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Department of Environment and Natural Resources
MINES AND GEOSCIENCES BUREAU
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ISO 9001:2015 CERTIFIED

Certificate of Approval

AEPEP No. 2022-06-MIMAROPA

The Mine Rehabilitation Fund Committee – Technical Working Group (MRFC-TWG) having reviewed the Annual Environmental Protection and Enhancement Program (AEPEP) for CY 2022, hereby issues this **Certificate of Approval** to **Graymont (Philippines), Inc. (GPI)** for its **Lime Milk Plant Project** located in Brgy. Rio Tuba, Bataraza, Palawan subject to the following conditions, in addition to the provisions stipulated under the Department of Environment and Natural Resources Administrative Order (DAO) No. 2010 – 21, the Consolidated Implementing Rules and Regulations of Republic Act No. 7942, otherwise known as the "Philippine Mining Act of 1995"

1. This Certificate is valid only for the activities stipulated in the approved AEPEP CY 2022 (hereto attached as Annex A and made an integral part hereof);

2. GPI shall allocate for its annual environment-related expenses a percentage based on the AEPEP that may approximate a minimum of three to five percent (3 – 5%) of its direct milling cost depending on the environmental/geologic condition, nature and scale of operations, and technology employed;

3. The budget allocation of this AEPEP amounts to eleven million one hundred eighty - six thousand four hundred twenty - one only (PHP 11,186,421.00) which is equivalent to 4.62% of GPI's milling expenses (PHP 242,062,041.19) for 2022;

4. GPI shall strictly conform to the policy of MGB on prompt submission of AEPEP, which is thirty (30) calendar days prior to the beginning of every calendar year;

5. To ensure and check the performance of and compliance with the approved AEPEP, the Multipartite Monitoring Team (MMT) shall monitor every quarter or more frequently, as may be deemed necessary, the activities stipulated in the AEPEP;

6. The expenses for such monitoring shall be chargeable against the Monitoring Trust Fund (MTF) of the Mine Rehabilitation Fund (MRF) as provided in Section 181 of DAO No. 2010 – 21;

7. GPI shall submit to MGB MIMAROPA a quarterly report of its environmental expenses within ten (10) days after the end of every quarter using the prescribed format;

8. GPI shall submit a comprehensive Care and Maintenance Program (CMP) in case of suspension/stoppage of its operations;

9. Additional conditions may be imposed to effectively implement the approved AEPEP based on the results of monitoring or environmental audit by the MGB Central Office and MGB MIMAROPA Region or the MMT;

10. The recommendation/s and directive/s or instruction/s of the MRFC and MMT members should be considered and put into effect by the proponent in the implementation phase of the subject AEPEP;

11. Transfer of ownership or assignment of the project carries with it the same conditions in this Certificate for which written notification shall be made by the company to the MGB MIMAROPA Region within fifteen (15) days from such transfer; and

12. That all other necessary permits (*i.e.* discharge permit, *etc.*) from all concerned government agencies must be secured in relation to project operation.

Non-compliance with the above conditions shall be sufficient ground for the suspension, cancellation, revocation or termination of this Certificate and/or be basis for the applicability of penalty prescribed in the Penal Provisions of R.A. 7942.

Issued this **14th day of January 2022** at Manila, Philippines.

EDWIN M. MOJARES, Ph.D.
OIC – Regional Director

Environmental Protection and Enhancement Program
Graymont (Philippines) Inc.- Lime Milk Plant
MPP No. 15-2014-IVB (1ST Renewal)
RTEPZ, Brgy. Rio Tuba, Bataraza, Palawan

Approved 2022 AEPEP of GPI
- 14 January 2022
- PHP 11,186,421.00

2022

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Annex A. AEPEP 2022 Physical and Financial Targets Matrix

ANNUAL ENVIRONMENTAL PROTECTION AND ENHANCEMENT PROGRAM

1.0. Executive Summary

GRAYMONT (PHILIPPINES) INC. (Graymont) is a lime milk plant located within the approximate area of 8.06 hectares at Rio Tuba Export Processing Zone (RTEPZ) in Barangay Rio Tuba, Bataraza, Palawan.

Graymont formerly Unichamp Mineral Philippines Inc. is a subsidiary of the Malaysian-based firm Unichamp Mineral Sdn Bhd (UMSB) and has significant experience in lime manufacturing supplying various industries including mining, mineral extraction, chemical, steel, water treatment, pulp and paper, oil and gas drilling, agro farming, and sugar milling.

The project produces approximately 134,000-147,000 of calcium oxide (CaO) per year, which is equivalent to 167,000 – 184,000 MT of hydrated lime or milk of lime (dry basis). The produced milk of lime (MOL) is solely intended for the consumption of CBNC to neutralize its wastewater.

Graymont, with MPP No. 15-2014-IVB (1st Renewal) is situated at the northeast section of the nickel processing plant of Coral Bay Nickel Corporation (CBNC) and is about 9.5 km away from the limestone quarry site in Barangay Gotok, Bataraza, Palawan.

During the operation phase, environmental impacts include generation of solid and hazardous wastes, pollution, and impact on safety and health. This Annual Environmental Protection and Enhancement Program is created to mitigate the identified impacts and enhance the current condition of the environment.

The mitigating projects to be implemented for the year 2022 include Solid Waste Management to address the identified impacts on solid and hazardous waste, Air Pollution Control Equipment/Devices are all well-maintained and an in-house air quality monitoring is regularly conducted to monitor emissions and ensure it is under the set standard. An On-site detention tank is being maintained as it functions as water

catchments allowing Graymont to recycle the water collected from the OSD. To maintain cleanliness within plant site and during hauling, road sweeping, and road watering is being conducted, this would also prevent dust pollution. To improve the current condition of the environment, Graymont rehabilitated 30-ha Mangrove Forest in Brgy. Sarong, and has on-going care and maintenance program. Targeted this year, is to establish a 20-ha Bamboo Plantation and construction of a nursery to be maintained by IPs in Brgy. Rio Tuba. Research to identify other beneficial use of petcoke ash will be conducted to recycle waste and lessen waste generation. All EPEP implementations will be audited by team consisting of various key stakeholders.

Based on the estimated 2021 OPEX of ₱242,062,041.19, 4.6% or **₱11,186,421.00** is allotted for the implementation of EPEP 2022.

2.0. Company Background

GRAYMONT (PHILIPPINES) INC. formerly Unichamp Mineral Philippines Inc. is a subsidiary of the Malaysian-based firm Unichamp Mineral Sdn Bhd (UMSB) and is acquired by GRAYMONT Ltd.

The project produces approximately 134,000 – 147,000 MT of Calcium Oxide (CaO) per year, which is equivalent to 167,000 – 187,600 DMT of hydrated lime (dry basis).

Company Information

Name:	GRAYMONT (PHILIPPINES) INC.
Main Office:	Unit 3004, 30th Floor, NAC Tower Building, 32nd Street, Bonifacio Global City, Taguig City
Project Site Office:	Rio Tuba Export Processing Zone, Brgy. Rio Tuba, Bataraza, Palawan, 5306
Telephone:	+632 8552–2651, +632 8869–6217

Email Address:	hilda.quillo@graymont.com
	alvin.trazona@graymont.com

Contact Person

Name:	Mr. Rommel Ibuna
Designation:	President
Company:	GRAYMONT (PHILIPPINES) INC.
Main Office:	Unit 3004, 30th Floor, NAC Tower Building, 32nd Street, Bonifacio Global City, Taguig City
Telephone:	+632 8552–2651, +632 8869–6217
Email Address:	rommel.ibuna@graymont.com

Name:	Engr. Alvin Trazona
Designation:	Plant Manager
Company:	GRAYMONT (PHILIPPINES) INC.
Main Office:	RTEPZ, Brgy. Rio Tuba, Bataraza, Palawan
Telephone:	+632 8552–2651, +632 8869–6217
Email Address:	alvin.trazona@graymont.com

3.0. Introduction

GRAYMONT (PHILIPPINES) INC. is a lime milk plant in Rio Tuba Export Processing Zone, Brgy. Rio Tuba, Bataraza, Palawan.

The project is produces approximately 134,000 – 147,000 MT of Calcium Oxide (CaO) per year, which is equivalent to 167,000 – 187,600 DMT of hydrated lime (dry basis).

A limestone supply agreement between Graymont and RTNMC was executed prior to

operation. RTNMC will provide the source of material that will be fed to the mineral processing operation of the Company. Graymont also source its limestone supply from Philippine Mining Services Corp. (PMSC).

