Citinickel Mines
AND DEVELOPMENT CORPORATION

2024

ENVIRONMENTAL PROTECTION AND ENHANCEMENT PROGRAM

CITINICKEL MINES AND DEVELOPMENT CORPORATION
TORONTO AND PULOT NICKEL MINING PROJECTS
MPSA NO. 229-2007-IVB

BARANGAY BATO-BATO, NARRA AND
BARANGAY PULOT INTERIOR, SOFRONIO ESPAÑOLA, PALAWAN

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1.0 CORPORATE DATA

1.1	Project Name:	**PULOT NICKEL MINING PROJECT**
1.2	Company Name:	**CITINICKEL MINES AND DEVELOPMENT CORPORATION (CMDC)**
1.3	Office Address:	10th Floor ORE Central Building 9th Avenue Corner 31st Street Bonifacio Global City Metro Manila
1.4	Telephone No.:	(632) 889-1129/ 889-1130
1.5	Facsimile No.:	(632) 888-5253
1.6	Site Location:	Sofronio Española, Palawan
1.7	Contact Person(s):	**ATTY. GIOAN FERNAND A. LEGASPI** President **MS. PAMELA P. MIGUEL** VP Admin / Operations **ENGR. JULIUS B. COSMIANO** Resident Manager

2.0 PROJECT DESCRIPTION

2.1 Project Details

The Citinickel Mines and Development Corporation's (CMDC) Pulot Nickel Mining Project is covered by the following permits:

MPSA No. 229-2007-IVB with an area of 1,408 hectares
Mine ECC Ref. Code No. 0707-016-2140
Allowable Production: 2.0M DMT per year
Causeway ECC No. ECC-R4B-0803-073-2140

2.1.1 Project Location, Access/Transportation Details

The Project is located in Barangay Labog, Punang and Pulot Interior Municipality of Sofronio Española, Palawan bounded by the following coordinates as per approved MPSA area:

Corner	Latitude	Longitude
1	9º 6'30.05"	117º58'18.21"
2	9º 6'30.05"	117º56'59.62"
3	9º4"19.85"	117º56'59.62"
4	9º4'19.85"	117º56'33.42"
5	9º3'27.27"	117º56'33.42"
6	9º3'27.27"	117º57'52.01"
7	9º3'53.81"	117º57'52.01"
8	9º3'53.01"	117º58'18.21"

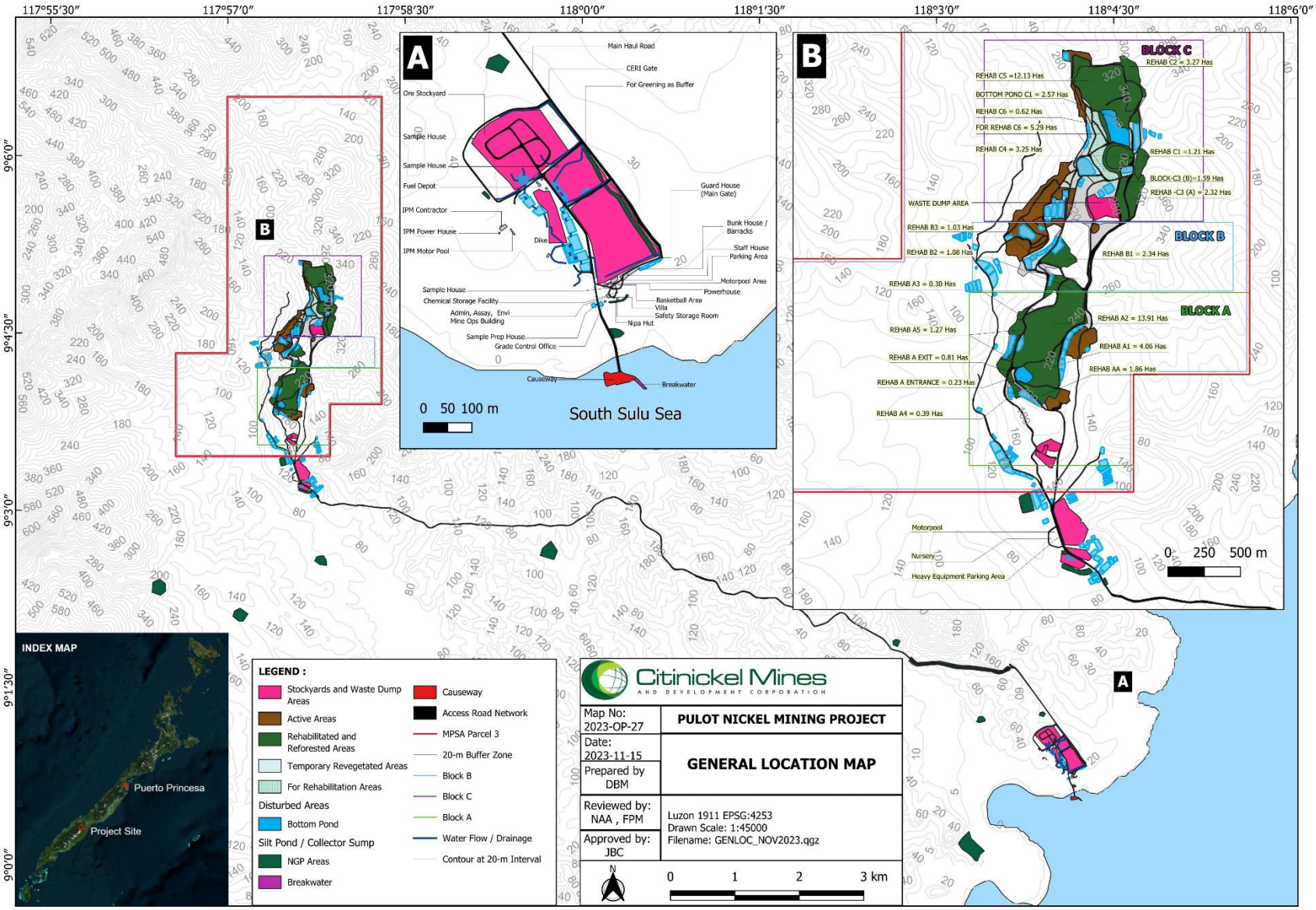
The project area is situated 154 kilometers south of Puerto Princesa, Palawan, and eighteen kilometers from the National Highway.

From Manila, the project site can be accessed through a direct one-hour flight to the capital city of Palawan, Puerto Princesa. Passengers also have the option to ride the commercial boat that reaches Puerto Princesa City after a 24-hour journey.

When traveling from Puerto Princesa City via a land trip, the project site can be accessed by a 3-hour land trip via the south road passing through the Municipalities of Aborlan and Narra. Bus companies such as RORO Bus, Cherry Bus, and some commercial utility van services also ply the area.

The project covers 1,408 hectares of Mineral Production Sharing Agreement (MPSA-229-2007-IVB) which was approved by DENR Secretary Angelo T. Reyes on January 3, 2007.

The Project location and MPSA area of Sofronio Española Operation are shown in **Figure 1.**



PULOT NICKEL MINING PROJECT

2.2 Estimated Capital Costs

The estimated initial capital expenditures and investment for the Española project for 2024 is **Php151, 993,347**. Breakdown and details of the aforementioned amount are shown in **Table 1** below:

Table 1. Details of the Initial Capital Expenditures

Particulars	Cost (PHP)
Exploration Drilling	12,320,000.00
Land Acquisition	3,745,500.00
Mobilization/Demobilization	17,250,000.00
Land clearing and site preparation	5,609,297.50
Road Construction	6,339,375.00
Safety and Health Management	244,090.00
Environmental cash fund	4,219,600.00
Environmental Remediation	21,493,383.00
Causeway Construction	4,600,000.00
Stockyard Development	6,265,200.00
Civil Works	16,657,750.00
General Services	3,300,000.00
Mechanical, Electrical and Laboratory Equipment	9,328,000.00
Office Equipment	2,092,200.00
Pre/Feasibility Studies	1,100,000.00
Permitting	3,080,000.00
EIS/ECC Acquisition	1,650,000.00
Occupation Fee	84,480.00
Working Capital	114,633,242.58
TOTAL	**234,012,118.78**

2.3 Minerals (Types of Minerals Extracted)

The minerals to be produced or mined in the project area is nickel ore with an average grade of 1.40% Nickel and other associated metal and minerals such as cobalt and iron.

2.4 Mining Method

The project pertains to the mining of laterite composed of limonite and saprolite ores. A type of mineral deposit requires a surface mining method. Standard operation procedures for the development scheme of the project before the mining operation will be maintained as follows:

- Construction of access roads and/or modification of existing mine roads. The road construction or improvement necessitated the utilization of bulldozer, grader, front-end loaders, compactor, excavator, and hauling trucks (dump trucks).

- Clearing of vegetation. The ore zone planned to be mined will be cleared with existing shrubs, bushes, trees, and other vegetation.

- Stripping of the overburden. Using hydraulic excavators or shovels stripping of overburden will be implemented. Removed topsoil/debris will be set aside and stockpiled to temporary stockpile area for future rehabilitation used.

- Construction of benches and access ramps. Bench mining method will be used considering its undulating topography. In this project, the contour benching type will be adopted, these features the following:

- 3-meter bench height
- Multi-level mining that provides flexibility in handling various grades and tonnages
- Mined-out areas can be used as waste dumps
- Multiple mining areas can be programmed as the need arises.

A minimum of two pits will be maintained at all times to provide flexibility in operations and grade control. Pits will start from the lowest elevation progressing upwards to higher elevations. Earth-moving equipment like backhoes, excavators or shovels and loaders in combination with dump trucks will be utilized. All run-of-mine ores (limonite and saprolite) will be hauled directly to drying stockyards or loading stockyards in preparation for shipment.

Bench Parameter:

e = batter angle : 70˚
a = pit-slope angle : 45˚
n = bench height : 3m
c = berm width : 3m
Road width : 20m

2.5 Estimated Production

Under the new amended Environmental Compliance Certificate (ECC), the company had been granted a permit to produce an annual capacity of 110,000 WMT of nickel ore. The computed overburden or wastes tripping ratio is less than **1.00**. The estimated production for 2024 was around 110,000 WMT of nickel ore.

2.6 Plant Process

CMDC has no provision yet for the processing of nickel ore. Nickel ore is directly shipped to the foreign market in China, Japan and Australia.

2.7 Ore Stockpiling

The beneficiated ore is hauled and stockpiled at the 25-hectare ore stockyard area located at pier site. The stockpiling is done according to ore classification based on Ni and Fe content for grade control purposes during shipment.

Stockpiled soil and other waste materials will also be susceptible to erosion during rain. This will likewise contribute to the siltation. The water bodies, draining the stockpile areas, particularly Sulu Sea will be affected. This impact will be significant particularly during heavy rains.

It should be noted however that the drainage of the stockpile areas is engineered to allow run-offs to be directed initially to the rock dams, sumps, and the siltation ponds before discharge to the receiving bodies of water. This will mitigate the impacts of siltation. The impacts are minimal if erosion/siltation control measures are maintained. These include the preservation of some existing areas of grass, shrubs, and trees.

As mentioned before, sedimentation of the waterways is controlled by diverting the run-off water from the stockpile areas. Catchment basins are provided not only by siltation ponds but also by excavations in the stockyard. This ensures limited contamination of other waterways. The vegetation around rivers also provides good protection against contaminated run-off.

2.7.1 Ore Stockyard or Temporary Stockpile Area

The project has no area identified as Pier Stockyard. Ores are beneficiated and stored at the "Ore Stockyard" that is located approximately 200 meters

away from the shoreline with an established environmental mitigating/ impounding structures where water laden with silt from a downpour are collected/ contained and settled in the Ore Stockyard Settling Pond.

2.8 Ore Shipment

The limonitic zone is located far from the causeway/pier docking area, foreign vessels are restricted to anchor 3.22 kilometers offshore to avoid coral reef damage and collision between small fishing boats that are usually fishing nearby. The TX excavator and wheel loader reclaim the beneficiated nickel silicate ore from the stockyard onto dump trucks which haul the ore to the pier about 200m to 800m away. The dump trucks unload directly to 1,500-2700 WMT LCTs anchored alongside the pier. The loaded LCTs travel directly to the anchorage area for unloading. Using a crane fitted at the ore vessel, the ore is loaded into the boat. With 2 to 3 LCTs operating 24 hours per day, it normally takes 4 to 5 days to fully load 25,000 to 50,000 WMT-capacity ore boats. The ore is brought to PAMCO of Japan and other smelting companies in China. To accommodate the shipment of nickel ore to China, at least two (2) LCTs are occasionally hired to augment the increased ore shipment schedule.

2.9 Projected Life of the Project

The company's operation is barely twelve (12) years old since the start of development in the second quarter of the year 2011. Based on resource estimate of the ore deposit indicates potential production of 110,000 tons/year that can last for approximately 5 to 10 years. However, due to fluctuating market demand and world market price directly affects the operation of the company. The firm is yet to identify the exact year for decommissioning. Meanwhile, confirmatory or exploration works are continuously being conducted for possible other precious metal detection and the result of which will surely augment the life of the project.

2.10 Mineral Reserves/Resources

Based on the 3rd Quarter 2023 initial survey is total of 501,123.37 WMT. The QNI and Marubeni-Pacific is having a continuous mine drilling to extent and prolong the mine life of the project.

2.11 Potential for Additional Reserves

The mining claim totaling 1,408 hectares and most of the areas are still not subjected to drilling / detailed exploration is a potential source for additional ore reserves. Ongoing exploration works simultaneously with the conduct of mine operations will be the standard operating procedures in the mine development/production activity.

2.12 Utilities

2.12.1 Power Supply

The Palawan Electric Cooperative (PALECO) was commissioned by the company as a regular supplier of its daily electricity needs. Also, three (3) units 100 KVA transformer using the three-phase method of connection was installed to maintain the voltage requirements of the office, laboratory equipment, and pier facilities for barge loading operations. Furthermore, the company maintains two (2) units standby generator sets (100 KVA and 125 KVA) as an alternate source of power in the event of unexpected power interruption. Based on 2023 electricity monitoring data, an average of 241.85 kWh/day was used to sustain the daily requirements of the amenities and especially during shipment operation. The energy committee will set a target reduction of electricity consumption for the year 2024, in line with the objectives and programs for ISO 14001:2015.

Powerhouse

2.12.2 Water Supply

Potable drinking water was sourced-out from the nearest water refilling station in Sofronio Española. Likewise, water for domestic used is pump-out from a constructed deep well (water permit number WP no. 02511 4) using a submersible water pump directed to a 1,400 liters water tank capacity for distribution to staff house, admin building, assay laboratory, and sample preparation area.

