R. Bordoloi, ES & Sri K. Nath, ES

PHYSICAL PARAMETERS:

pH : 6.3
Temperature : 24 °C

CHEMICAL PARAMETERS: (mg/l)

DO : 0.80
BOD : 1.20
As : BDL
Cd : 0.001
Total Coliform : Nil

BDL: Below Detectable Limit


Addl. Chief Env. Scientist

POLLUTION CONTROL BOARD, ASSAM
BAMUNIMADAM, GUWAHATI-781021

Analysis Report of B. Tech-17/14

1. Source : Brahmaputra river at Gumi Chaygaon (upstream project site) Brahmaputra Infrastructure Ltd.
2. Date of collection : 02.06.2014 at 2.20 PM
3. Date of Receipt : 03.06.2014
4. Collected by : Sri R. Bordoloi, ES & Sri K. Nath, ES

PHYSICAL PARAMETERS:

pH : 7.1
Temperature : 25 °C

CHEMICAL PARAMETERS: (mg/l)

DO : 7.10
BOD : 0.50
COD : 2.86
TDS : 108.0
TSS : 49.0
Oil & Grease : BDL

BDL: Below Detectable Limit



Addl. Chief Env. Scientist

POLLUTION CONTROL BOARD, ASSAM
BAMUNIMADAM, GUWAHATI-781021

Analysis Report of B. Tech-19/14

1. Source : Brahmaputra river at Gumi Chaygaon (down stream project site) Brahmaputra Infrastructure Ltd.
2. Date of collection : 02.06.2014 at 2.40 PM
3. Date of Receipt : 03.06.2014
4. Collected by : Sri R. Bordoloi, ES & Sri K. Nath, ES

PHYSICAL PARAMETERS:

pH : 7.1
Temperature : 25 °C

CHEMICAL PARAMETERS: (mg/l)

DO : 6.80
BOD : 0.80
COD : 2.86
TDS : 105.0
TSS : 45.0
Oil & Grease : BDL

BDL: Below Detectable Limit



Addl. Chief Env. Scientist

POLLUTION CONTROL BOARD, ASSAM
BAMUNIMADAM, GUWAHATI-21.

Report of Noise Level monitoring at Palasbari(Brahmaputra River Under water works) and Gumi, Chaygaon (Brahmaputra River under water& above water works,)Dist : Kamrup ,Assam

Report no AN- 25/2014

Dated:

Sl. No.	Date of monitoring	Name of Project site	Source /Location	Appx. distance from source	Noise Level (dB) A in Leq	Remarks
1	31-05-14	Palasbari (Brahmaputra River Under water works)	At Geo bag dumping site	10 meter	54.1	Working activities on
2	31-05-14		At Geo bag dumping site	10 meter	47.2	Working activities off
3	31-05-14		30 KVA DG Set	1 meter	76.2	Working activities on
4	31-05-14		Baseline area	1.5 KM	47.0	Working activities on
5	31-05-14	Gumi, Chaygaon (Brahmaputra River under water& above water works)	At Geo bag dumping site	10 meter	55.9	Working activities on
6	31-05-14		At Geo bag dumping site	10 meter	48.1	Working activities off
7	31-05-14		30 KVA DG Set	1 meter	75.6	Working activities on
8	31-05-14		Baseline area	1.5 KM	49.3	Working activities on

* Noise level monitoring conducted at day time

* Acoustic enclosure is provided with the DG set

Noise limit for DG set is 75 dB(A) at 1 m

Noise Standard in dB (A):

<u>During day time (in between 6am and 10pm)</u>		<u>During day time (in between 10pm and 6am)</u>	
Industrial Zone	75	Industrial Zone	70
Commercial Zone	65	Commercial Zone	55
Residential Zone	55	Residential Zone	45
Silence Zone	50	Silence Zone	40


Addl. Chief Env. Scientist

POLLUTION CONTROL BOARD, ASSAM
BAMUNIMAIDAM, GUWAHATI-21.

Analysis report of Ambient Air Quality monitoring at Palasbari (Brahmaputra River Under water works) and Gumi, Chaygaon (Brahmaputra River under water& above water works) Dist : Kamrup(R), Assam.