Table 1. Details of Contract Permit and Operating Agreement

Contract/Permit	
Contract/Permit Number	15-2014-IVB (1st Renewal)
Contractor/Permit Holder	GRAYMONT (PHILIPPINES) INC.
Status of MA/FTAA/MPP	Operational
Date Approved	November 27, 2019
Date of Expiration	November 27, 2024
Total Area Covered	8.06 hectares
Location of Contract/Permit Area	Rio Tuba, Export Processing Zone, Brgy. Rio Tuba, Bataraza, Palawan
Issuing Office	Mines and Geosciences Bureau MIMAROPA
Operating Agreement N/A	
Name of Authorized Operator, if any	
Date of Execution of the OA	
Deed of Assignment	
Name of Assignee, if any	
Date of Execution of the Deed	
Environmental Compliance Certificate	
ECC Reference Number	1205-0009
Company Name on ECC	Unichamp Mineral Philippines Inc.
Date of Issuance	July 19, 2012
Total Area Covered	8.06 hectares
Location of the Project	Rio Tuba, Export Processing

	Zone, Brgy. Rio Tuba, Bataraza, Palawan
Issuing Office	Environmental Management Bureau
Ore Supply Agreement (for MPP)	
Contracted Ore Supplier	Rio Tuba Nickel Mining Corporation (RTNMC)
Details of Mining Rights of Ore Supplier	MPSA-213-2005-IVB
Contracted Ore Supplier	Philippine Mining Services Corp.
Details of Mining Rights of Ore Supplier	MPSA No. 150-2000-VII

Dated January 6, 2021, OIC Director of Environment Management Bureau (EMB) Engr. William P. Cunado granted the change of name of the Environmental Compliance Certificate (ECC-CO-1205-0009) form Unichamp Mineral Philippines Inc. to Graymont (Philippines) Inc. The ECC was issued on July 19, 2012, by EMB Central Office.

4.0. Project Description

4.1. Project Details

4.1.1. Project Location

GRAYMONT (PHILIPPINES) INC. lime milk plant is located within the approximate area of 8.06 hectares at the Rio Tuba Export Processing Zone (RTEPZ) in Barangay Rio Tuba, Bataraza, Province of Palawan. The plant site is located at the northeast section of CBNC's nickel processing plant and approximately 9.5 kilometers from the limestone quarry in Gotok. Graymont is covered by the Mineral Processing Permit and its Environmental Compliance Certificate.

Table 2. Geographic Coordinates

Points	North Latitudes	East Longitudes
1	8° 33' 42.702"	117° 25' 34.157"
2	8° 33' 38.672"	117° 25' 34.157"
3	8° 33' 38.672"	117° 25' 30.799"
4	8° 33' 34.376"	117° 25' 30.799"
5	8° 33' 34.376"	117° 25' 26.311"
6	8° 33' 33.562"	117° 25' 26.311"
7	8° 33' 33.562"	117° 25' 23.011"
8	8° 33' 35.856"	117° 25' 23.011"
9	8° 33' 35.856"	117° 25' 21.688"
10	8° 33' 40.448"	117° 25' 21.688"
11	8° 33' 42.702"	117° 25' 25.893"

4.1.2. Estimated Project Cost

The total, actual cost of the Plant is USD 22.608 Million (PhP 998,048.45 million), with the following details:

Table 3. Breakdown of Project Cost

Particulars	USD
Raw Material Handling Plant	608,693.00
Handling Plant	12,251,672.00
Milk of Lime Plant 1 and 2	4,095,565.00
Petcoke Grinding Plant	2,334,465.00
Utilities	131,251.00
Substation	1,077,081.00
Office Building, Weighbridge & Warehouse	246,742.00
Laboratory Building and Equipment	170,702.00
Heavy Equipment	416,890.00
General Plant	1,043,539.00
Workshop and Store	231,852.00
Total Project Cost	**22,608,452.00**

Table 4. Plant Operating Expenses in PhP

PARTICULAR	NOVEMBER 2020 TO NOVEMBER 2021
Depreciation of machineries and production equipment	90,053,275.50
Repair and maintenance of machineries and production equipment and spare parts used	46,908,875.03
Fuel consumption	86,475,486.26

Labor cost (skilled and laborer)	18,624,404.40
TOTAL	**242,062,041.19**

4.1.3. Types of Minerals and Ores

The yearly requirement of GRAYMONT is 268,000 to 294,800 MT/year of limestone, which will be sourced from the Gotok Limestone Quarry or other areas that comply with the limestone specification requirements to which the cut-off grade should be 92% $CaCO_3$, with <5% SiO_2, <0.7% MgO, and <3% moisture content.

4.1.4. Mining Method/s

There is no mining activity, hence, no mineral is produced. The main product of the plant is MOL for the consumption of CBNC in its own operations. The raw material processed is limestone which will be sourced from the existing Gotok Limestone Quarry operated by RTNMC and another limestone supply from PMCS.

Table 5. Limestone Requirement for the Year 2022

Sizes	Consumption
40- 80 mm	>151,000 metric ton
30 - 55 mm	>118,000 metric ton

4.1.5. Estimated Production (daily or annual production of mine and output of mill) as per approved ECC

At normal plant operation of 24 hours a day and seven (7) days a week, except in downtimes for repair and maintenance, the average limestone consumption is at 440 MT/day/line/kiln or 880MT/day for the two (2) feeding systems. The corresponding quicklime output for the two (2) kiln plants will be 44MT/day and the MOL output is 56 MT/day.

Graymont has an annual production rate of 134,000-147,000 MT of Calcium Oxide (CaO)

equivalent to 167,000-187,000 MT of hydrated lime.

4.1.6. Mill/Processing Plant

Table 6.Details of Mineral Processing Plant

Site Location	Rio Tuba, Export Processing Zone, Brgy. Rio Tuba, Bataraza, Palawan
Area Covered	8.06 hectares
Type of Process	Calcining
Plant Capacity	600 MT per year
Process	Calcining
Waste and/or tailings disposal	N/A
Water Management	Water recycling with zero effluent.
Hazardous Waste Management	The Company established a temporary storage facility for generated hazardous waste and assigned personnel for the maintenance of the facility.
Stockpile Management	The Company ensures that existing stockpile management consider the safety and environmental related factors are complied.

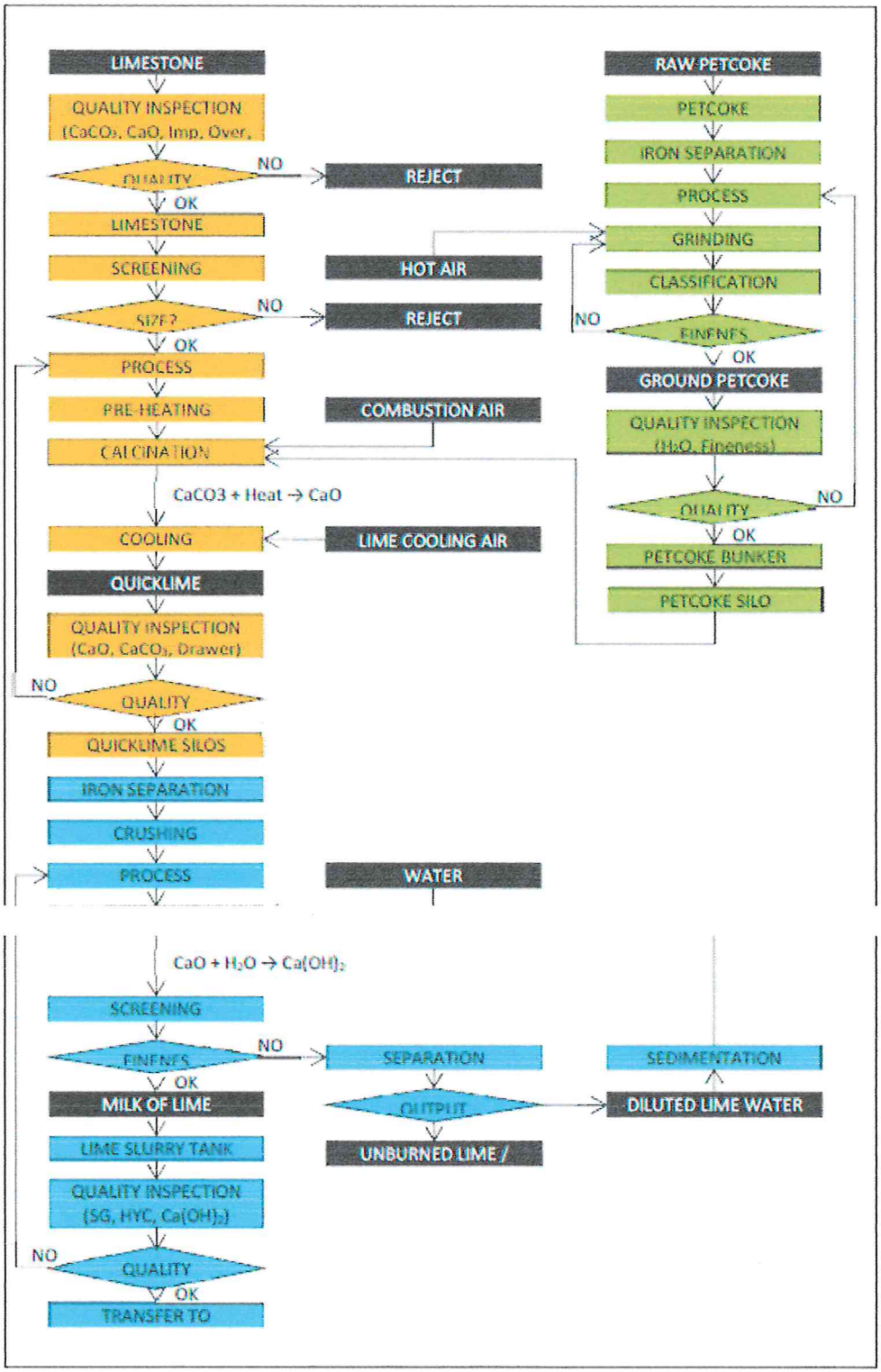

Figure 5. Process Flow

4.1.7. Proposed mine life (in years)

The supply agreement between Graymont and CBNC is for period of ten (10) years, with an option to renew for five (5) years.

