ENVIRONMENTAL MANAGEMENT PLAN

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1. SOIL MINING

1.1 INTRODUCTION

Soil has become a very important mineral for the expansion of society. Soil is a naturally occurring granular material composed of finely divided rock and mineral particles.

For thouSOILs of years, soil mining has been used in the construction of roads, bridges, dams and buildings etc. Today, demand for soil has increased manyfold & continuously increasing due to fast developmental activities in country. Soil Mining operators, in conjunction with cognizant resource agencies, must work to ensure that soil mining is conducted in a responsible and scientific manner.

1.1.1 Importance of Soil

Soil has become a very important mineral for our society due to its many uses. It can be used for making concrete, filling roads, building sites, brick-making, making glass, SOILpapers, reclamations, and etc. The role of soil is very vital with regards to the protection of the coastal environment. It acts as a buffer against strong tidal waves and storm surges by reducing their impacts as they reach the shoreline. Soil is also a habitat for riparian and other related terrestrial organisms. Soil also plays an important role in our tourism industry as it is an integral part of our gardens.

Individuals and private companies are increasingly demanding SOIL for construction purposes and this has placed immense pressure on SOIL resources. It is a practice that is becoming an environmental issue as the demand for SOIL increases in industry and construction.

However, Environmental Management Plan is a guiding document for environmental impacts associated with the proposed projects. It is a guiding document for management of good environmental condition on the site & surrounding of the proposed SOIL mine. The Environmental Management Plan (EMP) has been formulated and integrated with the soil mine planning keeping in view overall scientific development of local habitat and the adverse impact that may be caused due to the soil mining operation. The EMP has therefore been made considering implementation and monitoring of environmental protection measures during mining operations.

2.1 DESCRIPTION OF THE PROJECT

The proposed project is yellow soil mining from agricultural land. **Total lease area is 3.9035 Ha.** Gata No 283,286, 285Mi, 288, 192, 31/7,32/7 and 33/2 in Village Manikpur Damotikhera, Tehsil Bindki, District Fatehpur (Mining Area 3.9035)**.**

2.2 Objectives

- To ensure that soil extraction will be carried out in a sustainable way.
- To apply appropriate methods in identifying the suitable locations, period and quantity of soil d that can be extracted.
- To recommend the activities for mitigation of pollution like air, water, soil, noise, ecology and social affect.

3.1 IMPACTS OF SOIL MINING & MITIGATION

All development projects have an impact on surrounding environment. This impact may be beneficial or adverse, depending on the improvement or the deterioration it brings about in the status of air, water, land, ecology, natural systems, socio-cultural life styles and economics of the local population. Depending on the nature of activities and environmental screening, the impacts are assessed for their importance. Mitigating & monitoring requirement are focused in the Environmental Management plan for countering or minimizing the impacts. Impact on various environmental parameters and likely mitigation measures to be adopted are described below.

3.1.1 AIR ENVIRONMENT

3.1.2 Anticipated impacts

In soil mining operations, the source of air pollution may cause deterioration of air quality due to the fugitive dust emission during loading, transportation and unloading operations. Loading and unloading of soil would be associated with the fugitive emission in the active area whereas fugitive emission during transportation would affect the areas/villages situated adjacent to road side. Another source of air pollution would be emission from the trucks/tractor/other vehicles to be used for transportation of soil.

3.1.3 Mitigative measures

3.1.3.1 For Fugitive dust Emission:

- All trucks, tractors will be covered by canvas sheet to prevent dust emission.
- Streets would be swept once a day if visible soil materials are carried to adjacent streets.
- Water will be sprayed after loading activity (if soil collected could be dry condition)
- The dust suppression measures like water spraying will be done on the haul roads and working areas.
- Overloading of trucks and trolleys will be prevented.

3.1.3.2 For Vehicular Emission:

- Vehicular emission can pose some serious health hazard. During the soil mining extraction, trucks will be used for transportation. Trucks comprises of diesel engine produce particles are dangerously fine of PM_{10} & $PM_{2.5}$.It is well known fact that combustion of diesel generates small particulate matter, nitrogen oxides, sulphur dioxide, & polycyclic aromatic hydrocarbons.
    - Emission standards will be followed-

Table-3.1: Emission Standards for Diesel Truck and Bus Engines, g/kWh

Norms	CO (g/kmhr)	HC (g/kmhr)	NOx (g/kmhr)	PM(g/kwhr)
1991Norms	15	3.6	19	-
1996 Norms	11.1	2.5	14.6	-
India stage 2000 norms	4.5	1.2	8.2	0.37
Bharat stage-II	5.0	1.1	7.0	0.16
Bharat Stage-III	2.1	1.6	5.0	0.11
Bharat Stage-IV	1.6	0.98	3.6	0.02

- Plantation activities include trees like Babul, Neem, Jungle Jalebi and Peepal etc along the roads and nearby villages will reduce the impact of diesel particles.

3.2 WATER ENVIRONMENT

3.2.1 Anticipated impacts

Soil mining activities will not have any impact upon the river's water quality.