REPORT NO: AA-50/2014

Dated:

Date of monitoring	Place / Location	PM ₁₀ (µg/m ³)	NO ₂ (µg/m ³)	SO ₂ (µg/m ³)	Pb (µg/m ³)	Weather
30-05-14	Palasbari Erosion protection works(At Geo bag dumping site)	56	33	13	0.049	Clear
30-05-14	Palasbari Erosion protection works, Baseline area. (East side of the project area)	37	21	6	0.044	Clear
31-05-14	Gumi Erosion protection works(At Geo bag dumping site)	54	27	14	0.056	Clear
31-05-14	Gumii Erosion protection works, Baseline area. (East side of the project area)	26	14	12	0.043	Clear

Standard for Ambient Air Quality in µg/m³

Sl no	Pollutant	Time Weighted Average	Conc. in Ambient Air
			Industrial, Residential, Rural and Other Area
1.	Sulphur Dioxide (SO ₂)	24 Hours	80
2.	Nitrogen Dioxide (NO ₂)	24 Hours	80
3.	Particulate Matter(Size < than 10µm) or PM 10	24 Hours	100
4.	Lead(Pb)	24 Hours	1.0


Addl. Chief Env. Scientist

Appendix2:

Site Inspection and Monitoring Report

OFFICE OF THE PROJECT MANAGEMENT CONSULTING SERVICES (PMC)
Assam Integrated Flood and Riverbank Erosion Risk Management Investment Program

Project Office: 2nd Floor Nayanara Supermarket Building Six Mile, Guwahati-22, Assam, India

Tel. +91-9085201016 (ITL), +91-8761807521 (NTL), +91-9999981284 (MANAGER) +91-9401659816 (OM),

E-mails: c.stere@runbox.com; skccwes1973@yahoo.co.in; ritesh.singh@tetrattech.com; ajit.31oct@gmail.com

Minutes of Meeting

Subject:	C.M.M. for Dibrugarh : Environmental Safeguards			
Meeting Time:	From: 10:30 AM	To: 12:30 PM	Date: 02.04.14	Remarks:
Meeting Venue:	WRD Office, Maijan, Dibrugarh			
Attendees (FREMAA):	Not planned			
Attendees (SIO)	1. Mr. R. Barua, AEE			
Attendees (PMC):	1. Mr. B. N. Ghosh, ID & CE 2. Mr. V. K. Singh, SDS 3. Dr. J. Das, NES 4. Mr. J. Dey, Sr.SE 5. Mr. R. Yadav,			
Attendees from Contractors:	1. Mr. H. Alam, Engineer-in-charge, Garodia 2. Mr. S.K. Sonowal, Engineer, Garodia 3. Mr. Y. Angira, Engineer, Garodia 4. Mr. Amitava Hazarika, Site Engineer, JKM 5. Mr. S. Gohain, Surveyer / SiteEngineer, JKM			
Other Attendees	1. Mr. R. Oak, Mophologist, DHI, Water & Environment			

POINTS OF DISCUSSIONS:

1. Environmental Safety :

The JKM Infra Works Private Ltd. (JKM) has appointed Mr. A. Hazarika to look after engineering works, Environment safety and Social Safety. But BN Garodia Construction and Engineering Private Ltd (Garodia) group till date has not appointed any Environment Inspector. But section 6, subsection 2.1.1 states a fulltime Environmental Inspector exclusively for supervision compliance with the EMP.

2. Environmental Management Plan :

According to the representative of JKM and Garodia they have Environment Management Plans but was not seen during the meeting provided our verbal request on 1st April during the site visits. It will be highly appreciated if PMC gets copies of the EMP so that necessary measures can be suggested for meeting the environmental compliance of ADB. PMC can suggest timely follow up action of EMP.

3. Environmental Monitoring Plan :

SIO's representative was aware about strict environmental and safety monitoring during all the ADB works. This message was percolated to the Contractor's representatives. But there is a need to apprise the SIO's team and the Environmental Inspectors of the contractors regarding the measurable indicators (like quality of air, water, noise, etc) and the parameters to monitor following the EIA, EMP and EMoP. An independent document on Environmental Monitoring Plan has also to be prepared for each site. Till now there are no such plans. Monitoring of the selected parameters has to be followed as per EMoP. SIO will also monitor the EMoP. Suggestion from PMC can be made on the EMoP.

4. Monthly Environmental Reporting on the Safeguards

Representatives from JKM and Garodia have also been suggested to make the monthly Environmental Reporting to the SIO on the Safeguards by the Environmental Inspectors. They have to report to SIO on monthly basis in a acceptable format by FREMAA on the selected parameters mentioned in the EMoP.

5. Quarterly progress report on EMP

Environmental Inspector has to submit Quarterly progress report on implementation of EMP to SIO. SIO has to monitor the implementation of the EMP.