4.2. Mineral Resources and Ore Reserves

The plant is wholly dependent on the supply of limestone from Gotok quarry of RTNMC and PMCS.

4.3. Access/Transportation

4.3.1. Road

The Municipality of Bataraza is located on the southernmost tip of mainland Palawan. It is approximately 236 km from Puerto Princesa City and about five (5) to six (6) hours by land. From the capital city, the present road conditions to the municipality is relatively good with mostly paved roads to the municipality of Narra while the remaining road stretches to Bataraza are partly paved and undergoing repair.

The proposed lime milk processing plant is located within the RTEPZ at the northeast section of CBNC's nickel processing plant in Barangay Rio Tuba, Bataraza, Palawan. The plant is approximately 9.5 km from the limestone quarry site in Gotok. Access to the site will be by the existing municipal and barangay road.

4.3.2. Air Access

Puerto Princesa City, the provincial capital of Palawan, can be reached from Manila by regular commercial plane. It is approximately 185 aerial kilometers southeast of Manila.

4.3.3. Shipping

Small bancas and pump boats are mode of transportation in the navigable waterways in the area. However, most of these communities are not provided with berthing structures. The existing port in Brgy. Rio Tuba is owned and operated by RTNMC and CBNC.

4.4. Power Supply

4.4.1. Power Requirements

Graymont plant requires about 6.5 million kWh for its annual consumption.

4.4.2. Source of power supply

Graymont will source its power supply directly from CBNC's on-site power plant.

4.4.3. Supply alternatives

As part of the contingency plan of the project, a 175 KVA diesel engine generator is installed for emergency use in the event of power outage.

4.5. Equipment to be used

4.5.1. Milling/Processing

Raw Materials Handling:

- Weigh bridge
- Grizzly Feeder
- Belt Conveyor
- Divertor

Calcination Process

- Belt Conveyors (for stockpile, vibrating screen, skip hopper and bucket elevator)
- Stockpile Tunnel
- Vibration Feeders (4)
- Kiln Shells and valves
- SKIP motor
- Brake motor
- Combustion Blowers
- Cooling Lime Blowers
- Lances Cooling Blowers

- Petcoke Transfer Blowers
- Lime Extractor
- Bucket elevators
- Rotary Valve below cyclone
- Filter screw conveyor
- Filter rotary valve
- Circulating pump
- Hydraulic pumps
- Dosing rotary valves
- Agitator silo cone and dosing tank
- Petcoke filter fan
- Screw conveyors
- Quicklime Silo filter blower fan

Milk of Lime Process

- Vibrating feeder silos
- Belt conveyors
- Permanent magnet
- Impact Mill
- Bucket Elevator
- Bag filter fan
- Rotary Feeder
- Screw Conveyor
- Slaker motors
- Dupurit fan
- Vibrating screens
- Agitators
- Warmal Pumps
- Supernatant Water Pumps
- Lime Recycling System
- Lime Slurry Transport System

Petcoke Grinding Process

- Vibrating Feeder
- Belt Conveyor
- Feed hopper filter blower fan
- Belt feeder
- Classifier
- Vertical Mill
- Mill Oil Lubircation
- Hot Gas Generator
- Diesel Pump
- Filter Blower Fan
- Rotary Valve
- Petcoke transport blower
- Diverots
- Bag Filters
- Raw material silo
- Coal Silo
- Cooling Tower
- Fire Fighting System

4.5.2. Laboratory

Table 7. Laboratory Equipment

Laboratory Equipment		
List of Equipment	**Quantity**	**Remarks**
Analytical Balance	2	Purchased
Industrial Scale	1	Purchased
Top-loading balance	1	Purchased
Moisture analyzer	1	Purchased
Bomb Calorimeter	1	Purchased
Drying Oven	3	Purchased
Furnace	2	Purchased

Reactivity Set-up	1	Purchased
Calcimeter	1	Purchased
Digital Burette	4	Purchased
Cross-beater mill	1	Purchased
Hammer mill/Impact mill	1	Purchased

4.5.3. Motorpool

- Workshop and store for spare parts, components, and consumables.

4.5.4. Others

- Warehouse/storage facility for fuel.
- Water tank and water hydrant.
- Security base/guardhouse.
- Equipment for environmental protection (air filters, scrubbers, dust collectors, water sedimentation tank, *etc.*)
- Electricity substation
- Backup power supply/ stand by generator
- Ancillary equipment such as air compressors, blowers, etc.
- Lime Milk Pipeline and backup pipeline to the CBNC Receiving Tank
- Washing Area 1 and 2
- Magazine Chemical Storage
- Office building and staff canteen

4.6. Workforce Information

4.6.1. Total operational workforce

A total of 191 jobs were created by the project during the operational phase comprising of personnel for management and support, quality control, production, maintenance including indirect employee. Whenever possible, recruitment will be from the local

area. The local hires at the technical and supervisory levels will be sent to affiliate company for training and exposure to the lime manufacturing industry.

For Plant Site Security, a total of seventeen (17) security guards were hired through a security agency. They will work on two (2) shifts (7:00 am to 7:00 pm, and 7:00 pm to 7:00 am).

Site-based PCO/MEPEO and Metallurgical Engineer/MEPEO implement the approved AEPEP based on the targeted budget and schedule. They are also responsible for addressing the arising environmental concerns through the execution of adequate and sustainable programs. The PCO/MEPEO and Metallurgical Engineer/MEPEO directly report to the Plant Manager.

All the projects shall undergo the approval of the Country Manager.