3.2.2 Mitigation measures

- The major source of surface water pollution due to soil mining is insignificant.
- Utmost care will be taken to minimize or control oil spills or leakage vehicles to be used for soil transportation.
- The washing of trucks in the river will be avoided.
- Mining would be avoided during the monsoon season and at the time of floods.
- River stream will not be diverted to form in active channels.
- Water Quality Monitoring for the, river water shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
- The contractor will adhere all guidelines and rules for proper and scientific method of mining during the period of extracting the soil. Thus, the project activities shall not have any adverse affect on the physical components of the environment and therefore may not have less effect on the recharge of ground waters or affect the water quality.

3.3 LAND ENVIRONMENT

Mining of soil may cause a few environmental degradations.

3.3.1 Anticipated impacts

- Excavation may cause soil erosion.
- Temporary dustbins will be provided for wastes like polythene, Gutkha wrappers etc.

3.3.2 Mitigation measures

- No foreign material like polythene bag, jute bag and useless articles should be allowed, and no pits/pockets will be allowed to be filled with such material.
- Mining will not exceeds beyond the allowed extraction capacity.

3.4 NOISE ENVIRONMENT

3.4.1 Anticipated impacts

At soil mining site, noise is generated by movement of transportation vehicles, etc. The noise level in the working environment is compared with the standards prescribed by Central Pollution Control Board which has been adopted and enforced by the Govt. of India through The Noise Pollution (Regulation and Control) Rules, 2000. The summary of the permissible standards is given below:

NOISE LEVEL STANDARDS (Day time only)

6.00 AM – 10.00 PM Noise level Leq 75 dB (A)

3.4.2 Mitigation measures

- Well maintained vehicles will be used in order to reduce the noise during movement of vehicles.
- Regular and proper maintains of transportation vehicles (trucks, tractor etc) will be ensured.

3.5 BIOLOGICAL ENVIRONMENT

3.5.1 Aquatic environment

3.5.1.1 Anticipated impacts

Excessive and unplanned soil mining results in the destruction of aquatic and terrestrial habitat through large changes in the topography. Impacts include land degradation, soil erosion and slope instability. These physical impacts cause degradation of terrestrial and aquatic biota..

3.5.1.2 Flora and Fauna

The most important effects of excessive and unplanned soil mining on terretrial habitats are slope degradation and sedimentation, which can have substantial negative effects on terrestrial life.

If soil mining is done in an unplanned way, i.e. beyond the capacity, mining can have adverse effects at the mine sites. The fertile streamside land will be lost gradually and the wildlife in the areas may start vanishing. Degraded stream habitats will result in loss of fisheries productivity, biodiversity, and recreational potential. All species require specific habitat conditions to ensure long-term survival.

3.5.1.3 Mitigation measures

- No mining will be carried out during the rainy season to minimize impact on aquatic life.
- Soil extraction in agriculture land will be avoided.
- Large woody debris in the riparian zone will be left undisturbed or replaced when moved and not be burnt.
- Vegetative debris will not be stored within the mine lease area.
- Operation and storage of heavy vehicles within terrestrial habitat will be restricted.
- Access roads will not encroach into the ecological zones
- Conservation of biological diversity of plants, birds and animals,
- As dust receptor and dust filter, this is likely to be produced during mining.

3.5.2 Terrestrial environment

Terrestrial environment consist of trees, herbs, shrubs. The river streams which harbor a good biodiversity are playing an important role in sustenance and protection of terrestrial environment. The trees like Arjun, Peepal, Bargad and a good number of herbs and shrubs show a good growth near the stream. The avian biodiversity have its home near the streams and depend on it for their life.

3.5.2.1 Anticipated Impact:

- The avian biodiversity may be badly affected and birds may shift to other place.
- Trees and shrubs may be affected by the SOIL mining activities.

3.5.2.2 Mitigation measures

- As the mining site has no vegetation, thus clearance of vegetation not required. However the trucks and tractors approaching the soil mining site will be directed where the least damage to plant is ensured.
- The entire vehicle will be kept fit for making least noise and making horn will be avoided in and around the lease area.
- Grass Cultivation.

3.6 GREEN BELT DEVELOPMENT

The implementation for development of green belt will be of paramount importance as it will not only add up as an aesthetic feature, but also act as a pollution sink.

The species to be grown in the area should be dust tolerant and fast growing species so that permanent green belt is created.

To stabilize the erosion the plants having good growth will be planted along the road.

Apart from the green belt and aesthetic plantation for elimination fugitive of emission and noise control, all other plantation efforts shall be decided and executed with the assistance and co-operation of the local community.