6. Mitigation Measures :

On the basis of findings of significant deviation of the measured quality of the environmental factors from the baseline, mitigation measures should be planned following EMP guidelines.

7. Safe Drinking Water :

It was suggested by the PMC to test the drinking water quality in each of the labour camps from PHED or PCB Assam approved labs and test report should be submitted to SIO.

8. Sanitation :

PMC also strongly recommended for Sanitary toilets in proper ration in all the labour camps. SIO should ensure no defecation in the open air near the labour camps.

9. Solid Waste Management :

Solid waste management system and its awareness has to be generated in all the labour camps. It was suggested by PMC to separate Dry and Wet waste, and prepare a compost pit at site for the biodegradable wastes at labour camps.

10. Occupational Health and Safety :

Regular water sprinkling was seen on the roads near Maijan camp. More emphasis has to be given on Occupational Health and Safety in both the sites, like use of boots and masks, etc.

ACTION ITEM SUMMARY:

No.	Discussion Point / Issue	Discussion / Action	Responsibility and Action by	Target Date
1.	Environmental Safety	Full time Environmental Inspector exclusively for this purpose will give better performance and reporting.	JKM, Garodia, SIO	For Garodia - with immediate effect.
2.	Environmental Management Plan	<ul style="list-style-type: none"> - According to the contractors representative's both have EMPs. - Copies of EMPs at PMC will highly be appreciated. - PMC can suggest timely follow up action of EMP. 	JKM, Garodia, SIO, FREMAA, PMC	Copies of EMP - Next week
3	Environmental Monitoring Plan	<ul style="list-style-type: none"> - There is a need to apprise the SIO's team and the Environmental Inspectors of the contractors regarding the measurable indicators (like quality of air, water, noise, etc) and the parameters to monitor. - Monitoring of the selected parameters has to be followed as per EMoP. -PMC can suggest timely follow up action of EMoP. 	JKM, Garodia, SIO, FREMAA, PMC	Within one month after the finalization of EMP. But efforts should be made for immediate implementation.
4	Monthly Environmental Reporting on the Safeguards	<ul style="list-style-type: none"> - Both the companies have also been suggested to make the monthly Environmental Reporting to the SIO on the Safeguards by the Environmental Inspectors. - the reporting format should be acceptable to FREMAA. 	JKM, Garodia, SIO, FREMAA	After the EMoP on monthly basis during the entire construction phase.
5	Quarterly progress report on EMP	<ul style="list-style-type: none"> - Environmental Inspector has to submit Quarterly progress report on implementation of EMP to SIO. - SIO has to monitor the implementation of the EMP. 	JKM, Garodia, SIO	After the initiation of construction work on quarterly basis.
6	Mitigation Measures	On the basis of the findings of significant deviation of	JKM, Garodia, SIO	As and when required

No.	Discussion Point / Issue	Discussion / Action	Responsibility and Action by	Target Date
		the measured quality of the environmental factors from the baseline, mitigation measures should be planned on the basis of EMP.		
7	Safe Drinking Water	It was suggested by the PMC to test the drinking water quality in each of the labour camps from PHED and test report should be submitted to SIO.	JKM, Garodia, SIO	Immediately
8	Sanitation	<ul style="list-style-type: none"> - All labour camp should have sanitary toilets at proper ration. - SIO should ensure no defecation in the open air near the labour camps. 	JKM, Garodia, SIO	During the construction of the labour camp
9	Solid Waste Management	<ul style="list-style-type: none"> - Solid waste management system and its awareness has to be practiced in all the labour camps. - It was suggested by PMC to separate Dry and Wet waste, and prepare a compost pit for the biodegradable wastes at labour camps to be constructed at site. 	JKM, Garodia, SIO	During the construction of the labour camp
10	Occupational Health and Safety	More emphasis has to be given on Occupational Health and Safety in both the sites, like use of boots and masks.	JKM, Garodia, SIO	

Prepared by :-

Jayanta Das

Dr. Jayanta Das
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 PMC-FREMAA

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Meeting in the SIO office on 02.04.14

Appendix3

Monthly environmental Report of the contractors (Sample)

Assam Integrated Flood and Riverbank Erosion Risk Management Investment Program			
Tranche	1	Sub Project	: Dibrugarh , DTP DYKE
Contractor	: Jugal Kishore Mahanta	Project No	:
Date of Agreement	: 18 /10/ 2013	Contract Period	: 18 Month
Target Date of Completion	: 06/09/2015	Extended upto	: N/A
Name of the Environmental Inspector	: RupjyotiGoswami	Month and Year	: April , 2014