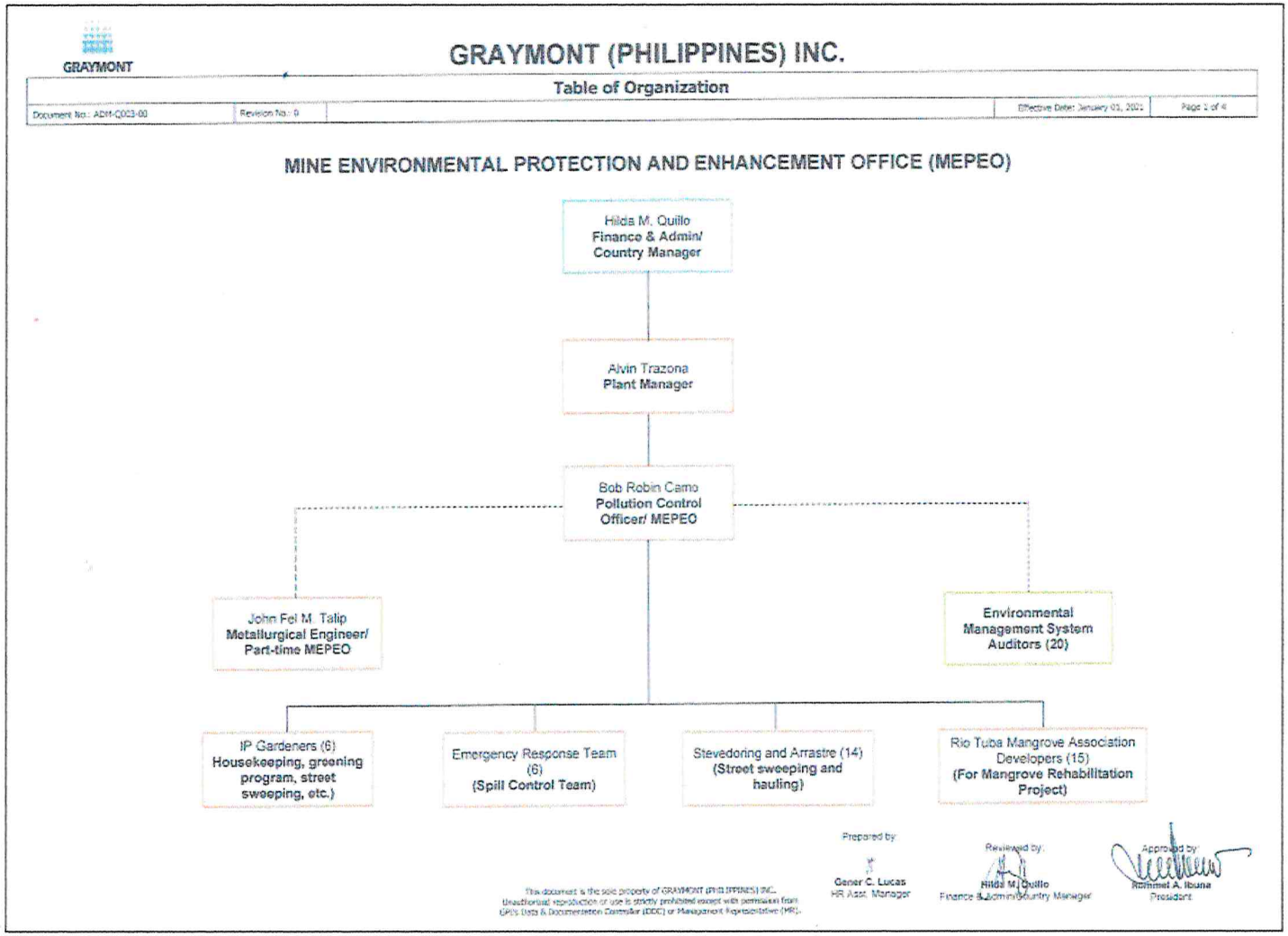

Figure 6. MEPEO Table of Organization

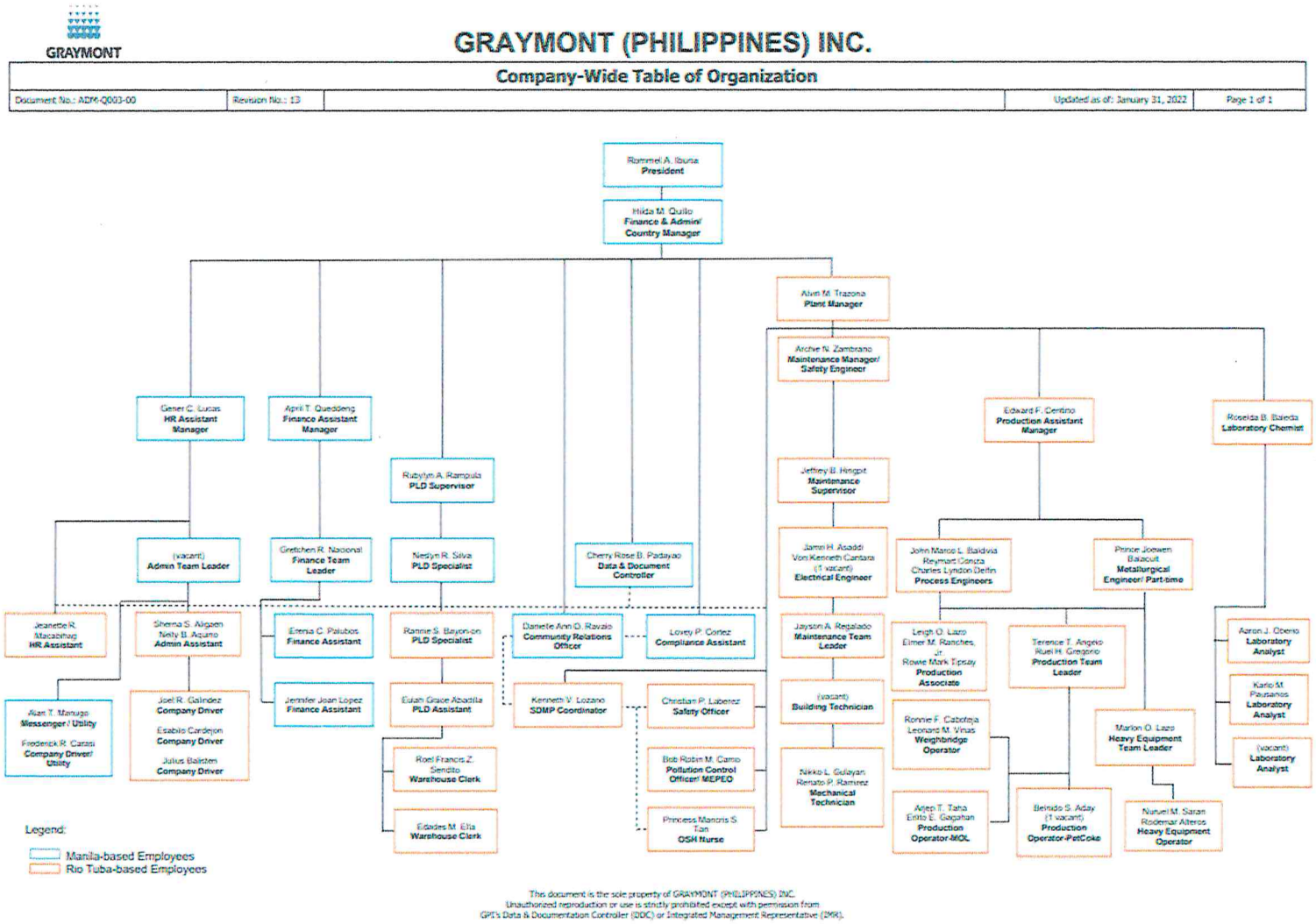

Figure 7. Company-Wide Table of Organization

4.6.2. Housing Options

Graymont provides free housing option located in Rio Tuba Townsite, Brgy. Rio Tuba, Bataraza, Palawan for staff residing outside of Rio Tuba and Palawan. The staff house has a capacity of 13 personnel with available basic amenities.

Proper waste management from collection and disposal is being management by Townsite Management of Rio Tuba Nickel Mining Corporation.

4.7. Development/Utilization schedule

4.7.1. State of Development

The Milk of Lime Plant has been fully constructed and began its commercial operations in November 2014. The Plant has been operating 24 hours a day since.

4.7.2. Description of Planned Activities

The kiln and milk of lime processing operates for 24 hours with three (3) shifts, at eight (8) hours per shift. The hydration process, petcoke preparation and raw materials feed will operate for one shift during normal office hours. Other management and support functions of the plant will operate during normal office hours. These functions include the quality control and assurance services, laboratory and testing services, maintenance services, store and warehousing, logistics and purchasing services, safety, health and environment and community relations office.

Graymont operates on the following basis:

A. Production

- KILN Operations – 3 shifts (8 hours per shift)
- MOL Operations – 3 shift (8 hours per shift)
- Coal/petcoke preparation operations – 1 shift
- Raw materials feeding – 1 shift normal office hours

B. Management and Support Functions

- Laboratory – normal office hours
- Maintenance – normal office hours
- Store and warehousing – normal office hours

- Logistics and purchasing – normal office hours
- Safety, health and environment – normal officer hours
- Security – 2 shifts (12 hours per shift)

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Table 9. Disturbed areas vs. rehabilitated areas

	Developed/ Disturbed Area		Progressively Rehabilitated	
	Project Component/ Area Name/ *Level*	Area (ha)	Project Component/ Area Name/ *Level*	Area (ha)
Development Stage (Note: The duration of Development Stage should be based on the approved Feasibility Study)				
1	N/A			
Operating Stage				
2.1	Limestone feeding system	2.2	Rehabilitated out of 8.06 ha	3.0
2.2	Fuel grinding plant	0.02258		
2.3	Kilns	0.14186		
2.4	Milk of lime plant	0.02328		
2.5	Feed hopper	0.015		
2.6	Office building	0.045		
2.7	Staff canteen	0.015		
2.8	Laboratory	0.0225		
2.9	Workshop	0.099		
2.10	Warehouses for fuel: Petcoke or coal	0.245		
2.11	Security base/ Guardhouse	0.0021		
2.12	Storage room for engineering spare parts	0.0144		

2.13	Drainage line	0.048		
2.14	Road network	0.24		
2.15	OSD Tank	0.028		
2.16	Sedimentation pit 1	0.0033		
2.17	Silt traps along road drainage	0.000543		
2.18	Others	4.894437		
Total		**8.06 ha**		**3.0 ha**

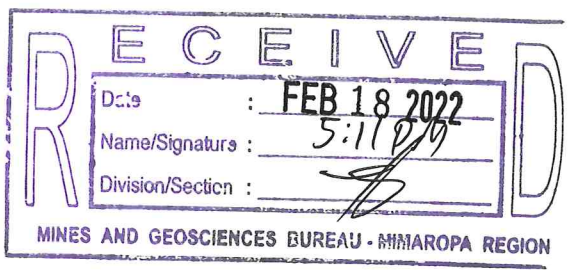
5.0. Baseline and/or Current Information

5.1. Land Resource

Dust propagation occurs especially during the transport of raw materials. To alleviate this impact, Graymont conducts tree planting within the perimeter of plant site to enhance the conditions of the ecosystems and to serve as noise, vibration and dust buffers. A total of 2,801 pcs of tree were planted for the year 2015 to 3rd quarter 2018 of difference species such as Narra, Mahogany, Bamboo, Palawan Cherry and Odling.

Last October 24, 2018, we have MOA signing with the DENR – CENRO (Department of Environment and Natural Resources – Community Environment and Natural Resources Office) – Brookes Point and contractor (Rio Tuba Mangrove Ecosystem Developers Inc.,) to adopt thirty hectares (30 ha.) mangrove rehabilitation located at Barangay Sarong, Bataraza Palawan. This area was checked and validated by the CENRO and MMT representative together with GRAYMONT PCO.