Water Source

Based on 2023 domestic water consumption data, an average of 56.6 cubic meters per month was used to sustain the daily requirements of the facilities. Regular inspection of leaks and posting of water conservation reminders were implemented to attain the 1% target reduction of water consumption throughout the year 2023 by following the objective and programs of ISO 14001: 2015 policy.

Water use for road sprinkling is siphoned from the settling ponds and nearby rivers (e.g., Pulot Interior and Punang River) depending on the weather conditions.

Settling pond as source of water for road sprinkling

2.13 Mining Equipment

2.13.1 Lists of Mining Equipment

a. Excavator - 4
b. Dump Trucks - 7
c. Bulldozer - 1
d. Compactor - 1
e. Water truck - 4
f. Service Pick Up - 3
g. Motorcycle - 2
h. Service jeep - 2
i. Service truck - 3

2.13.2 Lists of Fixed Equipment

Fixed equipment that was provided and installed in the project are Generator Sets being used to provide power at the mine site and port operations, laboratory sections consisting of X-ray Fluorescence, Drying Oven, Laboratory Crushers, Pulverizing machine, and other laboratory equipment.

2.14 Workforce Information

2.14.1 Total Operational Workforce

A total of one hundred ninety-five (195) personnel are employed for the project. The table of organization for the project was further elaborated on the succeeding page.

For camp security, a total of fourteen (14) security guards were hired through a security agency. They work on two (2) shifts (7:00 am to 7:00 pm, and 7:00 pm to 7:00 am).

2.14.2 Housing Option

Hired in-house employees/officers (e.g., Manager, Senior and Junior Staff) were provided with a staff house located within the pier site. Workers from distant places are provided with bunkhouses while those locally hired reside in the host and neighboring barangays.

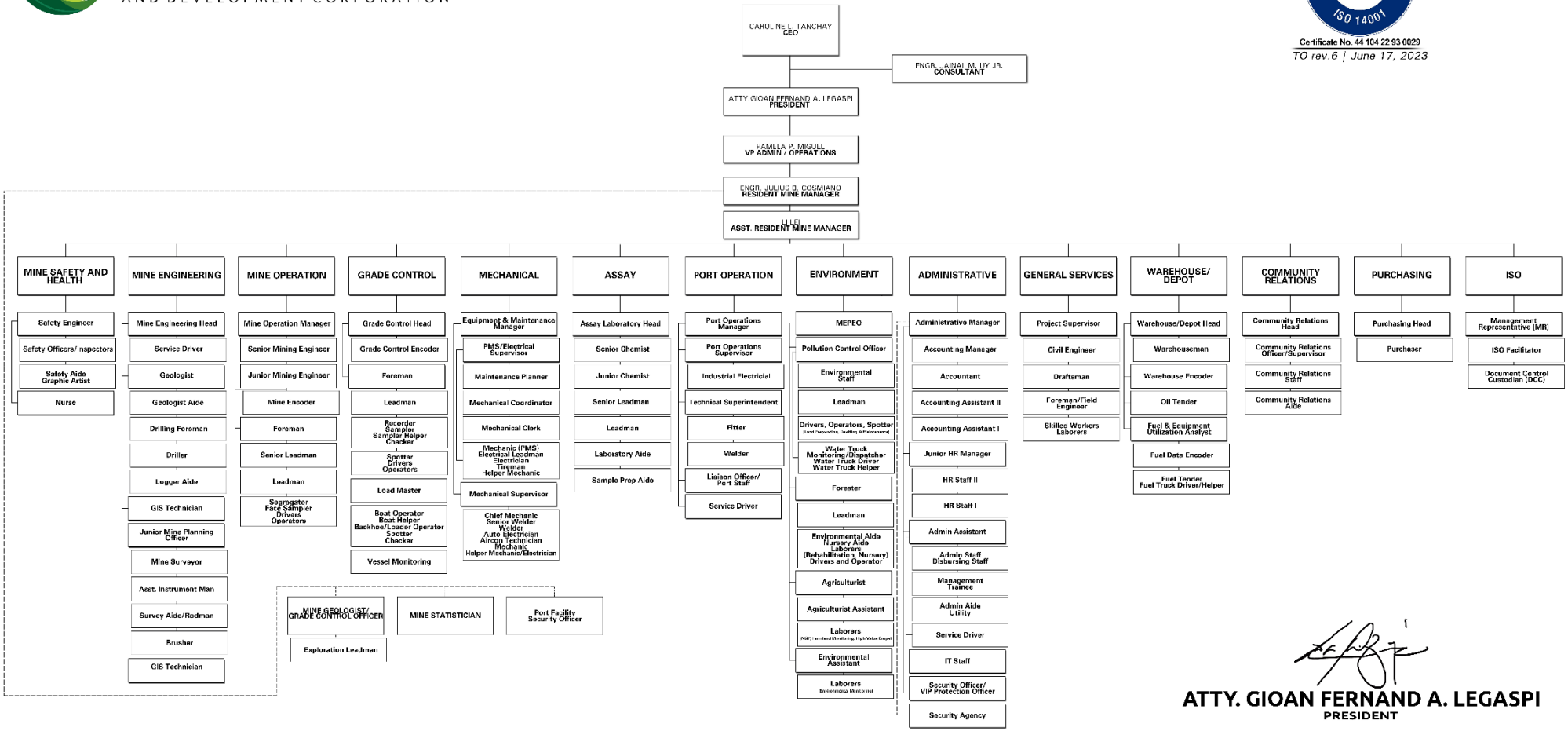
ADMIN BUILDING

PIER SITE OFFICE

Citinickel Mines AND DEVELOPMENT CORPORATION

TABLE OF ORGANIZATION
PULOT NICKEL MINING PROJECT

TÜV NORD CERT GmbH ISO 14001
Certificate No. 44 104 22 93 0029
TO rev.6 | June 17, 2023



ATTY. GIOAN FERNAND A. LEGASPI
PRESIDENT

2.15 Development Schedule

2.15.1 Site Development and Production Start-Up

The project started its development in the 2nd quarter of year 2011. The approximate volume of production for the year 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021 and 2022 were 261,192 metric tons, 1,359,505.25 metric tons 1,150,275.361 metric tons, 646,562.7 metric tons, 1,260,484.6 metric tons, 304,855 metric tons, 165,210.5 metric tons, 123,608.2 metric tons, 362, 646.6 metric tons, 253,736.20 metric tons, 807,903.4 metric tons, 632,369.1 and 502,570.2 metric tons respectively.

For the year 2024, the company will sustain its production schedule to attain 100,000 WMT.

2.16 Access/Transportation

The project area is situated 154 kilometers south of Puerto Princesa, Palawan, and eighteen kilometers from the National Highway.

From Manila, the project site can be accessed through a direct one-hour flight to the capital city of Palawan, Puerto Princesa. Passengers also have the option to ride the commercial boat that reaches Puerto Princesa City after a 24-hour journey.

When traveling from Puerto Princesa City via a land trip, the project site can be accessed by a 3-hour land trip via the south road passing through the Municipalities of Aborlan and Narra. Bus companies such as RORO Bus, Cherry Bus, and some commercial utility van services also ply the area.

3.0 SPECIFIC STRATEGY TO LIMIT AND CONTROL THE IMPACTS

3.1 Land Resources and Vegetation

Opening a mine particularly using a surface mining method will necessitate clearing of vegetation and stripping to extract the nickel ore. The result of the development is a temporary land disturbance that will eventually be rehabilitated.

The specific disturbance and impact on the environment are as follows:

a. Land deformation and creation of barren surface that will be exposed to rainfall and heat of the sun;

b. Eventually, during the rainy season, open space consisting of road cuts, mine benches/ mine openings, will be disturbed and the process of erosion and siltation will be active on this barren land surface;

c. Contamination of creeks and rivers as well as farm lots with laterites; and

d. Exposure of dry land surface with loose soil particles to wind and heat-producing dust will be aggravated with the passage of a fleet of haul trucks.

As a responsible mining company, the above-identified land disturbance and impact will be fully addressed with appropriate environmental mitigating measures as the mining of nickel advances.

3.1.1 Topsoil and Subsoil Management

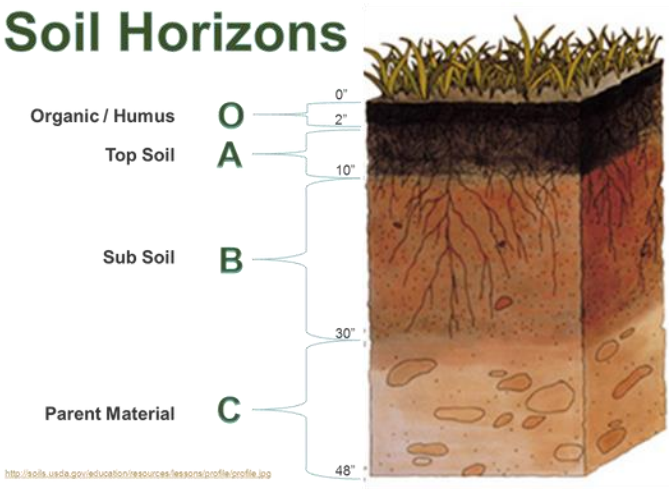
Soil is one of the most important natural resources on earth. Most of the life forms on earth depend on the soil as it is a direct or indirect source of food for them. Plants obtain their nutrients from the soil and animals are dependent on them. Soil is home to many different forms

of life. The soil has been formed by weathering, erosion, and decay of living plants and animals; however, valuable topsoil is formed so slowly that it should be protected and valued because it cannot be replaced in a lifetime of a man. Soil can be defined as the naturally occurring, loosed covering of broken rock particles and decaying organic matter (humus) on the surface of the earth which is capable of supporting life.

The soil consists of various layers called soil horizons and the arrangement of these horizons in the soil is known as the soil profile. Each soil horizon is different from the other in texture, color, chemical composition, and depth:

(i) ***O Horizon****: It is the top organic layer of soil, made up mostly of leaf litter and humus (decomposed organic matter).*

(ii) ***A Horizon:*** *This layer is also called topsoil. It is found below the O horizon. Seeds germinate and plants grow in this dark-colored layer. It is made up of humus (decomposed organic matter) mixed with mineral particles. Sometimes in the lower part of A-horizon, leaching of minerals and clay content takes place as water drips through this region. The process of leaching is called eluviation.*



(iii) ***B Horizon:*** *It is also called the subsoil-this layer is beneath the A Horizon and above the C Horizon. It contains clay and minerals deposits like iron, aluminum oxides, and calcium carbonates that it receives from layers above it when mineralized water drips from the soil above.*

(iv) ***C Horizon:*** *The layer beneath the B horizon and above the R horizon. It consists of slightly broken-up bedrock. Plant roots do not penetrate this layer, very few organic materials are found in this layer.*

(v) ***R Horizon:*** *This consists of the unweathered rock layer that is beneath all the other layers.*

Soil material is a critical component in the mining industry, where a massive volume of soil is involved particularly in open cast mining. However, poor topsoil management and lack of awareness on the importance of these materials by previous mining engineers and environmental officers has led to the shortage of topsoil and subsoil for mining rehabilitation used.

For future decommissioning plans, the company will sourced-out topsoil and subsoil from nearby farmland and grassland to augment the needs of topsoil requirements. Recovered topsoil and subsoil from the dredging of siltation ponds and external overburden were temporarily stored in waste dumping area located at Block A centered with coordinates 9º3'31" N and 117º57'36" E for future rehabilitation use. The temporary dumping area is equipped with bund walls to prevent erosion and depletion. Likewise, soil amelioration using organic matters and commercial fertilizer application is being applied to planted trees in the mined-out areas to expedite the recovery of planted species.

Retrieval of stockpiled topsoil and subsoil for backfilling and topsoil matting on declared mined-out area were performed progressively.

3.1.2 Buffer Zone Management

The buffer zone strip exceeds 50 meters from MPSA boundary of PNMP. All environmental mitigating strucutures (e.g. Settling ponds, silt collector sumps and drainage canals) are constructed 20-40 meter away from the edges of the normal high waterline of rivers and creeks that are within the MPSA. Bamboo plantation along gullies and creeks will be establish as part of the greening program and slope stabilization. Other bamboos were directly planted to the mine rehabilitation sites for adaptation and observation.

3.1.3 Progressive Rehabilitation Program

CMDC is proactive in the reforestation programs of denuded areas within its MPSA and adjacent impact barangays. To provide alternative sustainable livelihood to the grassroots of Sofronio Espanola, the company continuously provides a donation of Udling, Agoho, and seedlings. Moreover, the company is also committed to rehabilitating the denuded and non-mineralized areas outside mining claims adversely affected by human-induced activities such as uncontrolled forest extraction for timber and charcoal production, forest fires, unplanned settlements, and slash-and-burn making was included in the national greening program of the company. At the end of 2023, the company rehabilitated a total area of 15.81 hectares of mined-out areas. Mangrove areas in Pulot Shore, Sofronio Espanola have been enriched with a total of 2,160 propagules planted with an 80% survival rate. Fast-growing endemic and dominant species of Kupang (*P. Timoriana),* Agoho *(Casuarina equisetifolia)*, Narra *(Pterocarpus indicus)* are currently being used by CMDC for immediate rehabilitation of mined-out areas. Introduction of climax species is done starting one (1) year after the fast-growing species have been established which includes Nato *(Palaquium luzoniense)*,

Kamagong *(Diospyros blancoi)*, Apitong (Dipterocarpus grandifloras), Mahulay, Ipil *(Intsia bijuga)* and Udling/eugenia oleina *(syzygium myrtifolium)*. As per a study conducted on mined-out areas of CMDC-PNMP the list of dominant species recommended to be used for rehabilitation of mined-out areas are Kupang *(P. Timoriana),* Agoho *(Casuarina equisetifolia)*, Narra *(Pterocarpus indicus)* and Batino (*Alstoniamacrophylla*).

Table 4. Progressive Documentation on Reforestation and Rehabilitation

3.1.4 Status of Mine Rehabilitation and Reforestation

As of November 2023, a total of 14.98 hectares with a corresponding total of 32,398 seedlings were planted on the mined-out area of CMDC-PNMP. A total of 7,082 seedlings were donated as of October 2023.