Monthly Environmental Report

SL		Status	Remarks
1	Environment		
1.1	Sources of Materials		
1.1.a	Use quarry sites and sources permitted by Government	Yes.	Environmental clearance from Contingent Authority (SEIAA) (submitted.)
1.1.b	Verify suitability and approval by SIO	Yes.	After joint verification with the Revenue circle office, Dib., District Forest office,Dib. and WR Division, Dib, the Borrow Pit sites are used. Copy of NOC for excavations of soil is submitted.
1.1.c.	Submission of monthly documentation of all material sources.	Yes	Submitted to SIO
1.2	Air		
1.2.a	Spray water on dry surface to reduce dust in air.	Yes.	Photograph attested.
1.2.b	Use tarpaulins to cover sand and other loose materials where transported by vehicles.	Yes.	
1.2.c	Clean wheels and undercarriage of vehicles while leaving the site.	Yes.	
1.2.d	Certificates on Vehicular Emission of all the vehicles used in the site.	Yes.	Some vehicles are new so they need not require any PUC certificate. Certificate of PUC of other vehicle submitted.
1.2.e	Checked air quality by PBC approved Lab.	Yes.	We approach The Member Secretary, Pollution Control Board, Assam for the Test.
1.3	Noise		
1.3.a	Plan activities in consultation with SIO, community to reduce noise level.	Yes.	We try to minimize the noise level by using silencers.
1.3.b	Provide information to public about work schedule.	Yes.	

1.3.c	Horns not used, unless essential.	Yes.	
1.3.d	Minimize the noise by silencers.	Yes.	
1.3.e	Do not allow workers to an exposure of 80dBA or above without ear plug.	Yes.	No exposure of sound greater than 80dBA in the work site.
1.3.f	Use of heavy vehicles from 01/04/2014 to 30/04/2014.	Yes.	Total 15 number of Dumper and two water tanker working in the site.
1.3.g	Use of Generators	----	No use of generator.
1.3.h	Checked Noise level by PBC approved lab.	Yes.	We approach The Member Secretary, Pollution Control Board, Assam for the Test.
1.4	Surface water quality		
1.4.a	Avoid stockpiling of earth fill, especially during monsoon unless covered by tarpaulin or plastic sheets.	Yes.	
1.4.b	Install temporary silt traps or sedimentation basins along the drainage leading to water bodies.	Yes.	Photo Enclosed.
1.4.c	Store fuel and lubricants away from the drains.	Yes.	
1.4.d	Checked surface water quality by PCB approved lab.	Yes.	We approach The Member Secretary, Pollution Control Board, Assam for the Test.
1.5	Land Use		
1.5.a	Has the contractor preserved the top soil for replacement after construction?	No.	We use the top soil for leveling the low position of (country side) near embankment.
1.5.b	Status of the surface vegetation on the construction site prior to the initiation of the work (Detail report with number of trees cut and initial photographs of the area.	Measures taken	The trees falling on the chest and slope of the embankment are done the forest Department, Assam.
1.5.c	Borrow pit – Rehabilitation of the borrow pit was done.	Measures taken	Borrow pit areas are private land. The owners of Land of borrow pit areas will use it for fishery purpose.
1.6	Pollution		
1.6.a	Spills of oils on the site and on river regularly checked.	Yes.	
1.6.b	Necessary measures taken to stop it.	Yes.	Checked regularly.
1.6.c	What measures taken to remove the used engine oils?	Measures taken	Kept in storage(container with cover) place and send it to Contractor's special store room.
1.6.d	Surface discharges monitored.	Yes.	
1.7	Disruption of Agricultural activities		
1.7.a	Any agricultural activity in the flood embankment?	No.	No agricultural land is used for flood embankment. So it needs not any measures taken to minimize the impact
1.7.b	Any measures taken to minimize the impact on agricultural activity in the flood activity?	-----	
1.7.c	Land used the flood embankment belongs to WRD or	-----	