To date, approximately 77,700 mangrove species was planted at Barangay Sarong. Notable presence of wildlife such as crabs and bats can now be observed in the adopted mangrove project. For 2022, continuous monitoring, patrolling, protection, and maintenance will be conducted in the 30 hectares rehabilitated mangrove area to ensure the sustainability of the project. Figure 8 shows the latest map of Graymont's Mangrove Rehabilitation Project located in Brgy. Sarong, Bataraza, Palawan.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Mining Forest Program Plantation Activity (2015-2021)

Table 10. Plantation Activities

WITHIN THE PLANT PERIMETER								
Aspect	JD17-JJ18	Recent				Latest	Sub-total (Recent + Latest)	Grand Total
		JD18-JJ19	JD19-JJ20	JD20-JJ2021	Sub-Total	JD21-JJ22		
No. of Seedlings Planted	2,801	0	0	0	0	0	0	2,801
No. of Seedlings Replanted	0	0	0	0	0	0	0	0
No. of Surviving Plants	2,705	0	0	0	0	0	0	2,705
Survival	**97**	**0**	**0**	**0**	**0**	**0**	**0**	**97**
30 HECTARES MANGROVE AREA								
Aspect	JD17-JJ18	Recent				Latest	Sub-total (Recent + Latest)	Grand Total
		JD18-JJ19	JD19-JJ20	JD20-JJ2021	Sub-Total	JD21-JJ22		
No. of Seedlings Planted	0	25606	49,700	0	75,306	3,894	79,200	79,200
No. of Seedlings Replanted	0	0	17000	22,000	39,000	-	39,000	39,000
No. of Surviving Plants	0	22500	46,690	0	69,190	3,505	72,695	72,695
Survival	**0**	**88**	**93**	**90**	**91**	**90**	**91**	**91**

Table 11. Species Diversity (Plant site)

Tree Species	Spacing (m x m)
Bamboo (*Bambusa sp.)*	3x3
Narra (*Pterocarpus indicus*)	3x3
Ipil (*Instia bijuga*)	3x3
Mangium (*Acacia mangium*)	3x3
Palawan Cherry (*Cassia sp*)	5x5
Tonkat ali *(Eurycoma longifolia)*	3x3
Palomaria (*Calophyllum sp*)	3x3
Grasses	1ftx1ft
Creeping vine	1ftx1ft
Udling (*Eugenia sp*)	3x3
Others	3x3,2x2

Note: Other species are subject for species identification.

Table 12. Species Diversity in adopted Mangrove area in Brgy. Sarong

Tree Species	Spacing (m x m)
Pututan *(Avicenia sp.)*	2x2
Tangal *(Ceriops tagal)*	2x2
Bakauan lalaki *(Rhizophora apiculata)*	2x2

In 2022, Graymont will implement its 20-hectare bamboo plantation establishment in Sitio Tagpisa, Brgy. Rio Tuba, Bataraza, Palawan. Project site is shown in Figure 9. A total of 4,080 bamboo propagules is targeted to be planted within the 20 hectares project site.

5.1.1. Land Use/Land Cover and legal land classification

GRAYMONT (PHILIPPINES) INC. is located within the Rio Tuba Export Processing Zone, Brgy. Rio Tuba, Bataraza, Palawan. The site is classified as a "multiple-use zone" based on Environmentally Critical Areas Network (ECAN) Map of the Municipality of Bataraza.

The predominant land-uses of Bataraza are forest and forest-use categories, agricultural uses and residential. It should be noted that the total area allocated for mining/quarrying is approximately 5,262.50 hectares comprising 7.25 percent of Bataraza's total area. This part includes thee 990 hectares of RTNMC mining operation and CBNC plant complex (Source UMPI EIS 2012).

5.1.2. Geological and Soil Resources

Regional Geology

Southern Palawan is predominantly composed of an ophiolite that is overlain by highly folded and fractured Eocene to middle Miocene sedimentary rocks (MGB, 1982). The ophiolite is referred to as the Palawan Ophiolite. It is pre-middle Eocene in age and is thrusted upon the older pre-tertiary rocks (Encarnacion, et al. 1995). It exhibits a complete ophiolite sequence consisting of basal mantle harzburgite, dunite, gabbro and pillow basalts that are associated with cherty sediments (Raschka, et al., 1985). Low to moderately dipping middle Miocene to Pleistocene sedimentary rocks and recent deposits rest on the older rocks (MGB, 1982).

Stratigraphy Figure

Figure 7 presents the geologic map of the central sections of Bataraza and Rizal municipalities in southern Palawan compiled by Cabrera, 1985; Sto. Domingo et al., 1989 and the Mines and Geosciences Bureau, 1989.

Structural Geology

The main structural feature in the region is the thrust fault contact between the ultramafic rocks and the older sedimentary and volcanic rocks. The thrusting caused intense shearing and faulting along the margins of the ophiolite and folding, faulting and jointing in the adjacent rocks (Cabrera, 1985). The fault and fold structures that developed as a result of the thrusting generally trend north to northeast.

Geomorphology

Rugged to gently undulating terrain distinguishes much of Bataraza. The highest land feature in the area is the north-northeast trending Bulanjao Range, which is located at the central portion of the municipality. From there, the land slopes down to the western and eastern coastlines. Steep slopes and sharp peaks characterize the Bulanjao Range whose ridgeline averages 900 meters above sea level (masl). Its highest point is the *Escapardo Peak*, which rises to 1,036 masl. Ultramafic and volcanic rocks underlie the Bulanjao Range. Alluvial fan deposits that are topographically expressed as gently sloping land rest at the base of Bulanjao Range. These deposits consist primarily of boulders, cobbles and coarse sand derived from the weathering and erosion of the ultramafic and volcanic rocks. The areas farther out and up to the western and eastern coast assume a gently to moderately rolling nature. The broad hills that are found in these areas do not rise above 250 masl. Folded and moderate to gently dipping sedimentary rocks underlie the undulating land. A cluster of small, steep and rugged hills that rarely exceed 100 masl punctuate the undulating ground to the east of Bulanjao Range. The Panoyan Limestone underlies this area, which exhibits typical karstic features such as caves, sinkholes and springs. The flat, narrow coastal plains and floodplains are underlain by Quaternary alluvial deposits and raised coral reefs.

Seismicity and Other Geologic Hazards

Palawan is in the tectonically stable region of the Philippines. A virtual absence of seismicity and Tertiary igneous activity characterizes this region that includes the Cuyo

Islands, Sulu Sea and possibly southern Mindoro and Zamboanga (MGB, 1982).

Ground Motion

The intensity of ground shaking that result from a seismic event is measured by the horizontal acceleration. It depends on the earthquake magnitude, distance of the site to the earthquake generator, and the soil condition. Thenhaus et al. (1994) estimated peak horizontal ground acceleration that has a 10% probability of being exceeded in 50 years for rocks and soils throughout the Philippines. The ground-motion probabilities were estimated using a return period of 474 years and a model of 21 seismic source zones that describe the geographic extent and frequency of earthquake occurrence for major tectonic elements in the Philippines. Earthquakes smaller than Ms 5.0, which do not cause significant damage, were not considered in the estimation.

Tsunami

Earthquakes, landslides and volcanic eruptions that occur under the sea can produce giant sea waves called tsunamis. Tsunamis attain great speed and energy and may cause heavy damage when it strikes a populated coastline. Earthquakes along the Sulu and Negros Trench may generate tsunamis that could travel across the Sulu Sea and reach the eastern coast of Palawan. The project site is however not in direct danger of tsunamis since it is several kilometers inland and is situated on high ground.

Volcanic Hazards

There are no active volcanoes in the island. Tremendous eruptions from volcanoes in other parts of the Philippines may however subject the area to ash fall depending on the prevailing wind direction.

Landslides

Heavy and prolonged rainfall may increase the pore pressure within the lateritic soil and the sheared zone contact of the ultramafics. The increase in pore pressure causes a corresponding decrease in shear strength which, depending on the slope angle and

the weight of the overlying material, may trigger landslides. Since the lateritic soil on the slopes of Mt. Bulanjao is relatively thin and the underlying ultramafic rocks generally competent, the landslides are expected to be minor. Two small and shallow landslides scars were observed in the steep upper slopes of the western side of Bulanjao Range. The landslides apparently occurred in the thin residual soil that covered these slopes and did not cause any damage to the lowland.

Pedology

In general, soils in the area originated from the weathering of the Panas Formation, Ransang Limestone, Espina Basalt, and the Mt. Beaufort Ultramafics. The Bureau of Soils and Water Management (BSWM) in its regional studies classified these soils as Tagburos Clay with an upper 0.25 m of coarse, granular, and slightly clay as topsoil and another 0.25 m of slightly plastic porous clay. A hard, compact and stony to clay loam soil is encountered at the 1.5 m depth. Good cohesion between the soil particles is contributed by the coarse structure and high clay content of the upper layer. A baseline study in 2010 indicated a slightly acidic soil observed in grassland areas having a pH of 6.33 while the multiple-use zone showed a pH value of 6.67.

5.2. Water Resource and Quality

5.1.1. Hydrology

The nearest surface water body to the plant site is the Kinurong Creek, which is located upstream of Graymont and approximately less than a kilometer in distance. The Kinurong Creek has 146.7 MCM annual rate of rainfall. Stream discharge, actual evapotranspiration and groundwater recharge take up 52%, 40%, and 8% of the rainfall, respectively.