Furthermore, a total of 204.16 hectares with corresponding 425,517 seedlings was successfully planted on the denuded areas within MPSA and adjacent barangays of Sofronio Espanola. Likewise, CMDC has donated a total of 82,256 assorted tree seedlings to the

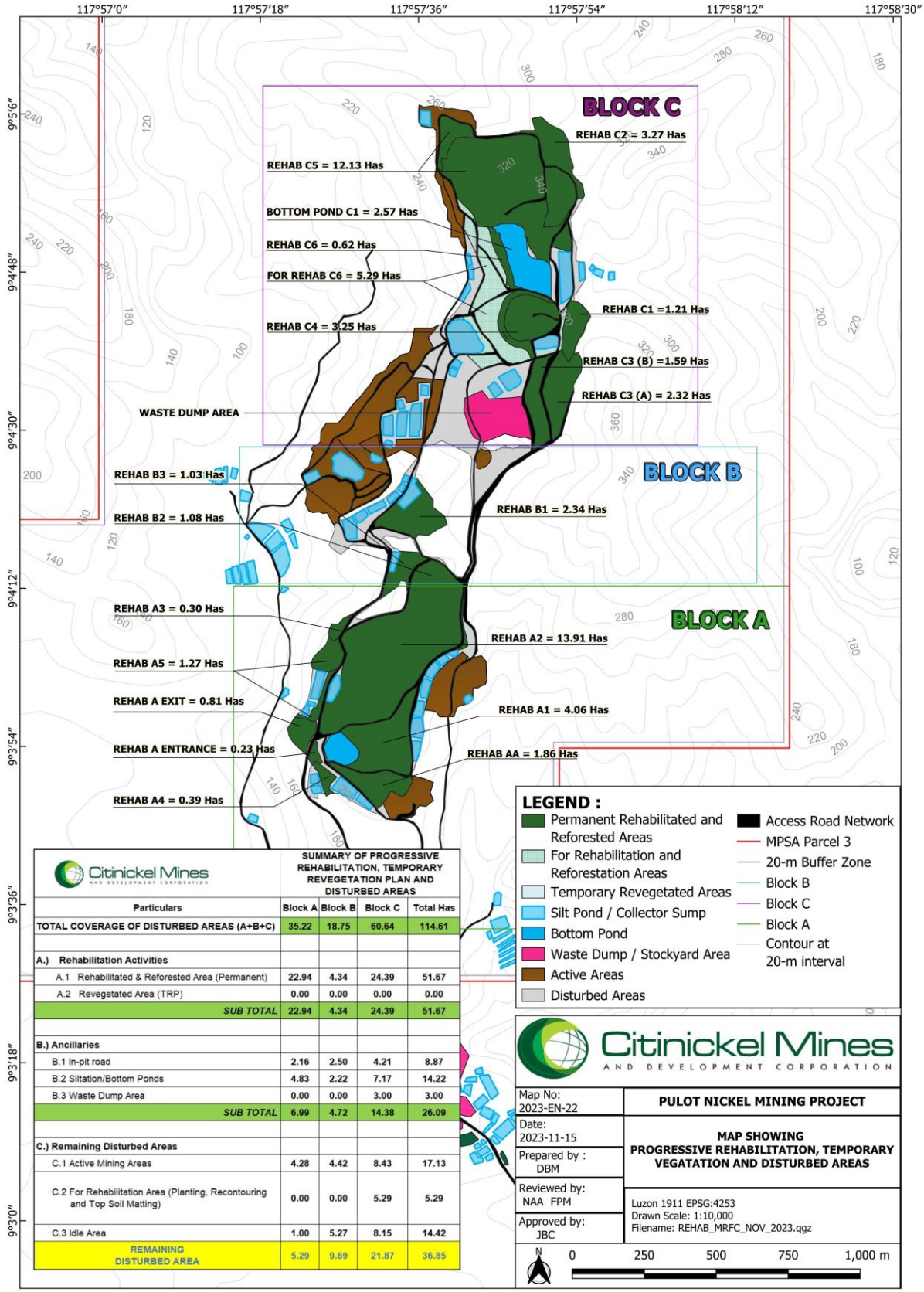
nearby community for livelihood improvements of the local and schools landscape improvements.

Table 4 shows the number of seedlings planted by the company.

Year	Total number of seedlings planted[1]	Survival rate[2]	Total number of areas rehabilitated and reforested[3]
2011	4,265	91.68%	2.44
2012	40,073	99.50%	57.24
2013	22,268	99.93%	76.25
2014	18,355	97.50%	79.95
2015	31,670	98.14%	87.15
2016	106,143	98.32%	194.68
2017	21,581	89.24%	198.48
2018	40,218	97.57%	152.72
2019	29,375	98.70%	160.56
2020	10,560	90.61%	179.35
2021	33,900	95.60%	183.27
2022	34,711	90.00%	189.18
2023	114,654	93.90%	204.16

[1]Includes seedlings donation;
[2]Based on submitted Mining Forest Program Accomplishment; and
[3]Total area rehabilitated (i.e., mined-out and denuded areas).

The areas that are not rehabilitated within the tenement area is the ancillaries with a total area of 51.67 hectares. This includes the road networks, settling ponds, undisturbed areas, and waste dumps.



SUMMARY OF PROGRESSIVE REHABILITATION, TEMPORARY REVEGETATION PLAN AND DISTURBED AREAS

Particulars	Block A	Block B	Block C	Total Has
TOTAL COVERAGE OF DISTURBED AREAS (A+B+C)	35.22	18.75	60.64	114.61
A.) Rehabilitation Activities				
A.1 Rehabilitated & Reforested Area (Permanent)	22.94	4.34	24.39	51.67
A.2 Revegetated Area (TRP)	0.00	0.00	0.00	0.00
SUB TOTAL	22.94	4.34	24.39	51.67
B.) Ancillaries				
B.1 In-pit road	2.16	2.50	4.21	8.87
B.2 Siltation/Bottom Ponds	4.83	2.22	7.17	14.22
B.3 Waste Dump Area	0.00	0.00	3.00	3.00
SUB TOTAL	6.99	4.72	14.38	26.09
C.) Remaining Disturbed Areas				
C.1 Active Mining Areas	4.28	4.42	8.43	17.13
C.2 For Rehabilitation Area (Planting, Recontouring and Top Soil Matting)	0.00	0.00	5.29	5.29
C.3 Idle Area	1.00	5.27	8.15	14.42
REMAINING DISTURBED AREA	5.29	9.69	21.87	36.85

Figure 2. Relative Location of Rehabilitation Sites of CMDC

The sequence of Mined-out Rehabilitation Illustration

In support of the ecosystem and biodiversity restoration of the country, the company has established its Nursery to preserve endangered, endemic, and exotic species of plants that existed within the project site. Nevertheless, to improve the knowledge and understanding of technical capabilities of the community in support of livelihood improvement of the grassroots in the locality, the horticulture project herbal and botanical garden was established. Continuous research studies have been conducted to further improve the horticulture project and herbal and botanical garden as well as adverse impact mitigation of the project.

3.1.5 Seedling Nursery Operation

Established in 2011, the permanent seedling nursery is located at the campsite with a capacity of 500,000 seedlings. To guarantee the rehabilitation and reforestation of mined-out areas according to the adjacent forest canopy, the collection, propagation, and seedlings production of indigenous species of trees found within the MPSA area have been strictly implemented. The collection and propagation of seedlings in the nursery were organized by IPs employees. **Table 5** shows the inventory of seedlings in the nursery as of October 2023.

As part of soil fertility enhancement, the company has engaged in vermicomposting and aged rice hull to increase the volume of fertilizers needed in the future.

3.1.6 Herbal and Botanical Garden

Established in 2015, located in the nursery area were preserving the medicinal plants and tropical plants that are locally available and being used mainly by IPs as an antidote or remedy to diseases.

3.1.7 Horticulture Project

The horticulture project has a total area of 1-hectare and was established in 2015, is envisioned to study different varieties of vegetables, cash crops, and fruit-bearing trees that will thrive in the area. The project served as an educational facility for visitors and residents that can train for skill development. Varieties of vegetables have successfully grown and provided tremendous output (e.g., Upo, okra, lettuce, string beans, eggplant, pechay, etc.). This year, the company will conduct a research study on the endemic fruit tree species.

3.1.8 Nursery Infrastructure

The existing infrastructure in the nursery comprises a storage facility measuring 3m x 3m, dedicated to storing nursery materials, tools, and machinery. This facility is slated for renovation to enhance the storage capacity, facilitating better organization of nursery tools and materials and to serve as a meeting area for personnel and/ or visitors.

3.1.9 Research Studies

CMDC has succeeded in various research studies conducted in the past few years these include (1) Diameter at breast height of planted species in the mined-out area to determine the appropriate endemic species suitable for immediate rehabilitation; (2) Recolonization in mined-out area; (3) Evaporation and infiltration rate capacity of pit bottom; (4) Active mine area run-off calculation and rainfall probability of return period; (5) Tilapia aquaculture for trace metal

bioaccumulation analysis; and (6) Milkfish adaptation capacity in freshwater (7) mud crab aquaculture as mangrove forest deforestation solution (8) mushroom production and (9) mud crab aquaculture.

The researcher will be focusing on the massive mined-out rehabilitation target accomplishment. Here is the list of proposed research studies for C.Y. 2024 (continuation of 2023 studies):

1. Growth Analysis of Kupang *(Parkia javanica)* and Bagalunga *(Melia dubia)* in the rehabilitation of CMDC-PNMP
2. Flora and Fauna Biodiversity Monitoring

3.1.8.1 Growth Analysis of Kupang (Parkia javanica) and Bagalunga (Melia dubia) in the Rehabilitation of CMDC-PNMP

Objective

1. To determine the adoptability of species to the rehabilitation site of PNMP.
2. To determine the growth performance of the selected indigenous species.
3. To determine the survival rate of the selected indigenous species.

Significance of the Study

The study will serve as a guideline to the department or company to know the indigenous species that will likely to survive given the climatically condition of the rehabilitation of PNMP.

Methodology

Regular monitoring is conducted every week by environmental staff such as measurement of tree diameter, height, and counting of leaves. Observations of mortality and survival rate are duly noted for data gathering.

Growth Analysis Gannt Chart												
	Year 2024											
	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Activities												
Data Gathering												
Results												
Growth Analysis of Kupang (*Parkia javanica*) and Bagalunga *(Melia dubia)* in the Rehabilitation of CMDC-PNMP												

3.1.8.2 Flora and Fauna Biodiversity Monitoring

Objective

The purpose of this study is to evaluate and describe the flora and fauna in general and the different existing ecological associations present in the project site and neighboring areas. To determine and identify the presence of both common and/or endangered species. Recommendation of measures that will reduce or minimize interferences to the adaptation of wildlife to the new environment.

Methodology

Monitoring Procedures

Regular monitoring is conducted every week by the environmental staff. Observations on the project site are duly noted for data gathering. Observation includes the site of interest, sighting with the initial identification of plant and animal species, and description or remarks.

Table 5. Seedling Inventory as of October 2023

Species	No. of Seedlings Previously Produced	No. of Seedling Out-Planted		Balance in Stock
		Propagated 2023 Q3	Planted 2023 Q3	
Agoho	8,787		50	8,749
Amogis	2,811		378	2,433
Batino	40,626		725	39,901
Coffee	168			168
Ipil	1,466		110	1,356
Kamagong	9,682			9,682
Kamansi	276		115	161
Katumpos	2,214		30	2,184
Malabayabas	4,191			4,191
Maladuhat	10,123	1,280	300	11,103
Mansalagon	3,250	100		3,150
Narra	16,605		910	15,695
Nato	10,975			10,975
Palawan Cherry	2,749			2,749
Putian	52,295		853	51,442
Tunom	1,725		100	1,625
Udling	14,153			12,523
Total	**182,108**	**1,380**	**1,118**	**178,087**

3.1.9 Mining Rehabilitation and Reforestation Targets for the Year 2023

The practice of planting large planting materials of trees in mined-out rehabilitation areas has guaranteed the highest survival rate of planted endemic species of trees in mined-out areas of CMDC-PNMP. Continuous propagation and planting of the same will be sustained in the present year.

For the year 2024, the Block C and A area will be scheduled for rehabilitation. 10 hectares of mined-out areas is from block C area and 3 hectares is from Block A area this will be rehabilitated, with a total area of **13.00** hectares.

CMDC will sustain the maintenance of the National Greening Program (NGP) of the country and will continuously provide seedling donations to the locals that are interested in tree planting for landscaping and greening programs.

The mining rehabilitation and reforestation targets of CMDC-PNMP for 2024 are shown in **Table 6**.

Figure 3 shows the locations of the accomplished plantation, rehabilitation, and NGP areas, including the targeted areas for rehabilitation in 2024. Moreover, **Figure 4 shows** the areas targeted for the Rehabilitation Areas for 2024 to further reduce the open area of the PNMP mine site. The information on the schedule of activities is shown in **Table 7.**

TABLE 6

2024 MINING REHABILITATION AND REFORESTATION TARGETS

Project/Activity	Location	Area (hectares)
1. Backfilling, Recontouring, Top and Subsoil Matting, and Tree Planting at Block C7 Rehabilitation	Block C	**10**
2. Backfilling, Recontouring, Top and Subsoil Matting, and Tree Planting at Block A6 & A7 Rehabilitation	Block A	**3**
	TOTAL	**13.00**

3.1.9.1 Summary of Land-Used and Disturbed Areas

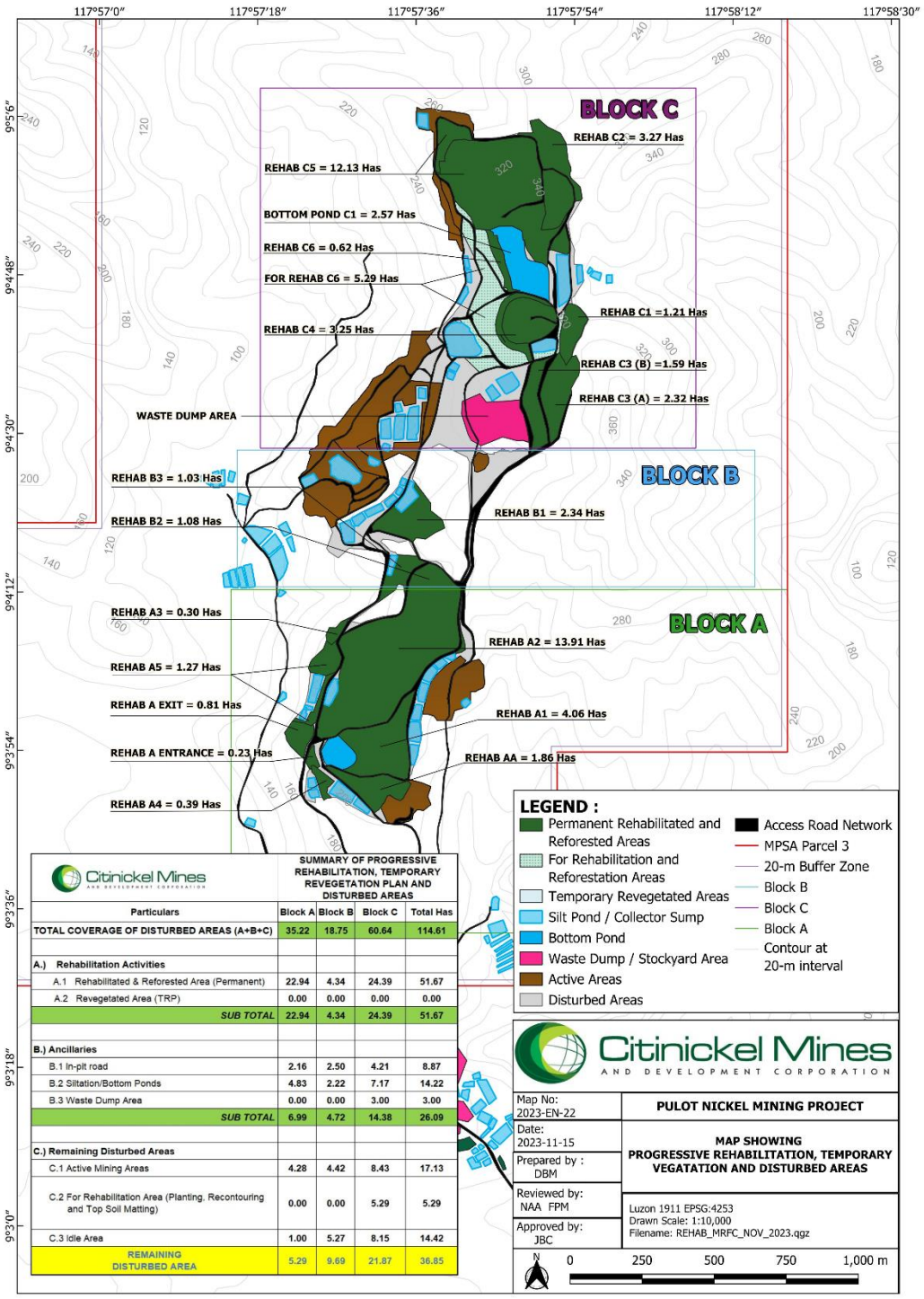
The Pulot Nickel Mining Project MPSA No. 229-2007-IVB has a total area of 1,408 hectares. The project has (3) three mining blocks, A (35.22 has), B (18.75 has), and C (60.64 has).