	private.		on agricultural activity.
1.7.d	If private agricultural land is used proper compensation is made by the contractor at current market value.	-----	
2	Access routes (River)		
2.a	Whether the Navigation routs are blocked?	-----	Not Applicable
2.b	How interference with the riverine traffic is minimized?	-----	Not Applicable
2.c	All the floating equipments following navigation standards application in India.	-----	Not Applicable
2.d	All the floating equipments following safety standards applicable in India.	-----	Not Applicable.
2.e	Any dredging operation done?	No.	
3	Road		
3.a	All the access roads inspected for their appropriateness for moving construction equipments.	Yes.	Enclosed photograph.
3.b	If found inappropriate, strengthened by Contractor.	Yes.	Photo Enclosed.
3.c	Due to the movement of the heavy vehicle, the access road is degraded more than normal use.	Yes.	Repaired the degraded access road regularly.
3.d	Contractor repaired the degraded access road.	Yes.	
3.e	Access road for the fringe community is used / blocked and alternate route provided.	-----	Not arise situation.
3.f	Conduct the work during light traffic.	Yes.	
4	Excavation and filling of Earth in Slope Protection		
4.a	Whether the area has been surveyed, inspected and approved by the SIO after the identification of excavation and filling site.	Yes.	
4.b	Whether the contractor has submitted a map indicating the area of earth excavation and filling activities showing the earth cut and fill areas, based on the baseline survey.	Yes.	Google map submitted.
5	Sand Excavation		
5.a	Whether the sand excavation area was approved by the SIO in writing.	-----	Not Arise.
5.b	Whether contractor has submitted a map indicating the area of planned sand excavation.	-----	
5.c	Whether the sand excavation area is close to the work site or to char inhabitants.	-----	
6	Site Installations	-----	
6.a	Protection of trees for their preservation.	Yes.	
6.b	Whether temporary roads were constructed ?	No	
6.c	Whether environmental friendly waste disposal system properly monitored and executed in the work sites ?	Yes.	

7	Labour Camps		
7.a	Consult SIO and fringe community for establishing the temporary office shed, camp and plant.	Yes.	Most of the work done by Machinery and we use very small number of Labor in the worksite and they are Local so no Labor camp is required in the site.
7.b	Minimize the removal of vegetation and do not allow cutting of trees.	Yes.	
7.c	Provide safe drinking water to the camp inhabitants.	Yes.	
7.d	Sanitation facility to the camp inhabitants.	Yes.	
7.e	Solid waste management practiced in the camps.	Yes.	
7.f	Report SIO and fringe community before vacating the camp after the work.	-----	Not Arise.
8	Agricultural Land and Crop Loss		
8.a	Any loss or damage of agricultural land and crops due to project construction activities.	-----	Not Arise.
9	Homestead Loss		
9.a	Any home stead loss (including loss of trees, ponds, shifting of any other installations)	-----	Trees uprooted by Forest Department.
10	Drainage from Adjacent Area		
10.a	Natural drainage system blocked or disrupted.	No.	
11	Wildlife		
11.a	Sighting of Dolphin (National Aquatic Animal)	No.	
12	Fish productivity		
12.a	Fish productivity increased or decreased (survey in the boat ghats)	----	Not affect any fish productivity.
12.b	Landing facility – Change of Boat Ghats	No	
13	Display Materials		
13.a	Sings like “ Only Staff ”, “Restricted Area ” displayed in relevant area.	Yes.	
13.b	Safety (including traffic sings) , notice board is available.	Yes.	
14	Health and Safety		
14.a	Provision of First Aid and medical service available.	Yes.	
Provide GPS coordinates for most of the descriptions so that map can be prepared.(complied)			
15	Additional comments or actions required: -----		
Signature by Environmental Inspector (Sample copy) Date: Contact Details: 9864897283		Accepted / Approved by SIO (Sample copy) Date: Contact Details:	

Monthly Environmental Report for the Month of April '2014

Name of the Work: Raising, Strengthening, Up gradation & construction of road works for Dibrugarh Town Protection (DTP) Dyke in Dibrugarh District.

Name of Contractor: Jugal Kishore Mahanta



Borrow pit area inspected by PMC officer (Hiloidhari)



Spray Water on Dry Surface to reduce dust in air



Use of sedimentation basins along the drainage leading to water bodies during rainy season.

Appendix-4

Photographs



Meeting with SIO, Contractor, FREMAA Meeting at CC Block casting plant with BNG PMC, Gumi



Meeting with SIO, Contractor, FREMAA, PMC, Palasbari



Meeting with SIO, Contractor, FREMAA, PMC, Gumi



Air quality Testing by PCB, Assam



Spraying of water- to reduce dust, DTP, Dib.



Labour Camp at CC Block casting site



Camp at Mothola Oakland



Sanitary Toilets at site camps



Drinking water facility at site camp
(Iron filter and filter) Palasbari



Drinking water facility at site camp
DTP Dyke