5.1.2. Hydrogeology/ Groundwater

RTNMC and CBNC installed Level 3 water system in Barangay Rio Tuba, Level 2 in Barangays Iwahig, Ocayan, and Sandoval. Barangay Taratak still depend on shallow dug wells and deep wells for their water requirements.

In general, groundwater levels are low due to highly fractured nature of the underlying

ultramafic rocks. All groundwater stations were found unfit for drinking due to its microbial quality.

Using the Philippine National Standard for Drinking Water (PNSDW), as a benchmark, most of the parameters were within allowable ranges except for aluminum, nickel, and lead.

The contamination of water resource from Graymont's operation will not occur as all wastewater flows into On-site detentions tanks and recycled for reuse. Sewerage for domestic wastes is constructed to prevent contamination not only of the water resources but also the surface environment.

5.3. Air Quality

Emissions during calcination, crushing and slaking processes include particulate matter, carbon monoxide, carbon dioxide, sulfur dioxide, nitrogen oxide and sulfur oxides. Ambient Air Quality Monitoring is conducted on quarterly basis. Air dispersion modeling was conducted February to October 2016. To collect dust generated from the KILN, bag filters and scrubbers are installed attached to the equipment. Plans to put up Dust Collector equipment are part of continual improvement to mitigate potential dust emission.

Graymont contracted HiAdvance Philippines, Incorporated (HiAdvance) to conduct and annual 1-hour ambient air sampling at two (2) sampling locations, located within its premises at Rio Tuba, Batraza, Palawan. The sampling activity conducted last December 19, 2020 determined the concentrations of Nitrogen Dioxide, Sulfur Dioxide, Total Suspended Particulates (TSP) and Particulate Matters as (PM10).

The two (2) sampling locations are in (a) In front of Admin Office and (b) Mt. Bulanjao Golf Course. The results of NO2, SO2, TSP, and PM10, for samples collected for one (1) hour were compared to the National mbient Air Quality Standards for Sources Specific Air Pollutants from Industrial Sources/Operations (NAAQSSAP) and all values for pollutants identified are within the acceptable limits of the standards stipulated in the IRR of the Philippine Clean Air Act.

5.4. Noise and Vibration

The nearest residential areas are located approximately 1.3 kilometers (Barangay Rio Tuba) to 1.6 kilometers (Sitio Tagpisa) from Graymont

The primary noise contributors are belt conveyors, blowers, compressors, power generators and other plant auxiliaries. To reduce noise, silencing equipment is provided including rubber lining for conveyors. All workers are provided with earmuffs or earplugs for protection.

HiAdvance also conducted Noise Level Monitoring at two (2) sampling locations for 1 hour with the sampling period of ten (10) minutes with ten (10) seconds time interval on December 19, 2020.

The two (2) sampling locations are in (a) In front of Admin Office and (b) Mt. Bulanjao Golf Course. The results of noise level measurement were compared to the standards based on the proposed land use within the sampling location. Both sampling locations were considered as Category C, indicating light industrial area.

The median of both stations passed the standard limit based on the NPCC Memorandum Circular Number. 002 Series of 1980.

5.5. Biodiversity Resource/Information

Terrestrial resource

The project site of Graymont, prior to its construction, has minimal vegetation cover since the site was formerly cleared for the construction of the Tailings Dam 1 of CBNC. Portion of the area was also used as stockpile area of RTNMC. The vegetation species observed on site were mainly grasses such as cogon (Imperata cylindrica) and kandi-kandilaan (Stachytarpheta jamaicensis). Other species of vegetation growing in the area were Auri (Acacia auriculiformis), Ipil-ipil (Laucaena leucocephala) and Batino (Alstonia macrophylla). Auri trees were planted in the area as buffer cover albeit growing sparsely since the soil is not very suitable for its physiological development.

Wildlife occurrence in the area is very minimal especially for those species that are non-volant. Commonly observed species are Anthreptes malacensis, Criniger bres, Dicaeum pygmaeum, Orthomus sericeus, Prionochilus plateni, and Pycnonotus pulmosus.

To date, a total of 2,801 seedlings were planted covering 3.0 hectares of the total 8.06 hectares land area of the Graymont Lime Milk Plant. The seedlings planted include Bamboo (Bambusa sp.), Narra (Pterocarpus indicus), Ipil (Instia bijuga), Mangium (Acacia mangium), Palawan Cherry (Cassia sp), Tonkat ali (Eurycoma longifolia), Palomaria (Calophyllum sp), Grasses, Creeping vine, and Udling (Eugenia sp).

5.6. Heritage and Cultural Values

The study in 2010 revealed that there is no ethnic group and ~~scared~~ sacred place in Barangay Rio Tuba. Although projected to be minimal, the project operations may attract migrants from different places, which may affect the cultural traits of the original dwellers.

5.7. Social Issues

According to Bay Magallanes, there are Palawan in Rio Tuba.

5.7.1. Exposure to Occupational Health and Safety Hazards

Depending on the nature of job, employees are exposed to occupational hazards such as noise from equipment operations, potential risks from injury and even fatality due

to accidents during operations and maintenance activities.

5.7.2. Increase in Population

The generation of work opportunities will attract people to migrate and sourcing of manpower outside the municipality of Bataraza if there is no qualified local applicant. Likewise, the presence of business opportunities would encourage entrepreneurs from other areas to invest in Bataraza.

5.7.3. Increased Volume of Generated Wastes

More wastes will be generated in the area from workers and from the day-to-day operation.

6.0. Environmental Impacts and Mitigating Measures

Graymont has created a Mine Environmental Protection and Enhancement Office (MEPEO) headed by MEPO Officer, Bob Robin M. Camo who is primarily in-charge in monitoring the environmental compliance together with the Plant Manager, who is directly in-charge in monitoring activities of the Plant. Support Group from ISO Team, in-charge of auditing the environmental compliance of the Company.

Table below presents the summary of sources of impact, impact and mitigating measures:

Table 13. Sources of impact, impact and mitigating measures

Resources	Sources of Impact	Impact	Mitigating Measures
Land Resource	Development and Operation of Mineral Processing Plant	Loss of vegetation	Tree planting, maintenance, and protection.
		Removal of Topsoil/Subsoil	Tree planting, maintenance, and protection.
		Land Erosion	Tree planting, maintenance, and protection.
		Change in soil properties including contamination	Tree planting, maintenance, and protection.
		Change in Landforms and Topography	Implementation of well-planned decommissioning of mineral processing facilities

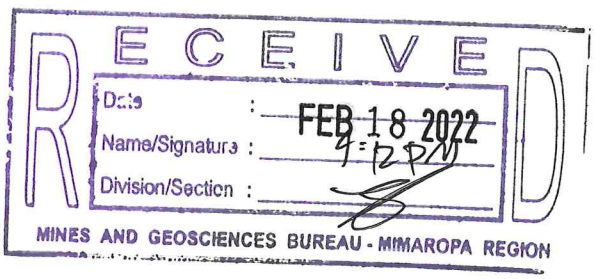
Water Resource and Quality	During the operation of following facilities: - Processing Plant - Laboratory - Drainage system - Solid Waste Areas - Hazardous Waste Storage - Others	Change in Drainage Pattern	Implementation of water recycling and practicing zero water discharge.
		Water Contamination	Implementation of water recycling and practicing zero water discharge.
		Erosion, Sedimentation, and siltation	Regular maintenance of siltation ponds and drainage canal.
	Domestic and process wastewater	Water usage/Balance	Implementation of water recycling and practicing zero water discharge.
Air Quality	Hauling operation	Dust Generation	Road concreting, watering, and sweeping, air quality monitoring
	KILN operation	Gases and Fumes emission	Air quality monitoring, Regular maintenance of air pollution

			control equipment
Noise and Vibration	Equipment operation	Noise Generation	Construction of sound barriers for sound absorption and control.
	Raw material handling operation	Vibration	Implementation of engineering controls
Biodiversity Conservation/ Consideration	Loss of biodiversity in nearby community	Disturbance/Loss of Biodiversity	Mangrove Planting, Protection and maintenance.
	Development and Operation of Mineral Processing Plant	Change in Landscape/ View	Continuous enhancement of overall landscape and appearance thru planting activities.
Heritage and Cultural Values	Development and Operation of Mineral Processing Plant	Disturbance of historical, archaeological and cultural sites / resources	Support to indigenous people.
	Influx of workers from outside the host and neighboring communities	Cultural Change	Prioritization of local citizens in employment opportunities

Social Issues	Development and Operation of Mineral Processing Plant	Displacement of Communities	Implementation of the Social Development and Management Program
		Impact to Livelihood and Social Services	Prioritization of local citizens in employment opportunities
		Impact to Recreation and Education	Funding or construction of recreational and educational sites

7.0. Research Proposals

Graymont will continue research on petcoke ash to identify its other beneficial use. Composition of petcoke ash samples will be tested and analyze to identify its potential use.