TABLE 7

SUMMARY OF PROGRESSIVE REHABILITATION, TEMPORARY REVEGETATION PLAN AND DISTURBED AREAS

	Particular	Block A	Block B	Block C	Total_ Has
	TOTAL COVERAGE OF DISTURBED AREAS (A+B+C)	**35.22**	**18.75**	**60.64**	**114.61**
A. Rehabilitation Activities					
A.1	Rehabilitated & Reforested Area	22.94	4.34	24.39	51.67
A.2	Revegetated Area	0.00	0.00	0.00	0.00
	SUB TOTAL	**22.94**	**4.34**	**24.39**	**51.67**
B. Ancillaries					
B.1	In-pit road	2.16	2.50	4.21	8.87
B.2	Siltation/Bottom Ponds	4.83	2.22	7.17	14.22
B.3	Waste Dump Area (new)	0.00	0.00	3.00	3.00
	SUB TOTAL	**6.99**	**4.72**	**14.38**	**26.09**

C. Remaining Disturbed Areas					
C.1	Active Mining Areas	4.28	4.42	8.43	17.13
C.2	For Rehabilitation Area (Planting, Recontouring, and Top Soil Matting)	0.00	0.00	5.29	5.29
C.3	Idle Area	1.00	5.27	8.15	14.42
	REMAINING DISTURBED AREA	**5.29**	**9.69**	**21.87**	**36.85**



Citinickel Mines

SUMMARY OF PROGRESSIVE REHABILITATION, TEMPORARY REVEGETATION PLAN AND DISTURBED AREAS

Particulars	Block A	Block B	Block C	Total Has
TOTAL COVERAGE OF DISTURBED AREAS (A+B+C)	35.22	18.75	60.64	114.61
A.) Rehabilitation Activities				
A.1 Rehabilitated & Reforested Area (Permanent)	22.94	4.34	24.39	51.67
A.2 Revegetated Area (TRP)	0.00	0.00	0.00	0.00
SUB TOTAL	22.94	4.34	24.39	51.67
B.) Ancillaries				
B.1 In-plt road	2.16	2.50	4.21	8.87
B.2 Siltation/Bottom Ponds	4.83	2.22	7.17	14.22
B.3 Waste Dump Area	0.00	0.00	3.00	3.00
SUB TOTAL	6.99	4.72	14.38	26.09
C.) Remaining Disturbed Areas				
C.1 Active Mining Areas	4.28	4.42	8.43	17.13
C.2 For Rehabilitation Area (Planting, Recontouring and Top Soil Matting)	0.00	0.00	5.29	5.29
C.3 Idle Area	1.00	5.27	8.15	14.42
REMAINING DISTURBED AREA	5.29	9.69	21.87	36.85

Aerial View of 10 Hectares Proposed 2023 Rehabilitation Area in Block C)

Aerial View of 3 Hectares Proposed 2023 Rehabilitation Area in Block A

TARGET REHABILITATION AREAS FOR CY 2024

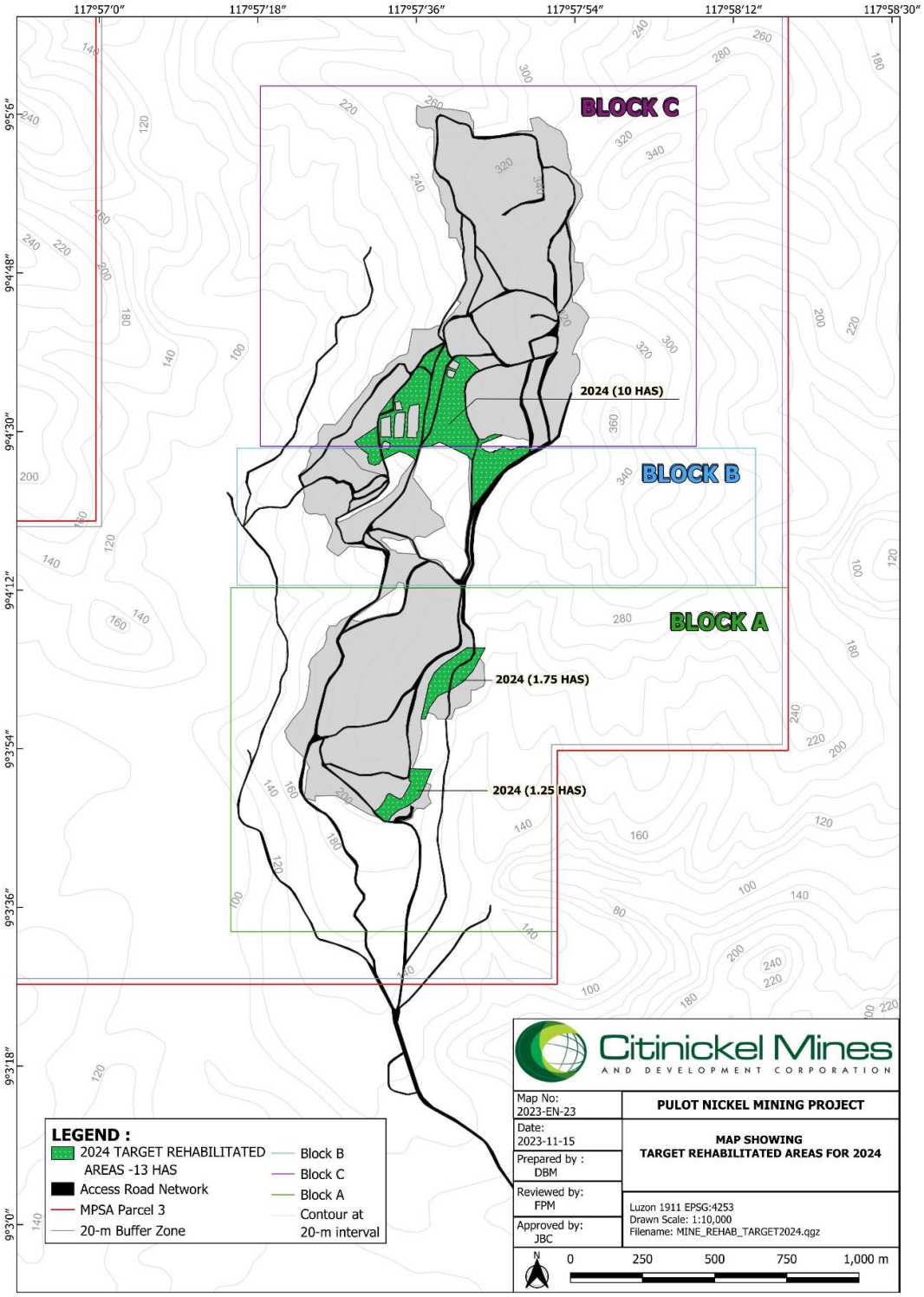


FIGURE 4

2023 PROJECTED SCHEDULE OF ACTIVITIES

TABLE 7

PROJECT TITLE / JUSTIFICATION	SCHEDULE OF ACTIVITIES			
	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4
Mining Rehabilitation Project / for compliance with the requirements of the Phil. Mining Law	Nursery operations Site preparation (earthworks)	Nursery operations Site preparation (earthworks) Out-planting activities	Out-planting activities	Out-planting activities Maintenance operations
Nursery production of planting stocks for mining rehabilitation and reforestation uses	Wildling collection Potting of soil media Seedling maintenance	Seedling maintenance Seedling maintenance and disposal for out-planting purposes	Seedling maintenance Seedling maintenance and disposal for out-planting purposes	Wildling collection Potting of soil media Seed sowing Seedling maintenance
National Greening Program/compliance to the commitment to MGB	Site identification, reconnaissance survey, area preparation, and wildling collection Seedling donation	Tree planting and maintenance activities Mangrove planting Seedling donation	Tree planting and maintenance activities Mangrove enrichment planting Seedling donation	Tree planting and maintenance activities Seedling donation
Re-greening Project/greening of bare areas in stockyard and ore stockyard	Bamboo collection and propagation	Bamboo nursery maintenance	Hole digging, staking and hauling of bamboo and planting	Bamboo collection and propagation

3.2 Water Resources

There are three impact water resources, two (2) river systems, and one (1) marine water. These are the following:

a. Pasi River (mine impact area)
b. Tagusao River (mine impact area)
c. Brgy. Punang Coastal Areas (pier loading area)

3.2.1 Sediment Control

The company has continuously been implementing siltation prevention measures such as sediment barriers and containment ponds at strategic places to avoid siltation of adjacent river systems, the Pasi River, Tagusao River, and coastal waters.

The settling ponds are designed to contain all silted run-off mine wastewater. This allows the silt to settle before discharging the clear effluent into nearby tributaries. The company continues to improve these silt preventive measures by adding more silt collector sumps whenever necessary and periodically desilting these to help maintain their holding capacities. Recently, a series of settling ponds, collector sumps, and drainage canals have been constructed. These structures do not only improved water retention within the ponds but also allow desilting activities to be undertaken manageably at any time, even during the rainy season. **Figure 5** shows the strategic location of siltation structures. Succeeding pages reflecting photo documentation of siltation ponds and bottom ponds.

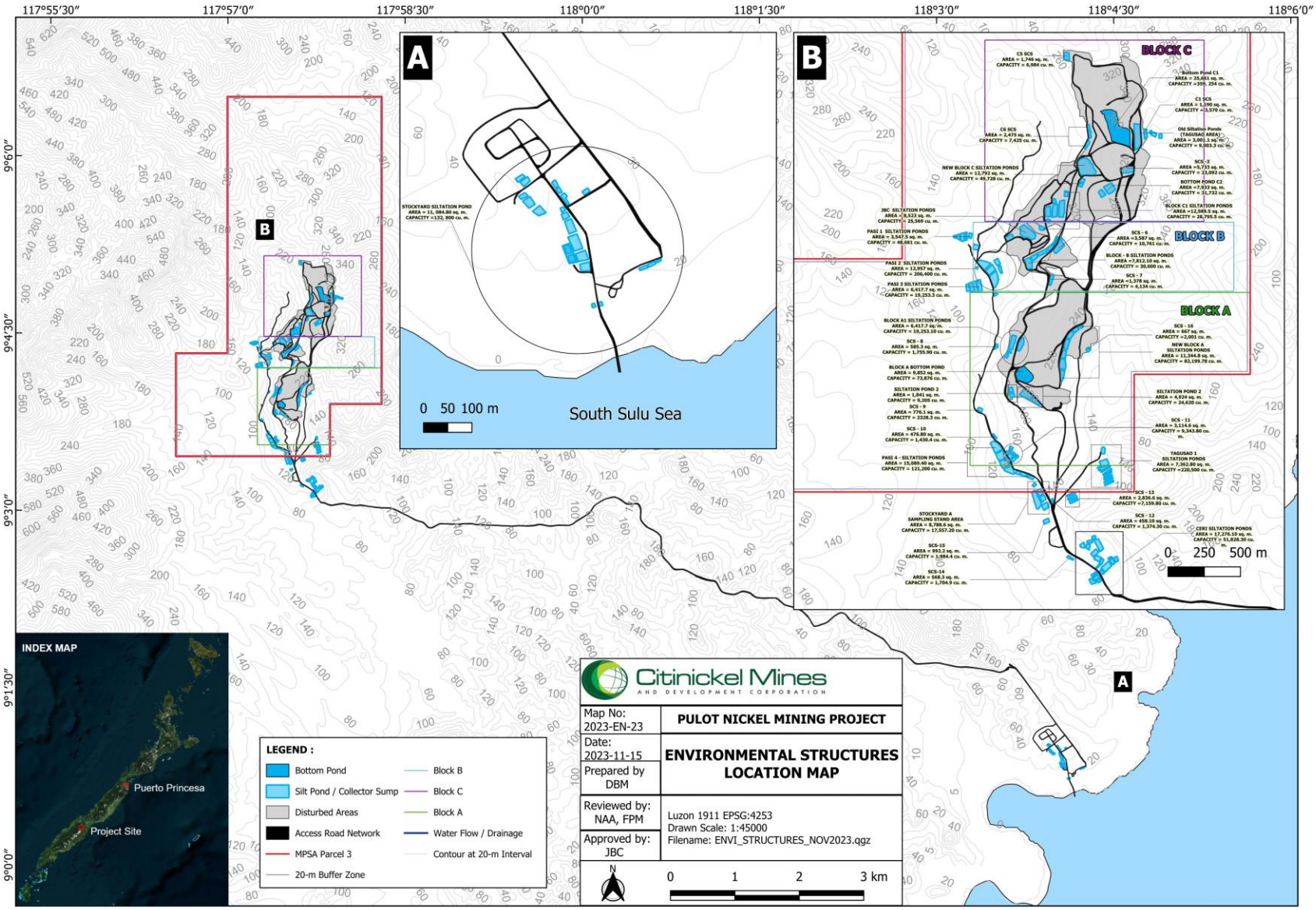
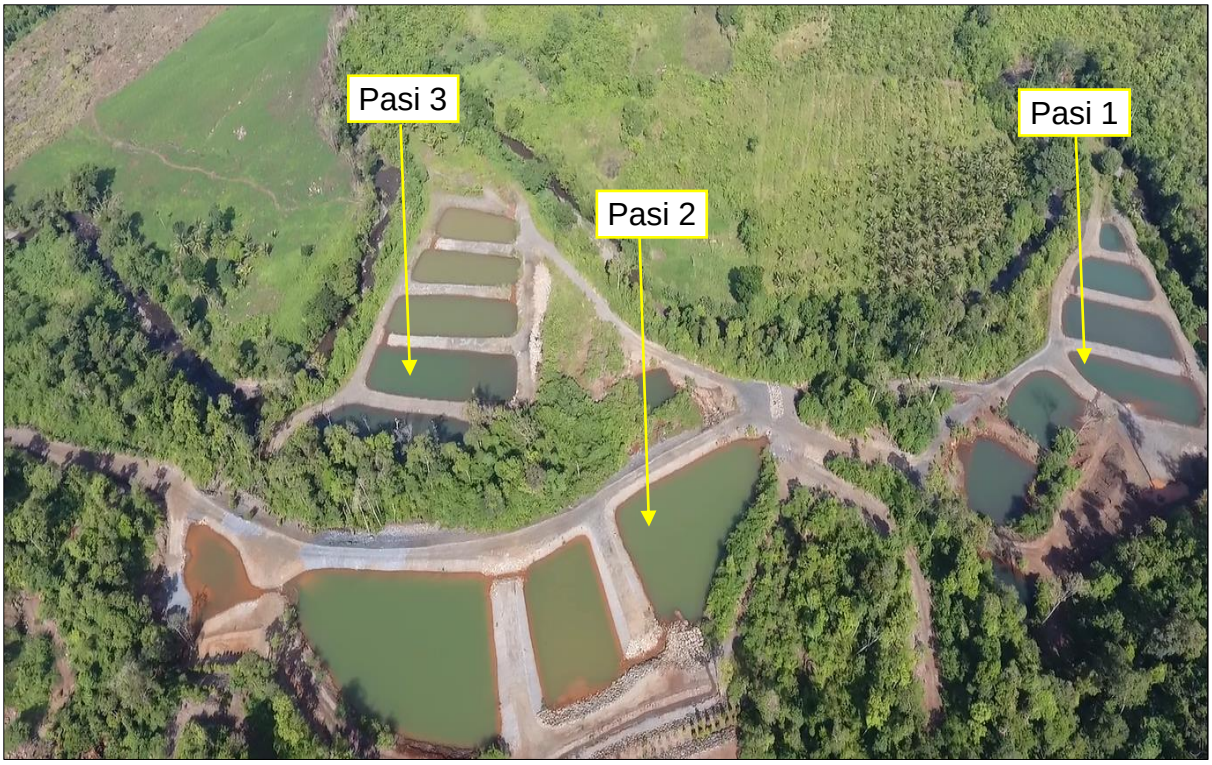