Table-3.2: Trees proposed for avenue plantation for green belt development

	Agro-climatic zone & Sub zone	**Middle Genetic Plains, North west alluvial sub zone**	
S/n	**Scientific name**	**Common Name**	**Pollution control features**
1	*Acacia nilotica*	Babul	Tolerant to SO_2
2	*Azadirachta indica*	Neem	Tolerant to SO_2
3	*Pithecolibium dulce*	Jungle jalebi	Tolerant to SO_2 and Dust control
4	*Mangifera indica*	Aam	Tolerant to Dust control
5	*Tectona grandis*	Sagon	Tolerant to Dust control
6	*Ficus benghalensis*	Bargad	Tolerant to Dust control
7	*Scigium cumuni*	Jamun	To stop river bank erosion
8	*Terminalia arjuna*	Arjun	To stop river bank erosion
9	*Populus ciliate*	Popular	Fast growing, broad leaf
10	*Ficus religiosa*	Peepal	Dust particles absorbance

4.1 ENVIRONMENTAL MANAGEMENT PLAN (GENERAL)

Proper environmental management plan are proposed for "SOIL" mining project to mitigate the impact during the mining operation.

4.1.1 Establish a Long-term Monitoring Program

- The mining should only be allowed during the dry season.
- Site-specific plans with eco-restoration would be considered/ implemented.
- Stream would not be diverted to form inactive channel,
- Care will be taken that no labour camps will be allowed on river bed.
- Care will be taken that no cooking, or burning of woods will be allowed in the adjoining area.
- Prior to mining, short awareness program will be conducted for labours to make them aware to way of working.
- If some causality or injury to animal occurs, it will be informed to forest department and proper treatment will be given.
- No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be

allowed.

- Care will be taken that noise produced during vehicles movement for carrying soil is within the permissible noise level.
- No pilling of RBM material will be in adjoining area.

4.2 ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

Environmental Management Plan serves no purpose if it is not implemented with true spirit. Some loopholes in the EMP can also be detected afterwards when it is implanted and monitored. Thus, an implementation and monitoring programme has to be prepared.

Implementation of proposed control measures and monitoring programme has an implication on the surrounding area as well as for the region. Therefore, mining management should be strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented within the mining area relating to the following specific areas:

- Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
- Collection of soil samples at strategic locations once in a year and analysis thereof with regard to deleterious constituents, if any.
- Regular visual examination will be carried out to look for erosion of river banks. Any abnormal condition, if observed will be taken care of.
- Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done in every quarter of the year.
- Plantation will be done as per program i.e. along the road sides, river banks and near civic amenities.

4.3 ENVIRONMENTAL OFFICER

Environmental officer should be appointed to implement the management plan. The officer shall report to mine owner. The officer shall ensure the suitability, adequacy and effectiveness of the Environment Management Programme.

- Environmental officer will be responsible for proper maintenance and operation of the programme and it will oversee the following aspects:
- Conduct environmental awareness program to the workers, supervisory staff and contract laborers during the construction period.
- Regularly monitor the environmental parameters and prepare reports as required by the UPPCB.
- Recommend necessary measures to improve Environmental conditions.
- Conduct safety programmes to create safety awareness among workers/staff.
- Train the staff and other workers on safety measures and conduct safety drills to educate them.

Environmental officer will be in regular touch with State Pollution Control Board and state mining department and send them annual progress report. Any new regulations considered by State/Central Pollution Control Board for the soil mining will be taken care of.

4.4 PROPOSED SET UP

The Environmental officer will be responsible for:

I. Collecting water and air samples from surrounding area and work zone monitoring for pollutants.
II. Analyzing the water, air and soil samples.
III. Implementing the control and protective measures.
IV. Co-coordinating the environment related activities within the project as well as with outside agencies.
V. Collecting statistics of health of workers and population of surrounding villages.
VI. Monitoring the progress of implementation of environmental management program.
VII. Greenbelt development along the access road at mining site.

For air, water and noise pollution control measures, it has been suggested that samples would be collected and tested all round the year with appropriate frequency at strategic places by suitable agencies. In case, it is found that any of the control parameters exceed the tolerance limit as fixed by

the State/Central Pollution Control Board, preventive measures will be taken and if required expert opinion will be sought for proper remedial measures. Environmental officer be responsible for the three major functions such as impact analysis, environmental pollution control and monitoring

Table - 4.2: Cost of EMP

S. Nos.	**Measures**	**Description of Work**	**Cost in Rs.**
1.	Buying saplings	10 Saplings @ Rs. 50 and extra saplings to maintain 100% survival	500.0
1.1	Tree Guard	@ Rs.800/plant for 10 plants	8000.0
2.	Sprinkling of water on Approach road and mining area	Water sprinkling on 6.0 m wide road twice per day.	20000.0
3.	**Pollution Monitoring**	**Proposed Plan**	0
4.1	Ambient Air Quality	Two stations will be monitored one in core zone and other in buffer zone six monthly	10000.0
4.2	Water Quality (Surface & Ground)	Two samples of ground water twice in year	10000.0
4.3	Ambient Noise Quality	Two stations will be monitored one in core zone and other in buffer zone six monthly	5000.0
5.1	Biodiversity Study	Study of flora and fauna of the region including core and buffer zone.	20000.0
Total			73500.00

EMP= Rs. 73500.00