8.0. Approach and Scope of Environmental Monitoring Program

All mitigating measures to be implemented will be monitored to ensure thatthe significant impacts identified are prevented/minimized. To provide an effective monitoring program, the following shall be discussed for every aspect (i.e., Land Resource, Water Resource and Quality, Air Quality, Noiseand Vibration, Biodiversity Conservation/Consideration, Heritage and Cultural Values, Social Issues, and Research):

Table 14. Key environmental aspects to be monitored by the Company as identified in Environmental Impact Statement (EIS)

Key Environmental Aspects	Significant Impacts	Parameters to be Monitored	Purpose of monitoring	Monitoring Method	Monitoring Locations	Monitoring Frequency
Land Resources	Land Pollution	Volume of Hazardous Waste Generated	To properly label and store hazardous wastes.	Visual Inspection. Recording of volume waste. Monitoring of Accredited DENR Treater and Transporter	Hazardous Waste Facility	Daily/Monthly

		TSP, Sulfur Dioxide, Nitrogen Dioxide, PM10	To ensure properly segregated and disposed to sanitary landfill	Visual Inspection	Plant site-Central Solid Waste Area	Daily
Water Resource and Quality	Water Pollution	BOD, Fecal Coliform, TSS, Ammonia, Nitrate, Phosphate, Oil and Grease, Surfactant	To ensure water quality is within DENR Standards and effluent should comply with effluent Standards of DENR for Class C water	Azide Modification Dilution Technique Gravimetric, Partition Gravimetric Visual inspection	Water Storage Tank-CBNC Supernatant Water Tank- CBNC OSD (On Site Detention)	Quarterly
					Plant-site Drainage system	
Air Quality	Air Pollution	*TSP, Sulfur Dioxide, Nitrogen Dioxide, PM10*	*To ensure air quality is within DENR Standards*	*Gravimetric, Colorimetric, Saltzman-Colorimetric,*	*Upper Kinurong & Tagpisa*	*Quarterly*
		Particular Matter, NOx,SOx,CO	To ensure air quality is within DENR Standards:	Gravimetric, Phenoldisulfonic Acid-Colorimetric,	KILN 1 and 2 Stack	Annually

				Barium Thorin titration, NDIR		
Noise	Noise Pollution	dB	To ensure noise level is within government standard	dB Level Monitoring	Upper Kinurong & Tagpisa	Annually

Table 15. Environmental Monitoring Program

Impacts	Mitigating Measures	Parameters Considered	Monitoring Method/s	Monitoring Location/s	Monitoring Frequency
A. Land Resource					
Decrease in vegetation	Tree planting, maintenance, and protection.	No. of hectares rehabilitated, and seedlings planted	Records validation	Plant site	Quarterly
Solid waste generation	Disposal and spraying of insecticides	Solid wastes	Visual inspection	MRF	Daily
Hazardous waste	Collection by DENR-Accredited HazWaste treater	hazardous waste	Visual inspection	HazWaste storage area	Weekly
B. Water Resource and Quality					
Stormwater run-off containing sediments	Maintenance of drainage system and silt ponds	TSS, TDS,pH	Water sampling	OSD Tank	Quarterly
Water quality	Desilting of drainage canals and sedimentation pits	TSS, TDS,pH	Visual observation Water sampling	OSD Tank	Quarterly
C. Air Quality					

Gas emissions from burning of fuels in the kilns	Maintenance of Air Pollution Control Equipment/Devices	TSP, PM10, NO2, SO2	Ambient air quality sampling	Plant site	Quarterly
Generation of particulate matter	Maintenance of Air Pollution Control Equipment/Devices	TSP, PM10, NO2, SO2	Ambient air quality sampling	Plant site	Quarterly
D. Noise and Vibration					
Noise Generation	Construction of sound barriers for sound absorption and control.	dB	Noise level monitoring	Plant site	Daily
Vibration	Construction of sound barriers for sound absorption and control.	Vibration rate	Measuring vibration using Vibration meter	RMH Equipment	Daily
E. Biodiversity Conservation/ Consideration					
Disturbance / Loss of Biodiversity	Plantation establishment and protection and maintenance.	No. of hectares rehabilitated, and seedlings planted	Site validation	Plant site Mangrove Site, Brgy. Sarong, Bataraza, Palawan	Quarterly
Change in Landscape	Continuous enhancement of overall landscape and	No. of hectares rehabilitated, and seedlings planted	Site validation	Plant site	Quarterly

	appearance thru planting activities.				
F. Heritage and Cultural Values					
Social and economic activities	Implementation of SDMP				
G. Research Proposal/ Activities					
Petcoke Ash Sampling for Beneficial Use Description: Petcoke ash is generated as residue in combustion process. Petcoke ash has its own designated pipes where is it collected and then disposed in an open pit. The continuous generation of petcoke ash can have severe impacts in the environment such as a potential groundwater contamination by the leaching of heavy metals and/or particulate matter emissions; making it necessary to treat or reuse them. Methodology: Samples of petcoke ash will be collected and will be tested for its properties/composition. First batch of Petcoke samples will be tested on 2Q2022, and second batch will be on 4Q2022. Results will be analyzed for the identification of its other beneficial uses.					

Table 16. Schedule of Research Activity

Action Plan	Apr	May	Jun	Jul	Aug	Sep	Oct	In-Charge	Resources Needed
Collection of Petcoke Ash Sample								Process Engineer & PCO	Manpower/ Materials/ Equipment
Composition analysis								Third Party	
Review of lab test result								Process Engineer & PCO	
Identification of other beneficial uses of petcoke ash based on its composition								Process Engineer & PCO	
Technical Paper Writing								Process Engineer & PCO	

To monitor the company's operation and implementation of its annual programs, the following are the reportorial requirements that the company comply to submit to MGB and EMB.

Table 17. Reportorial Requirements

Report	Target Date of Submission
MGB 29-10 Monthly Report on Production, Sales, Inventory of Non-Metallic Minerals and Employment Data.	Within 15 working days after the end of each calendar month
MGB 29-16 Integrated Annual Report	Within 2 months after the end of each calendar
MGB 29-18 Quarterly Energy Consumption Report	Within 15 working days after the end of each calendar month
MGB Form 15-5 Monthly General Accident Report	Within 15 working days after the end of each calendar month
MGB 18-1 Semiannual Report on Mine Waste and Mill Tailings Produced,Contained and or Utilized	Within 15 working days after the end of each calendar month
Annual Accomplishment Report of Five-Year Development / Utilization Work Program	One month before end of the year
Annual Land Use Report	Sixty (60) calendar days after the end of each calendar month
Three Year Development/Utilization Program (Status Report)	Within 15 working days after the end of quarter
SHES Expenditure Form	Within 15 working days after the end of quarter
SMR (Self-Monitoring Report) - Hazardous Waste Inventory and Hauling Activities - Water Sample Analysis - Air Sampling Monitoring Solid Waste Inventory and Disposal	Quarterly, within 15 working days after the end of each calendar month
Project Environmental Monitoring Audit and Priority Scheme (PEMAPS)	Semiannual
Compliance Monitoring Report	Quarterly, within 15 working days after the end of each calendar month
Compliance Monitoring Report (EMB)	Semiannual
Quarterly and Annual AEPEP Accomplishment Report	Quarterly, within 15 working days after the end of each calendar month

Employers Work Illness and Accident Report	Submission to DOLE as per deemed necessary
Report on Taxes, Fees, and Royalties	
Monitoring Report on Investment and Employment	Quarterly, within 15 working days after the end of each calendar month
Alien Employee and Workforce Employment	Quarterly, within 15 working days after the end of each calendar month
National Greening Program Report	Quarterly, within 15 working days after the end of each calendar month
SDMP Accomplishment Report	Quarterly, within 15 working days after the end of each calendar month
ASHP Accomplishment Report	Quarterly, within 15 working days after the end of each calendar month
EMB Wastewater Management Weekly Report	Every Tuesday

Table 18. Clearance / Permit Compliance to Regulatory Government

Report	Schedule of Activities
SEP (Strategic Environmental Plan) Monitoring Report	Quarterly submission to PCSD (Palawan Council for Sustainable Development)
Discharge Permit -Water Sample Analysis	Quarterly, within 15 working days after the end of each calendar month
Permit To Operate -Kiln Emission Test -Ambient Air Sampling	Quarterly, within 15 working days after the end of each calendar month
Hazardous Waste Generator I.D. -Treatment and Disposal of Hazardous Waste	As per hauling schedule
Occupancy, Building, Electrical, Electronic and Mechanical Permit	Annual Plant visit of PEZA representative
Mechanical and Electrical Permit	Annual Plant visit of MGB representative

9.0. Total Cost of AEPEP

The total cost of AEPEP for year 2022 is **Php 11,186,421.00** or 4.6% of the 2021 OPEX costing ₱242,062,041.19. Comprising cost for the management of land resources, water resource and quality, air quality, noise and vibration, conservation values, environmental research, and validation activities.