Figure 5. Siltation Control Structure Location Map



Aerial view of Pasi Siltation Pond no. 1, 2 and 3

Aerial view of Tagusao Settling Pond

Aerial View of Block A Rehabilitation Area and Bottom Pond 1

Aerial View of Block A and B Rehabilitated Area

Regular desilting of siltation ponds and silt collector sumps were thoroughly conducted as scheduled to attain its maximum serviceable usage and capacity. **Figure 6** shows the desilting activity and designated waste dumpsite.

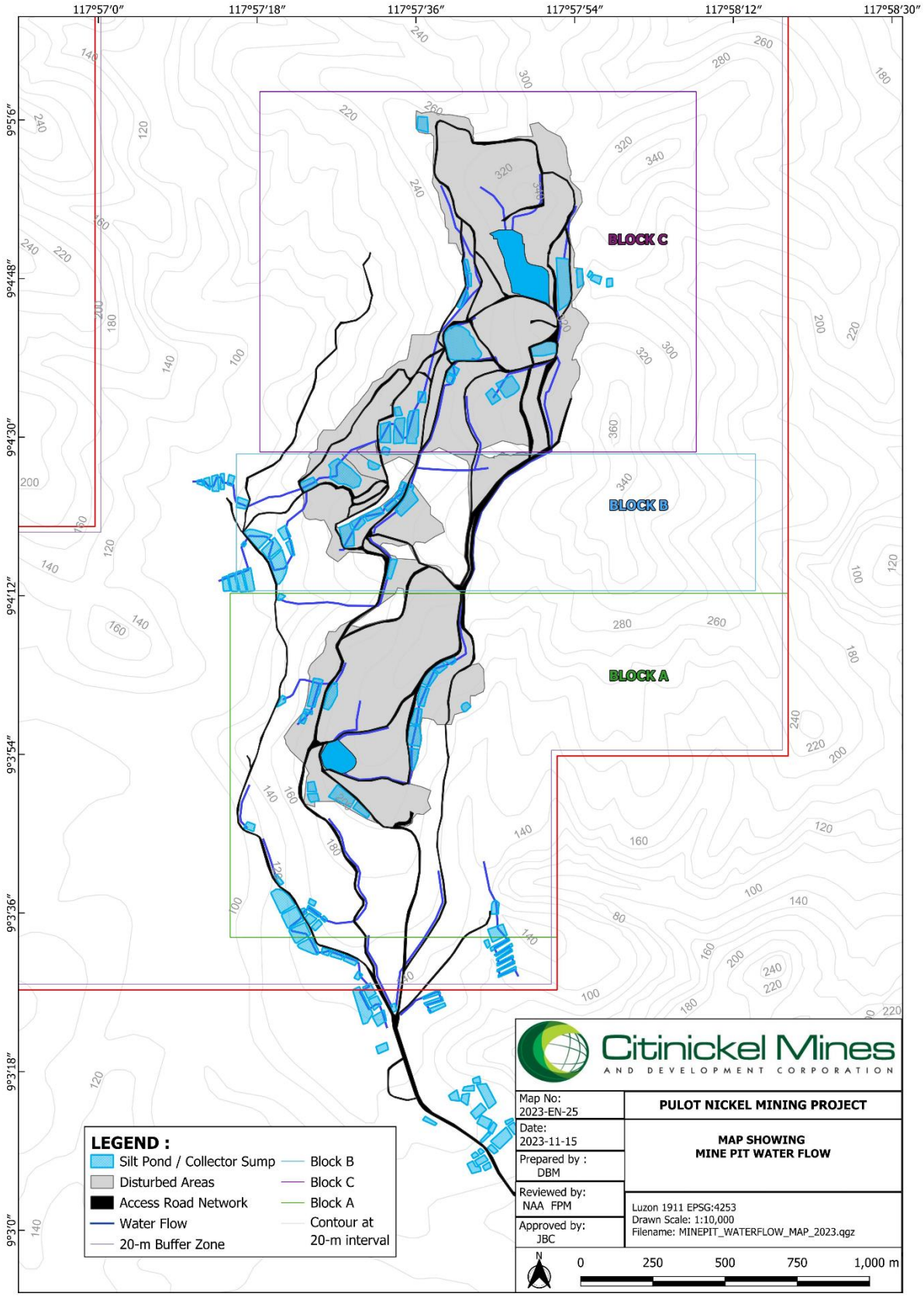
Desilting activities

Waste Dump Area

Figure 6. Desilting Activities and Waste Dumping area

The silt materials were hauled far from the siltation ponds and temporarily stockpile to the designated dumping area of silt materials. The desilted materials were preserved for future mined-out rehabilitation's base matting. Likewise, the perimeter canals had also been constructed to prevent the spillage of silt to the nearby adjacent creeks/rivers.

As environmental control strategies, all avenues of runoff that may contaminate waterways are provided with drainage channels as control structures that will divert water to silt traps, sumps, and eventually to silt ponds for containment. Control structures such as drainage systems and siltation ponds are intended to trap sediments, silts, and reduce the velocity of runoff. **Figures 7 and 8** reflect the drainage system and diversion canal to divert run-off from open areas.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117°57'36"
117°57'54"
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117°58'30"
9°5'6"
9°4'48"
9°4'30"
9°4'12"
9°3'54"
9°3'36"
9°3'18"
9°3'0"
BLOCK C
BLOCK B
BLOCK A
LEGEND :
Silt Pond / Collector Sump
Disturbed Areas
Access Road Network
Water Flow
20-m Buffer Zone
Block B
Block C
Block A
Contour at 20-m interval
Citinickel Mines
AND DEVELOPMENT CORPORATION
Map No: 2023-EN-25
PULOT NICKEL MINING PROJECT
Date: 2023-11-15
MAP SHOWING MINE PIT WATER FLOW
Prepared by : DBM
Reviewed by: NAA FPM
Approved by: JBC
Luzon 1911 EPSG:4253
Drawn Scale: 1:10,000
Filename: MINEPIT_WATERFLOW_MAP_2023.qgz
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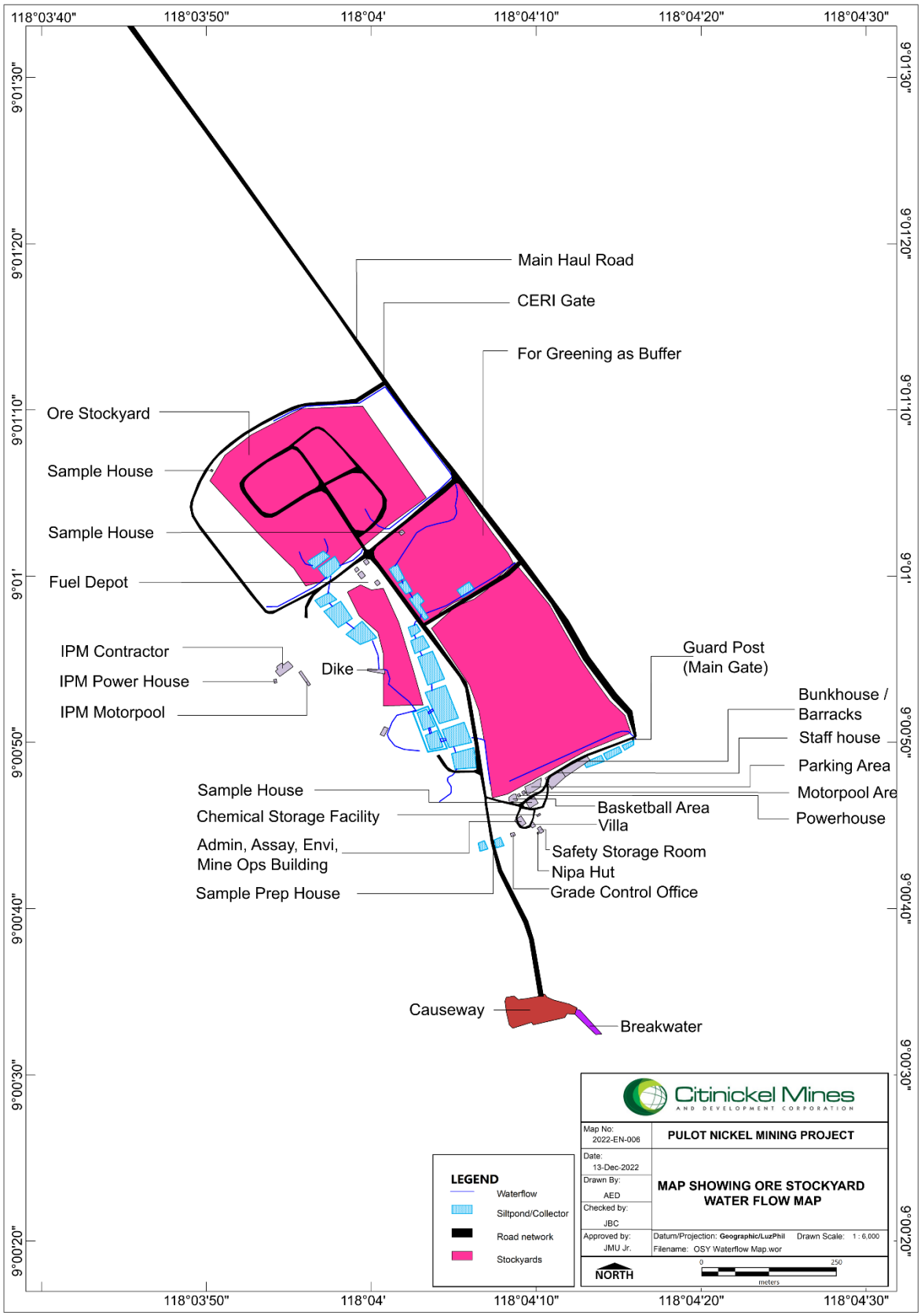
1,000 m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9°00'30"
9°00'20"
Main Haul Road
CERI Gate
For Greening as Buffer
Ore Stockyard
Sample House
Sample House
Fuel Depot
IPM Contractor
IPM Power House
IPM Motorpool
Dike
Guard Post
(Main Gate)
Bunkhouse /
Barracks
Staff house
Parking Area
Motorpool Are
Powerhouse
Basketball Area
Villa
Safety Storage Room
Nipa Hut
Grade Control Office
Sample House
Chemical Storage Facility
Admin, Assay, Envi,
Mine Ops Building
Sample Prep House
Causeway
Breakwater
LEGEND
Waterflow
Siltpond/Collector
Road network
Stockyards
Citinickel Mines
AND DEVELOPMENT CORPORATION
Map No: 2022-EN-006
PULOT NICKEL MINING PROJECT
Date: 13-Dec-2022
Drawn By: AED
Checked by: JBC
Approved by: JMU Jr.
MAP SHOWING ORE STOCKYARD
WATER FLOW MAP
Datum/Projection: Geographic/LuzPhil
Drawn Scale: 1 : 6,000
Filename: OSY Waterflow Map.wor
NORTH
0
250
meters

Figure 7. Mine Drainage System

Figure 8. The constructed canal for run-off diversion

The target schedule of desilting/maintenance of siltation ponds was reflected in the AEPEP matrix of activities including the cost of implementation thereof.

3.2.2 Slope Stabilization of Mining Areas (Active and Non-active)

3.2.2.1 Low-Grade Ore, Waste, and Top Soil

The stripped-off top layer of soil was recovered and used in rehabilitating the mined-out areas. Management of soil and low-grade ores is included in the mine operation cost.

3.2.3 Road Maintenance

3.2.3.1 Haulage Road (Mine pit/ Pier)

It is necessary for the efficient transport of nickel ore and waste materials as well as in the environmental control and safety of trucks the proper maintenance of haul roads (mine pit roads and main haul road). mine pit haul road includes access from active mining areas to pre-stockpiled and final stockpile areas, waste dumpsite, and topsoil dumping areas.

Haul road distances vary as nickel ore extraction advances and progressive rehabilitation is always on the top of the schedule of activity. With regards to the main haul road, year-round maintenance is to be conducted by backfilling, road grading/leveling, compaction, and water sprinkling. The length of the main road that connects the mine site and pier is approximately eighteen (18) kilometers.

3.2.4 Maintenance and Monitoring Activities

Regular monitoring of environmental facilities (e.g., silt collector sumps, siltation ponds and dikes, embankments, water levels, color, and discharge) was conducted to ensure the efficiency of the structures to contain/retain a certain level of water in the siltation ponds and silt collector sumps. Replacement of gabions and geotextile filter materials were also conducted regularly.

3.3 Ground Water

The existing mine operations do not use any toxic chemicals nor produce toxic materials such as tailings, acid drainage, among others. Hence, there is no chance of contaminating the groundwater resources.
All solid wastes are properly disposed of in the sanitary landfill in regular scheduling of garbage collection in mine site and pier site.

All hazardous waste is properly stored in the hazardous waste storage facility of the company and transported/treated by the DENR-Accredited transporter/ treater of hazardous waste. Used oil-filled drums are stored in a 10 x 8 m open storage area with slightly slanted concrete flooring provided with a gutter. The lowest point of the flooring is provided with one unit of an oil-water separator. Spilled oils are washed by water and flow towards the separator unit.

The oil-water separator operates simply by the concept of difference in specific gravity. In an oil-water mixture, water being heavier separates forming the lower layer while the oil floats over the water. The oil layer is decanted and stored in drums while the water flows through the drain pipe towards the drainage canal.

The company's diesel fuel requirements are being delivered in bulk by a fuel tanker and transferred to the storage tanks through the pumping method. The storage tank is lined with an impervious bund-wall to contain 110% of the total volume of the tank to confine oil spillage in case of tank breakages. Likewise, the storage tank area is provided with an oil-water separator unit.

3.4 Noise

The sources of noise pollution may come from the following operations:

a. From the use of heavy equipment during mining, loading, and road maintenance operation; and

b. Passage of hauling trucks along roads adjacent to host barangays and neighboring communities and residential areas.

3.4.1 Control Strategies

Noise pollution in the project area and vicinity is expected to be well within the standard limit set by the DENR. However, as a means to further control the noise coming from the mining operation due to utilization of heavy equipment and during hauling of nickel ore from the mine site to pier, the following measures to control or limit noise within DENR Standard is being implemented:

a. Instead of using explosives in breaking the hard rock portion of the pit area, hydraulic rock breakers are utilized, thereby reducing the generation of noise from an explosion from blasting materials.

b. A Series of humps along the haulage road has been constructed to force the company and contractor's vehicles to slow down, thereby reducing noise level. Whenever necessary, silencers and mufflers are installed in machines generating uncontrollable noise levels.

c. The project site is located far away from the communities. Thus, the construction of sound barriers is not necessary. However, a portion of traversed haulage road is exposed, where haulers of beneficiated ore to the ore stockyard regularly traveled during the dry season. The company planted a different types of tree species such as Narra, Kamagong, Palawan Cherry, among others, along the road side of the road network to act as a sound barrier.

d. Regular maintenance, check-up, and replacement of mufflers of company vehicles and contract haulers of nickel ore were performed as scheduled to minimize the noise generation;

e. All drivers are regularly instructed during the safety talk that truck speed shall be limited to 10-40 kph when traveling within populated areas or national highways;

f. In-house noise monitoring using a handheld or portable digital noise meter was regularly performed to check the level of noise in the affected areas; and

g. Provision of ear muffs to heavy equipment operators whenever necessary.

3.5 Air Quality

In nickel mining and hauling operation, dust generation is the main identified impact due to very fine lateritic soil particles produced as a result of soil excavation, transportation, and stockpiling. However, since the main sources are already known, its control and prevention will be the activity in this program. But it is a mandatory requirement to have the technical information through the sampling of air to determine which areas of operation are expected to exceed the DENR standard for air quality so that appropriate mitigation will be implemented.

Parameters that are necessary to be monitored are the Total Suspended Particulate (TSP) Matter (PM-10) according to RA 8749 and National Ambient Air Quality Standard (NAAQS).

3.5.1 Control Strategies

3.5.1.1 Dust Suppression Strategies

During the dry season and any time of the day, regular road water sprinkling was conducted to minimize the dust emission or generation. The total length of the hauling road is approximately 18.6

kilometers starting from the pier up to the mine pit. The number of water trucks to be used is eight (8) units (including contractors). The company continuously conducted water sprinkling as often as necessary from 7 AM up to 5 PM. Other control measures being implemented are the following:

a. Maintaining a speed limit to 10 kph and a maximum of 40 kph;

b. Installation road humps across the haulage road to reduce the speed of hauling trucks and other vehicles;

c. Planting of trees, which act as dust curtain, along sides of the haulage road;

d. Proper maintenance of haulage road using road grader and road roller/compactor;

e. Using minimum drop height during ore loading to minimize fugitive dust;

f. Stabilizing and enhancing mined-out areas; and

g. Planting of fast-growing trees, which act as windbreakers, around the open storage areas to prevent fugitive dust emission by wind action.

3.6 Conservation Values

3.6.1 Nature Issues

Reforestation and mine rehabilitation activities of the company continue to be implemented to restore disturbed areas to their

original wildlife habitat. Clearing of vegetation is in the segment and only when needed.

3.6.2 Visual Aesthetics

Total rehabilitation and greening of disturbed areas, especially the mined-out areas, are the only mitigating measures possible to enhance the visual aesthetics of the affected area. In the meantime, thick vegetation curtains (trees planted along sides of major access roads and the periphery of disturbed areas) are installed to somehow temporarily conceal the ill effects of excavations and junkyards while at the same time observing good housekeeping.

3.7 Social Issues

Social issues such as those that are raised by NGO's and anti-mining groups will be addressed by the company. Continuous Information and Education Campaign (IEC) about the programs of CMDC on environmental protection, operations, social responsibility, and Social Development and Management Program (SDMP) including the progressive rehabilitation strategies to address the issues and concerns of the rice farmers.

CMDC will maintain the line of communication open and transparent to the LGU, residents, NGOs, and government agencies concerned to be able to respond promptly on future issues that may be raised by anti-mining groups. It will also use the tri-media information drive to counter the misinformation and disinformation campaign of the local NGO's and educate people on the responsible mining and the truth about nickel mining operations and their temporary impact on the surrounding environment and how the company successfully implements the mitigation measures.

For more than 8 years now, the mining operation of CMDC has played a vital role in the development not only on the impact barangays but in the Municipality of Sofronio Española as a whole. It is the multiplier effect in which the communities can develop through active local economic activities.

Aside from these, the industry has helped in carrying out priority development projects at the local and national levels through regular reimbursement of mining revenues. The investment of the mineral wealth through full compliance and implementation of the Social Development and Management Program (SDMP) gives the local stakeholders direct access to benefits and local developmental funds.

3.8 Emergency Response Committees

In the event of an environmental disaster brought about by heavy downpour and flooding, fire, and hazardous waste spill, the Flood and Typhoon Committee and the emergency first responder organized by the company shall automatically respond to such eventualities.

3.9 Establishment of Reference Ecosystem (DAO No. 2022-04)

The PNMP will establish a reference ecosystem within the MPSA. A total of 70.43 hectares or equivalent to 5% of the total approved MPSA area was defined as reflected to the attached scaled map.

The proponent will also conduct a Biodiversity Assessment Monitoring Study (BAMS) and soil analysis in the area to gather detailed information for more comprehensive baseline data.

4.0 APPROACH AND STRATEGY FOR MONITORING

4.1 Monitoring

4.1.1 Significant Impact to be Monitored

All identified environmental pollution/degradation that includes the following shall be monitored:

a) Deforestation
b) Land disturbances/contamination
c) Soil erosion
d) Siltation
e) Water quality degradation/contamination
f) Air quality degradation
g) Adverse socio-economic impacts, if any

Regular in-house air and water quality monitoring, as well as the in-house noise level monitoring, shall be done and brought to the third-party laboratory for analysis. The results shall be presented to the scheduled validation activities of the Multi-Partite Monitoring Team (MMT).

4.2 Sources of Impact

4.2.1 Mining Activities/ Infrastructures

i. Parameters to be monitored

The impact water bodies are the Pasi, Maribong, Tagusao, and Pulot River. Marine water at Causeway and Pulot river delta was also monitored areas. Parameters to be monitored are pH, TSS, temperature, heavy metals, and Oil & Grease.

ii. Purposes of Monitoring

The main concern to be monitored is the water quality and condition of river systems and marine water near the causeway that will be impacted by the mining activities such as total suspended solids, and heavy metals.

iii. Monitoring Methods

Monthly water quality monitoring shall be conducted by the company and quarterly by MMT. Sampling methods to be adopted is following the prescribed method of sampling by the EMB.

Erosion control measures and silt control structures shall be inspected regularly especially during the rainy season to check silt accumulation at the silt traps and other areas of concern.

iv. Monitoring Frequency

Water Quality	-	Monthly
Stability/Environmental Integrity	-	Daily
Reforestation area/Planted trees	-	Weekly

4.2.2 Noise

i. Parameters to be Monitored

The noise level, expressed in decibel (dB), of various equipment of the mine operation or point sources of noise at different distances, will be monitored.

ii. Purposes of Monitoring

To determine noise level emanated from the mine operation especially during hauling from mine site to pier site if the noise level is within DENR standard.

iii. Monitoring Methods

To determine the noise level around mine industrial premises, sampling stations were established. A handheld noise level meter will be used to give instantaneous display readings. The sampling activities shall be done quarterly by MMT or monthly by the company.

iv. Monitoring Frequency

Noise sampling will be done monthly or often as possible as required by MMT.

4.2.3 Air Quality

Air quality is usually described in terms of the concentration levels of the various types of air pollutants over a certain area at any given time.

i. Parameters to be Monitored

Based on the nature of the mine operation, the air pollutants parameter to be considered are the TSP and PM_{10}. However, the company is open to any recommendations to be included in the monitoring parameter

ii. Purposes of Monitoring

To determine the quality of air around mine site premises and nearby residential areas.

iii. Monitoring Methods

Total suspended particulates (TSP) and particulate matter 10 are collected using air filters and a High-Volume Air Sampler, set up at a fixed station within and around the mine area.

iv. Monitoring Frequency

Ambient air quality monitoring will be done monthly.

Other Air Quality Environmental Activity

Road water sprinkling is just one the main activity in terms of dust suppression. Road maintenance using heavy equipment also contributes in reducing dust pollution through scraping-off residual ballasting material. In addition, the hauling road crosses a national highway and it is prone to mud build-up or the accumulation of residual ballasting material in the crossway. To address this matter, a road scraper was hired to remove all the debris or mud build-up in the crossway. Frequency of maintenance will be every regular ore transfer and as the need arises.

4.2.4 Conservation Values

i. Parameters to be monitored:

Forest patches for in-situ conservation, including tree species and mangroves areas, shall be monitored. Likewise, both Pasi River and Tagusao River shall be regularly observed/ inspected for any significant environmental degradation.

ii. Purpose of monitoring:

To determine the presence and degree of degradation.

iii. Monitoring method:

Regular field ocular inspection/ observation by the company's deputized forest guard and/or Pollution Control Officer of these areas identified for preservation.

iv. Monitoring locations:

1. Identified forest patches
2. Areas with the presence of banned tree species
3. Pasi and Tagusao area

v. Monitoring frequency:

A regular annual inspection or as the need arises.

4.2.5 Heritage and Cultural Values

i. Parameters to be monitored:

a) Artifacts of archeological significance, if any
b) Customs and traditions of native *Palaw'ans*

ii. Purpose of monitoring:

To help preserve the customs and traditions of native *Palaw'ans* living in the vicinity of the mine site and to turn over to the National Museum any artifacts found in the area.

iii. Monitoring method:

Actual interactions/interviews with the native *Palaw'ans* as well as actual ocular inspection of newly disturbed land areas suspected for the presence of artifacts.

iv. Monitoring locations:

a) Nearby *sitios* where native *Palaw'ans* reportedly have settled.
b) Newly distributed land areas

v. Monitoring frequency:

Annual monitoring will be conducted or as the need arises.

vi. Acceptable Impacts of the mining operation

Culture and Lifestyle

There may be some immigration to the mine community despite the fact that the project itself will not need great number of work force, considering the attraction that the project to laborers, entrepreneurs, and traders. The new residents may influence the local populace by introducing their customs, culture, and moral values.

Archeological/ Anthropological/ Historical sites

The seas of Palawan are sites of significant historical and archeological discoveries that provide insights into the Filipino race. However, there are not many similar discoveries in the terrestrial zones of the province. IPs in the uplands and the Muslim communities near the shore freely practice their traditional rites and beliefs. A site in Pulot shore has been designated as burial grounds while the IPs in the upland areas have yet to be officially granted their ancestral domain claim.
The location of the mining activity will not in any way affect any archeological, anthropological, or historical sites in the area. Unless the excavation of the site will reveal an archeological discovery of national significance, it is expected that the mining activity will not have any effect on any heritage site. (*Source: ENVIRONMENTAL IMPACT STATEMENT (EIS)- CMDC, 2007*).

4.2.6 Social Issues

i. Parameters to be Monitored

Parameters to be monitored include the perception of the residents, rice farmers, and neighboring communities regarding the project implementation. Monitoring shall likewise include the effectiveness of the environmental mitigation measures and community development programs/projects provided by the company through the Social Development and Management Program (SDMP).

ii. Purposes of Monitoring

To monitor public perception and acceptability of the project from the affected people and the effect of the program on the Social Development and Management Program (SDMP) so that the company could assess if there is a need for further improvements of the environmental and social activity implementation.

iii. Monitoring Methods

Social meetings, coordination with the community leaders, NGOs, and LGUs.

iv. Monitoring Locations

Host and neighboring communities.

v. Monitoring Frequency

The company's COMREL is tasked to monitor frequently the issues and concerns being raised by the communities, civil societies, and government regulatory agencies.

The summary of the monitoring plan/matrix showing the sources of impacts and their corresponding parameters to be monitored, monitoring frequency, monitoring method, and purpose of monitoring is reflected in **Table 8**.