Table 19. AEPEP Cost

	UNIT COST	NO. OF UNITS TO COMPLETE	COST
A. LAND RESOURCES			
Bamboo Plantation Establishment and Maintenance			
1. Plantation Establishment	24,888/hectare	20	497,760.00
2. Bamboo Propagules Production	50/propagule	4,080	204,000.00
3. Maintenance of bamboo plantation	3,508.8/hectare	20	70,176.00
Nursery Operation			
1. Construction of nursery	231,449	1	231,449.00
2. Bamboo Propagules Production	50/propagule	500	25,000.00
3. Maintenance of nursery			

	To be funded under SDMP 2022 with IP gardener from Brgy. Rio Tuba		
Tree Planting and Maintenance at Plant Periphery 1. Care and Maintenance at Plant	320/day of gardener	288	92,160.00
B. WATER RESOURCE AND QUALITY			
Water Analysis 1.Third party water sampling	12,990/sampling	4	51,960
Maintenance of Drainage System and others 1. General housekeeping of Petcoke, KILN and MOL Plant	6,750,000/unit of backhoe	1	6,750,000.00
Waste Management 1.Solid and Hazardous Wastes Hauling	3,000/hauling	4	12,000.00
C. AIR QUALITY			
Sprinkling of Road Networks and Periphery 1. Sprinkling	1,200/watering activity	20	24,000.00
Road Sweeping 1. Daily 2. Petcoke Hauling	320/man day 145,000/service	288 3	92,160.00 435,000.00

Maintenance of Air Pollution Control Equipment/Devices			
1. In-house	6,188/maintenance	12	74,256.00
2.Third party (Stack Gas Emission and Ambient Air)	156,000/sampling	1	156,000.00
D. NOISE AND VIBRATION			
Maintenance of Noise Control Measures in RMH Discharge Chute and Others			
1.Noise control measures	1,500/Maintenance Equipment	4	6,000.00
2. Calibration of noise monitoring equipment	4,500/calibration	1	4,500.00
E. BIODIVERSITY CONSERVATION/CONSIDERATION			
Mangrove and Bats Sanctuary Patrolling, Protection and Maintenance			
1.Mangrove and Bats Habitat Patrolling, Protection and Maintenance	12,000/hectare	30	360,000.00
F. RESEARCH			
Petcoke Ash for other beneficial uses			
1.Petcoke Ash Sampling	5,500/sampling	2	11,000.00
G. OTHERS			

1.MMT Monitoring of EPEP Implementation	206,750/audit	4	827,000.00
2. MRFC Meetings	59,000/MRFC Meeting	4	236,000.00
3. MPP Validation	16,000 Verification Fee	1	16,000.00
4. Trainings/Seminar/Workshop	10,000/PCO Training	1	10,000.00
5. ISO 14001-2015 (EMS)	10,000/certification	1	10,000.00
TOTAL		**5,270**	**11,186,421.00**

10.0. Name and Signature of Applicant or Person(s) preparing the EPEP (Specify PRC and PTR numbers), duly noted by the President.

First Draft prepared by:

BOB ROBIN M. CAMO
MEPEO/PCO
Certificate of Accreditation No.: 2021-R4B-02044
Date Issue: July 15, 2021
Expiry Date: July 14, 2024

Second Draft reviewed and prepared by:

BOB ROBIN M. CAMO
MEPEO/PCO
Certificate of Accreditation No.: 2021-R4B-02044
Date Issue: July 15, 2021
Expiry Date: July 14, 2024

RYNAN JOSEPH C. PANTALEON
MEPEO/PCO*
**with pending application*

Checked by:

HILDA QUILLO
Country Manager

Approved by:

ROMMEL IBUNA
President

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Annex A

AEPEP 2022 Physical and Financial Targets Matrix

EPEP 2022	Unit of Work Measure (UWM) / Unit Cost	Annual Physical/ Financial Target	Quarterly Physical/Financial Target			
			1stQ	2ndQ	3rdQ	4thQ
A. LAND RESOURCES						
Bamboo Plantation Establishment and Maintenance						
1. Establishment of bamboo plantation (including enrichment activity)	No. of hectares established	20	5	5	5	5
	24,888	497,760	124,440	124,440	124,440	124,440
	No. of bamboo propagules planted	4,080	1,020	1,020	1,020	1,020
	50	204,000	51,000	51,000	51,000	51,000
2.Maintenance of bamboo plantation	No. of hectares maintained	20	5	10	15	20
	3508.8	70,176	17,544	17,544	17,544	17,544
Nursery Operation						
1. Construction of Nursery	No. of constructed nursery	1	1			
	231,449	231,449	231,449	-		
2. Bamboo Propagules Production	No. of propagules produced	500		500		
	50	25,000		25,000		
3. Maintenance of nursery	**To be funded under SDMP 2022 with IP gardener from Brgy. Rio Tuba**					
NGP - Tree Planting and Maintenance at Plant Periphery						
1. Care and Maintenance	No. of hectares maintained	30	30	30	30	30
2. Maintenance of gardener	No. of Man-days	288	72	72	72	72
	320	92,160	23,040	23,040	23,040	23,040
B. WATER RESOURCE AND QUALITY						
Water Analysis						
1. Third Party water sampling	No. of sampling	4	1	1	1	1
	12,990	51,960	12,990	12,990	12,990	12,990
	No. of parameters	12	12	12	12	12
Maintenance of Drainage System and Others						
1. General housekeeping of Petcoke, KILN; desilting and maintenance of drainage system and MOL Plant	No. of Drainage System maintained	4	4	4	4	4
	No. of backhoe procured	1	1			
	6,750,000	6,750,000	6750000			
Waste Management						
1. Volume of wastes produced						
- Solid Wastes	Kgs of solid waste produced	520	130	130	130	130
- Hazardous Wastes	Kgs of hazardous wastes produced	449	112.25	112.25	112.25	112.25
2. Solid and Hazardous Wastes Hauling	No. of hauling	4	1	1	1	1
	3,000	12,000	3,000	3,000	3,000	3,000

EPEP 2022	Unit of Work Measure (UWM) / Unit Cost	Annual Physical/ Financial Target	Quarterly Physical/Financial Target			
			1stQ	2ndQ	3rdQ	4thQ
C. AIR QUALITY						
Maintenance of Air Pollution Control Equipment/Devices	No. of APCE/D maintained	3	3	3	3	3
	82,500	990,000	247,500	247,500	247,500	247,500
Sprinkling of Road Networks and Periphery						
1. Road Networks sprinkled	Distance (kms)	0.6	0.6	0.6	0.6	0.6
2. Plant Periphery sprinkled	Area (square meters)	3000	3000	3000	3000	3000
	No. of road watering activity	20	5	5	5	5
	1,200	24,000	6,000	6,000	6,000	6,000
Road Sweeping						
3. Daily	No. of mandays	288	72	72	72	72
	320	92,160	23,040	23,040	23,040	23,040
4. During petcoke hauling	No. of petcoke hauling	3	1		1	1
	145,000	435,000	145,000		145,000	145,000
Air Quality Monitoring						
1. In-House	No. of sampling conducted (1 per month)	12	3	3	3	3
	No.of parameters measured/ sample	36	9	9	9	9
	No of gastec detector tube purchased/used	12	3	3	3	3
	6,188	74,256	18,564	18,564	18,564	18,564
2. Third Party (Stack Gas Emission and Ambient Air)	No. of monitoring conducted	1				1
	156,000	156,000				156,000
	No. of parameters measured	9				9
D. NOISE AND VIBRATION						
1. Maintenance of Noise Control Measures in RMH Discharge Chute and Others	No. of maintenance of noise control measures	4	1	1	1	1
	1,500	6,000	1,500	1,500	1,500	1,500
2. Noise Monitoring	No. of monitoring conducted	12	3	3	3	3
3. Calibration of noise monitoring equipment	No. of calibration conducted	1				1
	4500	4,500				4,500
E. BIODIVERSITY CONSERVATION/CONSIDERATION						
1. Mangrove and Bats Habitat Patrolling, Protection and Maintenance	No. of hectares patrolled/protected/maintained	30	30	30	30	30
	12,000	360,000	90,000	90,000	90,000	90,000

EPEP 2022	Unit of Work Measure (UWM) / Unit Cost	Annual Physical/ Financial Target	Quarterly Physical/Financial Target			
			1stQ	2ndQ	3rdQ	4thQ
F. RESEARCH						
1. Petcoke Ash Sampling for other beneficial uses	No. of research conducted	2		1		1
	5,500	11,000		5,500		5,500
	No. of progress report prepared	1				1
G. OTHERS						
1. MMT Monitoring of AEPEP Implementation	No. of monitoring/audit	4	1	1	1	1
	206,750	827,000	206,750	206,750	206,750	206,750
2. MRFC Meetings	No. of MRFC Meetings conducted	4	1	1	1	1
	59,000	236,000	59,000	59,000	59,000	59,000
3. MPP Validation	No. of MPP validation conducted	1		1		
	16,000	16,000		16,000		
4. Conduct of Trainings/Seminar/Workshop	No. of Training conducted	1		1		
	PCO Training	1		1		
	10,000	10,000		10,000		
5. Maintenance of ISO 14001-2015 (EMS)	No. of Certificate secured	1		1		
	10,000	10,000		10,000		
GRAND TOTAL		**11,186,421**	**8,010,817**	**950,868**	**1,029,368**	**1,195,368**