Table 8

ENVIRONMENTAL IMPACTS, CONTROL STRATEGIES AND MONITORING PROGRAM

Environmental Impact				Mitigating Measures	Impact Monitoring						Budget P x 1000
Description of Impact		Affected Areas	Sources of Impact		Objectives	Parameter	Method or procedures	Monitoring location	Frequency	Schedule	
General	Detailed										
Water Quality Degradation	Turbid water from mine runoff will significantly provide changes of water quality on nearby rivers and coastal area.	Pasi River, Tagusao River and Causeway	Mining Operation/ Ore Stockyard	1. Construction of 2 Pit Bottom, 16 Siltation Ponds, 16 Silt Collector Sumps (SCS). 2. Construction of mine drainage channel to divert water run-off to nearest siltation ponds. 3. Regular desilting of constructed Pit Bottom, SCS and siltation ponds. 4. Construction of additional Siltation ponds based on the calculated excess runoff.	To ensure that the constructed mitigating measures are efficiently contained silted water.		Daily monitoring of siltation ponds discharge and mine drainage channel	Mine pit, Pasi Siltation Ponds and Ore Stockyard	Daily or as frequent as necessary	January-December 2024	2,474.44013 1,310
				5. Daily monitoring of siltation ponds discharge and monthly water sampling for laboratory analysis of heavy metals and onsite parameters.	To determine the effectiveness of constructed siltation ponds and validate the water quality in conformance	The samples parameter are the following; pH, arsenic, cadmium, lead, manganese, nickel, TSS (for the regular station) and chromium hexavalent, oil	1. Daily inspection of siltation pond discharge. 2. Monthly in-house water sampling for onsite and heavy metals parameters	Pasi settling pond, Tagusao settling pond	Daily/Monthly	January-December 2024	

					with RA 9275.	and grease (for effluence).	for laboratory analysis				
Air Quality	The use of heavy equipment for mining and hauling activities will generate dust emission, gaseous emission and increase of noise level	Nearby residence of Pasi area, contractor's campsite, hauling road resident and Ore Stockyard resident	Mine pit excavation and Ore transport from mine pit to Ore Stockyard	1. Use of properly maintained heavy equipment installed with mufflers. 2. Protection of existing vegetation near the mining area to serve as noise barrier. 3. Use of properly maintained motor vehicles and heavy equipment. 4. Regular water sprinkling along exposed areas especially during dry periods. 5. Limiting the speed of service vehicles, hauling trucks and other heavy equipment. 6. Imposition of truck load limits to prevent the unwanted discharge of materials and dusts.	To verify the effectiveness of established mitigating measures and continuously provide improvement as necessary to reduce dust emission, noise level and gaseous emission in compliance to RA 8749 and DAO 2000-98.	The standard noise monitoring will not more than 90 decibels. And 300 µNm3 TSP results, for the ambient air quality monitoring.	1. Securing yearly smoke emission test results of all vehicles. 2. Monthly in-house noise level monitoring 3. Monthly in-house air quality monitoring. 4. Daily monitoring of service vehicles' speed thru trip tickets 5. Monthly validation/inspection of road watering consumption and 6. Daily monitoring of water sprinkling activity	Mine pit, pre-pile yard, hauling road and Ore Stockyard stockpile.	Daily/Monthly or as frequent as necessary	January-December 2024	4,824.43 648
Deforestation/ Land Disturbances	The mining operation and activities will cause loss of top soil, soil erosion, slope failure or mass movement,	Mine pit, Pasi River, Tagusao River, Ore Stockyard and causeway	Mine pit, pier yard, motor pool, campsite and causeway	1. Revegetation of the open/expose areas. 2. Maintaining a stockpile for topsoil in a designated area away from	To apply state-of-the-art mine rehabilitation strategies and performed progressive		1. Daily patrol works on established rehabilitation sites 2. Regular application of organic	Nursery, Mine pit, hauling road, Ore Stockyard and established buffer zone and rehabilitated areas.	Daily/monthly	January-December 2024	41,644.5 63.45

	change in land reform, siltation of drainage systems, generation of solid waste and soil contamination with oil and grease			creeks/erosion prone areas. 3. Use of a combination of permanent engineering structures and vegetative means to stabilize toe and slope stockpiles. 4. Installation of proper drainage along road systems and open areas and by immediately revegetating the peripheries. 5. Maintaining vegetation cover in the designated buffer zones and in the peripheries of roads and minepit. 6. Diversion of runoff away from steep slopes and denuded areas by constructing interceptors, drains and berms. 7. Keeping stockpiles with moderate slopes to minimize high erosion rate 8. Progressive rehabilitation.	mined-out rehabilitation.		fertilizer for growth development of potted seedlings in nursery. 3. Massive production of seedling for large planting stocks 4. Regular patrol works on buffer zone area for illegal activity inspection. 5. Planting of endemic/endangered species and 6. Regular inspection of stockpile slope. 7. Regular inspection of interceptor canals, drains and berms.				
				9. Implementation of Solid Waste Management Program involving local community and contractors.	To validate the reduction of solid waste generation at source and proper toxic and		1. Regular garbage collection and inventory of solid waste generated.	Mine pit, campsite, contractors motor pool and Ore Stockyard.	Twice a week/ Weekly hazwaste inspection	January-December 2024	62.5

				10. Maintenance of vehicles/heavy equipment strictly at motorpool. 11. Regular maintenance of the oil and water separator will be done to ensure optimum performance. 12. Good housekeeping practices including proper handling and clean-up of oil at motorpool.	hazardous waste management in compliance to RA 9003 and RA 6969		2. Recycling of biodegradable waste for mine rehabilitation. 3. Regular inspection of hazardous waste storage facility				
				13. Protection of Mangrove areas 14. Rehabilitation of denuded mangrove areas	To ensure the protection of mangrove areas for the improvement of fish production and income generation of fisherman within the impact area of mine operation		4. Regular patrol works and enrichment planting on established mangrove rehabilitation areas	Sitio Mangingisda /Causeway	Weekly	January-December 2024	28

Activity	Affected Resources/Areas	Foreseen Impacts	Mitigating Measures	Estimated Budget (P x 1000)
Mining Operation/ Ore stockpiling and mobilization for ore shipment	Water Quality in Pasi River, Tagusao River and Causeway area	Turbid water from mine runoff will significantly provide changes of water quality on nearby rivers and coastal area.	1. Construction of additional settling ponds, collector sumps with drainage canals. 2. Construction of mine drainage channel to divert water run-off to nearest settling ponds. 3. Regular desilting of constructed Pit Bottom, SCS and settling ponds.	3,962
Mine pit excavation and Ore transport from mine pit to Ore stockyard	Nearby residence of Pasi area, contractor's campsite, hauling road resident and adjacent ore stockyard resident	The use of heavy equipment for mining and hauling activities will generate dust emission, gaseous emission and increase of noise level	1. Use of properly maintained heavy equipment installed with mufflers. 2. Protection of existing vegetation near the mining area to serve as noise barrier. 3. Use of properly maintained motor vehicles and heavy equipment. 4. Regular water sprinkling along exposed areas especially during dry periods. **5.** Limiting the speed of service vehicles, hauling trucks and other heavy equipment. **6.** Imposition of truck load limits to prevent the unwanted discharge of materials and dusts.	1,720
Mine operation, ore stockpiling, construction of motor pool, campsite and causeway/pier area for LCT docking area	Deforestation/ Land Disturbances	The mining operation and activities will cause loss of top soil, soil erosion, slope failure or mass movement, change in land reform, siltation of drainage systems, generation of solid waste and soil contamination with oil and grease	1. Implement temporary revegetation of the open/exposed areas of block A & B. 2. Maintaining a stockpile for topsoil in a designated area away from creeks/erosion prone areas. 3. Use of a combination of permanent engineering structures and vegetative means to stabilize toe and slope stockpiles. 4. Installation of proper drainage along road systems and open areas and by immediately revegetating the peripheries. 5. Maintaining vegetation cover in the designated buffer zones and in the peripheries of roads and minepit. 6. Diversion of runoff away from steep slopes and denuded areas by constructing interceptors, drains and berms. 7. Keeping stockpiles with moderate slopes to minimize high erosion rate. 8. Perform 5 hectares mined-out rehabilitation within a year.	20,711.75

			9. Implementation of Solid Waste Management Program involving local community and contractors. 10. Maintenance of vehicles/heavy equipment strictly at motor pool. 11. Regular maintenance of the oil and water separator will be done to ensure optimum performance. 12. Good housekeeping practices including proper handling and clean-up of oil at motor pool. 13. Protection of Mangrove areas 14. Rehabilitation of denuded mangrove areas	

Source of Impacts	Parameters Considered	Purpose of Monitoring	Monitoring Method/s	Monitoring Locations	Monitoring Frequency
Mining Operation/ Ore Stockyard	Water Quality	1. To insure that the constructed mitigating measures are efficiently contained silted water. 2. To determine the effectiveness of constructed siltation ponds and validate the water quality in conformance with RA 9275.	1. Daily monitoring of siltation ponds discharge and mine drainage channel. 2. Daily inspection of siltation pond discharge. **3.** Monthly in-house water sampling for onsite and heavy metals parameters for laboratory analysis	Mine pit, Pasi Siltation Ponds and ore stockyard	Daily or as frequent as necessary
Mine pit excavation and Ore transport from mine pit to Ore Stockyard	Air Quality	To verify the effectiveness of established mitigating measures and continuously provide improvement as necessary to reduce dust emission, noise level and gaseous emission in compliance to RA 8749 and DAO 2000-98	1. Securing yearly smoke emission test results of all vehicles. 2. Monthly in-house noise level monitoring 3. Monthly in-house air quality monitoring. 4. Daily monitoring of service vehicles' speed thru trip tickets 5. Monthly validation/inspection of road watering consumption and 6. Daily monitoring of water sprinkling activity	Mine pit, pre-pile yard, hauling road and Ore Stockyard stockpile.	Daily/Monthly or as frequent as necessary
Mine pit, Ore Stockyard, motor pool, campsite and causeway	Deforestation/ Land Disturbances	To apply state-of-the-art mine rehabilitation strategies and performed progressive mined-out rehabilitation.	1. Daily patrol works on established rehabilitation sites 2. Regular application of organic fertilizer for growth development of potted seedlings in nursery. 3. Massive production of seedling for large planting stocks 4. Regular patrol works on buffer zone area for illegal activity inspection. 5. Planting of endemic/endangered species and 6. Regular inspection of stockpile slope. **7.** Regular inspection of interceptor canals, drains and berms.	Nursery, Mine pit, hauling road, Ore Stockyard and established buffer zone and rehabilitated areas.	Daily/monthly
		To validate the reduction of solid waste generation at source and proper toxic and hazardous waste management in compliance to RA 9003 and RA 6969.	To validate the reduction of solid waste generation at source and proper toxic and hazardous waste management in compliance to RA 9003 and RA 6969	Mine pit, Ore Stockyard, motor pool, campsite and causeway	Twice a week/ Weekly hazardous waste inspection
		Protection of Mangrove areas and Rehabilitation of denuded mangrove areas	To ensure the protection of mangrove areas for the improvement of fish production and income generation of fisherman within the impact area of mine operation	Sitio Mangigisda/ Causeway	Weekly

For the year 2024, the total budget for the various environmental protection and enhancement projects/activities amounts to **Php 50,928,440.06**. This will be used to sustain priority projects that include tree planting, siltation and dust control, and environmental monitoring. The EPEP matrix for the quarterly implementation of these projects/activities including the targets and budget allocations are presented in **Table 9**.

4.3 REPORTING

The company's AEPEP activities and accomplishment will be reported to the Multi-Partite Monitoring Team (MMT) every quarter. The accomplishment reports will be submitted by the MMT to the Mine Rehabilitation Fund Committee (MRFC) for scrutiny and further recommendations to improve CMDC's environmental mitigation activities.

In the case of infractions, CMDC is responsible to report to MRFC its compliance with the MMT's recommendations. The report will be submitted after the MMT's quarterly monitoring.

Aspect	MMT Reporting	Company Reporting
Water Quality	Quarterly	Quarterly
Air Quality	Quarterly	Quarterly
Noise Level	Quarterly	Quarterly

Table 9

2024 ANNUAL ENVIRONMENTAL PROTECTION AND ENHANCEMENT PROGRAM (AEPEP) PHYSICAL TARGETS AND BUDGET ALLOCATIONS MATRIX

Activities	**UoWM/ Unit Cost**	**Target (Physical/Financial)**					**Remarks**
		1Q	**2Q**	**3Q**	**4Q**	**Annual**	
• LAND RESOURCE (35%)		8,780,549.63	15,411,452.65	15,648,422.29	1,804,138.88	**41,644,563.45**	
1. Progressive Rehabilitation of Mined - Out Areas							
A. Backfilling	hectare	3	5	5		**13.00**	
	1,492,155.91	4,476,467.73	7,460,779.55	7,460,779.55		**19,398,026.83**	
B. Re-countouring/ Reshaping/Benching	hectare	3	5	5		**13.00**	
	989,564.34	2,968,693.02	4,947,821.70	4,947,821.70		**12,864,336.42**	
C. Reforestation	hectare		7	6		**13.00**	
	239,880.36		1,679,162.52	1,439,282.16		**3,118,444.68**	
	seedling	0	17,500	15,000		**39,450**	2m x 2m spacing
D. Maintenance	hectare	9.5	7.16	17.53	18.25		
	2024			9	15		

				45,000.00	75,000.00	120,000.00	
	2023	3.25	3.25	3.25	3.25	**13.00**	Replacement activity
		16,250.00	16,250.00	16,250.00	16,250.00	**65,000.00**	
	2022	3.91	3.91			**3.91**	Block C3 A and B Rehab (Slope enhancement)
		19,550.00	19,550.00			**39,100.00**	
	2021			5.28		**5.28**	Block AA and Block C4 Rehab (Slope enhancement)
				26,400.00		**26,400.00**	
	2020	2.34				**2.34**	Block B1 Rehab (Slope enhancement)
		11,700.00				**11,700.00**	
2. Mining Forest Program (MFP) and National Greening Program (NGP)							
A. NGP							
1. Maintenance	hectare		2.40		2.40	**2.40**	Old existing NGPs. Narra (0.72ha) and Gmelina (1.7has) Plantation along the light vehicle road. Activity includes monitoring and brushing.
	8,333.33		10,000.00		10,000.00	**20,000.00**	
3. Nursery Operations							

A. Seedling Production	seedlings			15,000	15000	**30,000**	Due to the delays on procurement of materials, the production of seedlings is scheduled on 2nd & 3rdQ. Seedlings were aligned for planting in 2x2 m spacing
	28.00			420,000.00	420,000.00	**840,000.00**	
B. Seedling Maintenance	seedlings	80,400	80,400	80,400	80,400	**321,600**	80,400 propagated seedling as of Oct. 2023
	10.00	804,000.00	804,000.00	804,000.00	804,000.00	**3,216,000.00**	
C. Nursery Infrastructure							
1. Expansion of Existing Nursery Facility	activity			1		**1**	Expansion (Planned in 2022 however, materials for construction is insufficient)
							Total of 86,560.00 budget allocated reflected to 2022 approved AEPEP
D. Auxilliary Facility							
1. Horticulture Project	Kg	100	100	100	100	**400**	Target production of assorted vegetables for staff house consumption. Excess harvest will be distributed to some employees
	400.00	40,000.00	40,000.00	40,000.00	40,000.00	**160,000.00**	
	unit	1	1	1	1	**1**	Production of assorted vegetables

2. Vermicomposting	Kg	50	50	50	50	**200**	Target for production. Vermicast will be added to the soil mix as an organic soil enhancer for seedling production
	400.00	20,000.00	20,000.00	20,000.00	20,000.00	**80,000.00**	
	unit	1	1	1	1	**1**	Production of vermicast and compost
4. Slope Stabilization and Erosion Control							
A. Slope Stabilization and Erosion Control Activities (Grass Planting)	hectare			1	1	1	Subject for grass and bamboo enrichment planting for 1 hectare (Along the hauling road at Pier site)
	10,000.00			5,000.00	5,000.00	**10,000.00**	
	activity			1	1	**2**	Planting, maintenance, and monitoring activity
5. Topsoil/Subsoil Management (For confirmation)							
A. Retrieval and Management of Topsoil/Subsoil from the mine	square meter	13,000	20,000	10,000	10,000	**100,000**	Source of Topsoil/Subsoil- 1stQ: Block A & B, 2ndQ: Block A, 3rdQ: Block B & C, 4thQ: Block B & C. Dumping areas are Waste Dump Area and Rehabilitation Sites
		20,000		17,000	10,000		
	cubic meter	13,000	20,000	10,000	10,000	**100,000**	
		20,000		17,000	10,000		
	127.60	3,828,000	3,828,000	3,190,000	1,914,000	**12,760,000.00**	Annual Cost - Php 12,760,000.00 Expenses c/o Development cost under 3YD/UWP

							Annual Cost - Php 12,760,000.00 Expenses c/o Development cost under 3YD/UWP
6. Access Road							
A. Maintenance of Access Roads	kilometer	18.0	18.0	18.0	18.0	**18.0**	From pier site to mine pit haul road
	88,888.89	400,000.00	400,000.00	400,000.00	400,000.00	**1,600,000.00**	
7. Stockyard Management							
A. Maintenance of bundwalls	kilometer	2.0	2.0	2.0	2.0	**2.0**	Ore Stockyard bund walls in the pier site
	27,777.76	13,888.88	13,888.88	13,888.88	13,888.88	**55,555.52**	
8. Other Land Resource Environmental Activities							
A. Establishment of Bamboo Reforestation	no. of culms	400		400		**800**	Bamboo plantation 5 x 5 meters spacing (not intercrop) at Block A (block 1 STCEP area) total area 2.0 has
	25.00	10,000.00		10,000.00		**20,000.00**	
• WATER QUALITY AND RESOURCE (20%)		500,211.55	817,808.02	815,329.60	341,090.96	**2,474,440.13**	
1. Maintenance of Pollution Control Structures through Desilting							
A. Siltation/Settling Ponds	m^3	2,710	2,626	2704	712	**8,752**	There are two (4) SP such, block A, Block B, Block C & Pasi 2 SP(1st and 4th Q will also conduct desilting as the need arises)

	m³	247,711.63	240,068.92	247,199.68	65,091.04	**800,071.27**	
B. Collector Sumps (CS)	m³		5,564	5,400		**10,964**	There are six (6) SCS such as, SCS 3,5,6,7,11 & 12 (1st and 4th Q will also conduct desilting as the need arises)
	58.45		325,239.18	315,630.00		**640,869.18**	
C. Drainage Canal/System	kilometer	18	18	18	18	**18**	1.5 x 1.5 meter in 18 km
	27,777.76	124,999.92	124,999.92	124,999.92	124,999.92	**499,999.68**	
2. Construction of Pollution Control Structures							
A. Siltation/Settling Pond	m³				13500	**13,500**	Location: near Tagusao SP, Volume capacity of 13,500cu.m and with 1,050,000.00 budget (2023 AEPEP approved budget allocation)
	no. of SP				1	**1**	90 x 30 x 5 meters near Tagusao SP
B. Collector Sumps(CS)	m³		750	750		**1,500**	Location : Tagusao and Block B (With 100,000.00 budget allocation for two SCS constructed (2023 AEPEP)
	no. of SCS		1	1		**2**	10 x 15 x 5 meters (2023 AEPEP approved budget allocation)
3. Solid Waste Management							

A. Collection/Storage/ Handling/Disposal	ton	1.179	1.179	1.179	1.179	**4.716**	Based on the 2021 WACS Result, the annual average generation of solid waste is 4.7 tons (**Bio: 0.95**, Res: 3.01, **Rec: 0.6**, Special: 0.13). Projected bio and recyclable is highlighted.
	14,000.00	14,000.00	14,000.00	14,000.00	14,000.00	**56,000.00**	
B. Disposal to Sanitary Landfill	no. of trips			2	2	**4**	2021 (2.04 tons), 2022 (2.05 tons) and 2023 (0.62 tons) residual waste for disposal to Sanitary Landfill (SLF).
					6,500.00	**6,500.00**	plus 18,595 tipping fee for disposal of waste to Municipal SLF (Three trips schedule of disposal has a budget allocated (Approved 2023 AEPEP)of 35,095.00
C. Maintenance of MRF and RCA	no. of facility	2	2	2	2	**2**	Maintenance of 1 MRF and 1 RCA includes housekeeping and monitoring
	5,000.00	2,500.00	2,500.00	2,500.00	2,500.00	**10,000.00**	
4. Hazardous Waste Management							
A. Collection/Storage/ Handling/Disposal	ton	1.25	1.25	1.25	1.25	**4.98**	Projected generation of hazardous wastes per Q(solid 0.445 ton and liquid 0.8 ton hazwaste).

	2,500.00	3,000.00	3,000.00	3,000.00	20,000.00	**29,000.00**	1st to 3rd Quarter allocated to in-house collection and storing. For 4th Q2024 hauling and transport the waste to the accredited treater.
B. Maintenance of HWF	no. of facility	1	1	1	1	**1**	Maintenance works (e.g., housekeeping, labeling, lifting of drums, transferring into drums, and monitoring)
	12,000.00	3,000.00	3,000.00	3,000.00	3,000.00	**12,000.00**	
5. Water Quality Monitoring							
	activity	2	2	2	2	**8**	
A. In - house	no. of samples	60	60	60	60	**240**	**Ambient** = 9 sampling stations x 2 samples per station x 2 sampling activities/quarter = **36 samples** **Effluent** = 4 sampling stations x 3 samples per station x 2 sampling activities/quarter = **24** samples **TOTAL = 60 samples**

	1,000.00	60,000.00	60,000.00	60,000.00	60,000.00	**240,000.00**	
B. MMT Confirmatory Sampling	activity	1	1	1	1	**4**	
	no. of samples	30	30	30	30	**120**	**Ambient** = 9 sampling stations x 2 samples per station x 1 sampling activities/quarter = **18 samples** **Effluent** = 4 sampling stations x 3 samples per station x 1 sampling activities/quarter = **12 samples** **TOTAL = 30 samples**
	1,000.00	30,000.00	30,000.00	30,000.00	30,000.00	**120,000.00**	
6. Other Water Quality and Resource Environmental Activities							
A. Monitoring of Effluent/Diversion Canals	no. of effluent monitored	4	4	4	4	**4**	Effluent target for monitoring includes Pasi 1, Pasi 3, Tagusao SP & Ore stockyard SP from 1st-4thQ of 2024
	15,000.00	15,000.00	15,000.00	15,000.00	15,000.00	**60,000.00**	
• **AIR QUALITY (20%)**		1,548,922.44	1,548,922.44	863,295.80	863,295.80	**4,824,436.48**	
A. Dust Suppression							
1. Water Spraying	kilometer	18	18	10	10	**18**	4 watertrucks (inhouse), daily water sprinkling, with 12,000 L capacity

	259,259.25	1,499,999.94	1,499,999.94	833,333.30	833,333.30	**4,666,666.48**	
B. Air Quality Monitoring							With 7 ambient sampling station. 2 sampling activity every quarter
	samples	14	14	14	14	**56**	
1. Air Sampling	no. of sampling activity	2	2	2	2	**8**	
	950	13,300.00	13,300.00	13,300.00	13,300.00	**53,200.00**	
2. MMT Confirmatory Sampling	samples	7	7	7	7	**28**	With 7 ambient sampling station. 1 sampling activity every quarter
	no. of sampling activity	1	1	1	1	**4**	
	687.50	4,812.50	4,812.50	4,812.50	4,812.50	**19,250.00**	
C. Other Air Quality Environmental Activities							
1. Road Sweeping/Scraping	frequency	78	78	30	30	**216**	Daily activity. Sweeping and maintenance
	395.00	30,810.00	30,810.00	11,850.00	11,850.00	**85,320.00**	1 pax scrapers
• NOISE AND VIBRATION (10%)		2,500.00	2,500.00	2,500.00	2,500.00	**10,000.00**	
A. Noise and Vibration Level Monitoring	samples	14	14	14	14	**56**	
	no. of sampling activity	2	2	2	2	**8**	
	0.12	2,500.00	2,500.00	2,500.00	2,500.00	**10,000.00**	

1. MMT Confirmatory Sampling	samples	7	7	7	7	**28**	
	no. of sampling activity	1	1	1	1	**4**	This activity is conducted simultaneously with the MMT Air sampling
• CONSERVATION VALUES (5%)		20,000.00	20,000.00	24,000.00	24,000.00	**88,000.00**	
A. Adopt - a - River/Creek Program	activity	1	1	1	1	**4**	Location: Pulot Shore Delta
	15,000.00	15,000.00	15,000.00	15,000.00	15,000.00	**60,000.00**	
B. Mangrove Rehabilitation Program	activity	1	1	3	3	**8**	In coordination with CENRO-Brooke's Point to monitor and maintain 5.24 has. mangrove area established Nov. 17, 2017. 1st-2ndQ will be the settlement between land owner (access way) and BLGU, CENRO Brookes, and CMDC. Not allowing trespassers to use accessible foot trails to mangrove plantation. For 3rd & 4thQ is subject for monitoring implementation.
	3,500.00	5,000.00	5,000.00	9,000.00	9,000.00	**28,000.00**	Pulot Shore Mangrove Area
• ENVIRONMENTAL RESEARCH (5%)		0.00	50,000.00	0.00	50,000.00	**100,000.00**	

A. Research Study: Growth Analysis of Selected Indigenous Species in Rehabilitation (Continuous)	progress report		1		1	**2**	Progress report will be submitted per semester
	25,000.00		25,000.00		25,000.00	**50,000.00**	
B. Flora and Fauna Biodiversity Monitoring with Initial Identification	activity		1		1	**2**	Progress report will be submitted per semester
	25,000.00		25,000.00		25,000.00	**50,000.00**	
•OTHERS (5%)		225,000.00	448,500.00	441,000.00	632,500.00	1,747,000.00	
A. Inspection/Monitoring/Audit	activity		1		1	**2**	2Q & 4Q: SHES and other environmental related inspection/monitoring/audit Annual EMB Validation on 4thQ
	7,500.00		7,500.00		7,500.00	**15,000.00**	
B. Multipartite Monitoring Team (MMT) Validation	monitoring	1	1	1	1	**4**	MMT validation - 4Q2023, 1Q - 3Q2024
	60,000.00	60,000.00	60,000.00	60,000.00	60,000.00	**240,000.00**	
C. Mine Rehabilitation Fund Committee (MRFC) Meeting	meeting	1	1	1	1	**4**	1st-4thQ2023 MRFC meetings
	100,000.00	100,000.00	100,000.00	100,000.00	100,000.00	**400,000.00**	

MRFC Secretariat Honorarium	15,000.00	15,000.00	15,000.00	15,000.00	15,000.00	**60,000.00**	Budget allocation for the MRFC Secretariat honorarium, Php15,000.00 per quarter
E. PCO, MEPEO trainings and other seminars	seminar/ training		1	1	2	**4**	Attendance to the environmental related meetings/trainings/seminars to capacitate the MEPEO personnel
	200,000.00		200,000.00	200,000.00	400,000.00	**800,000.00**	
F. IEC to the Company's Employees and Contractors in line with the ISO 14001:2015 (Environmental Management System)	activity	1	1	1	1	**4**	IEC during General Toolbox Meeting and academe (students).
	15,000.00	15,000.00	15,000.00	15,000.00	15,000.00	**60,000.00**	
G. Rice Farmers Assistance (Donation of Fertilizers)	no. of sacks	10	14	14	10	**48**	List of recipients per quarter; 1st quarter Mr. Vic Galang (10 sacks), 2nd & 3rd quarter Mrs. Genalie Cuba (5 sacks), Mr. Dioedes Maturan (6 sacks),Mr. Armando Jerez (3 sacks) & 4th quarter is reserved as back up
	2.87	35,000.00	51,000.00	51,000.00	35,000.00	**172,000.00**	
Provision of DAO No. 2022-04		10,000.00	10,000.00	10,000.00	10,000.00	40,000.00	

Reference Ecosystem	hectare	70.40	70.40	70.40	70.40	**70.40**	5% of 1,408 hectares MPSA for PNMP. Map will be provided indicating the reference ecosystem location
	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00	**40,000.00**	
	activity	1	1	1	1	**4**	To conduct Biodiversity Assessment Monitoring Activity. Soil analysis will also be considered for baseline reference.
		11,087,183.62	**18,309,183.11**	**17,804,547.69**	**3,727,525.64**	**50,928,440.06**	

Total Environmental-Related Costs = **50,928,440.06**

Estimated Direct Mining Cost[1] = **151,993,440.06**

Percentage of Total Environment-Related Cost to the Direct Mining Costs = **34%**

Note: [1]Partial and unofficial, awaiting results of official 2023 audit report by third party auditor. These includes breakdown of estimated direct mining cost.

5.0 NAME AND SIGNATURE OF PERSONS PREPARING THE AEPEP

Prepared by:

NALMA A. ASMAD
Pollution Control Officer

GIOVANIE G. TENIDO
Environmental Assistant/ Agriculturist

SHEENA MAE G. PONCE DE LEON
Forester

Approved by:

ENGR. JULIUS B. COSMIANO
Resident Manager- CMDC

PRC No.	:	002690
Date Issued	:	18 July 2021
Place Issued	:	PRC Manila

MS. PAMELA P. MIGUEL
Vice President Administration/ Operations - CMDC

PRC No.	:
Date Issued	:
Place Issued	: