



Republic of the Philippines
Department of Environment and Natural Resources
MINES AND GEOSCIENCES BUREAU
MIMAROPA Region

7/F DENR Building, 1515 Roxas Boulevard, Ermita, Manila
Telefax No. (+632) 536-0215 / (+632) 310-1369
Email: region4b@mgb.gov.ph



MSDF-02 Rev02 12.17.2019

Certificate of Approval

AEPEP No. 2022-05-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 **Coral Bay Nickel Corporation (CBNC)** for its **Hydrometallurgical Processing Plant Line 1 and Line 2** covered by **MPP No. 006-2004-IVB** 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 Revised 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. CBNC 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 one billion seven hundred ninety-eight million nine hundred twenty-one thousand eight hundred sixty-four pesos only (PHP 1,798,921,864) which is equivalent to 15% of CBNC’s milling expenses (PHP 12,193,764,166) for 2022;
4. CBNC 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. CBNC 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. CBNC 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 *WA*



Reference No.: EMO-MNL-2022-M-004

DATE : 03 March 2022

FOR : **DIRECTOR EDWIN M. MOJARES, Ph.D.**
Regional Director
MGB IVB-MIMAROPA
7/F DENR By the Bay Building
1515 Roxas Blvd., Ermita, Manila

**Attention: MINE SAFETY ENVIRONMENT AND SOCIAL
DEVELOPMENT DIVISION**
FROM : **BENJAMIN ARMAND A. TANSINGCO**
VP-Environmental Management

**SUBJECT :REVISED ANNUAL ENVIRONMENTAL PROTECTION AND
ENHANCEMENT PROGRAM FOR 2022 (AEPEP for the Year 2022)**

Dear **Director Mojares**:

In compliance to Item No. 2 of the approved Environmental Protection and Enhancement Program (EPEP # 171-2020-14) of CBNC for its Hydrometallurgical Processing Plants Line and Line 2 Project, the Revised Annual EPEP for the Year 2022 is hereby submitted incorporating the recommendations and revisions based on the Evaluation Report dated 09 February 2022.

The corresponding budget is as follows:

Program	Purpose	2022 Budget (Php)
1. Land Resource	Rehabilitation and Reforestation of Project Areas	8,540,270
2. Water Resource and Quality	Protection of Waters	1,396,932,020
3. Noise	Mitigation of Noise from Plant Operation	2,100
4. Air Quality	Protection of Air	366,832,526
5. Conservation Values	Enhancement and Monitoring of Environmental Program Performance	6,544,389
6. Environmental Research	Activities to Improve Environmental Programs	2,209,200
7. Others	Administration, Compliance Management and MEPEO Operation	17,861,359
Total		1,798,921,864

We are looking forward to your valuable assistance in the successful implementation of our 2022 AEPEP.

Republic of the Philippines
Department of Environment and Natural Resources
MINES AND GEOSCIENCES BUREAU
MIMAROPA Region

**ANNUAL ENVIRONMENTAL PROTECTION
AND ENHANCEMENT PROGRAM 2022**

1.0 Project Name: Coral Bay Nickel Corporation (CBNC)
Hydrometallurgical Processing Plant,
Line 1 & Line 2

Site Office : Rio Tuba Export Processing Zone,
Rio Tuba, Bataraza, Palawan

Manila Office : Sumitomo Metal Mining Philippine Holdings
Corporation, 24th -25th Floor, NAC Tower, 32nd
Street Bonifacio Global City, Taguig City, Philippines
1634

Contact Person: Mr. Masahiro Kamiya
President

Tel No.: 8548-7110/8548-7100

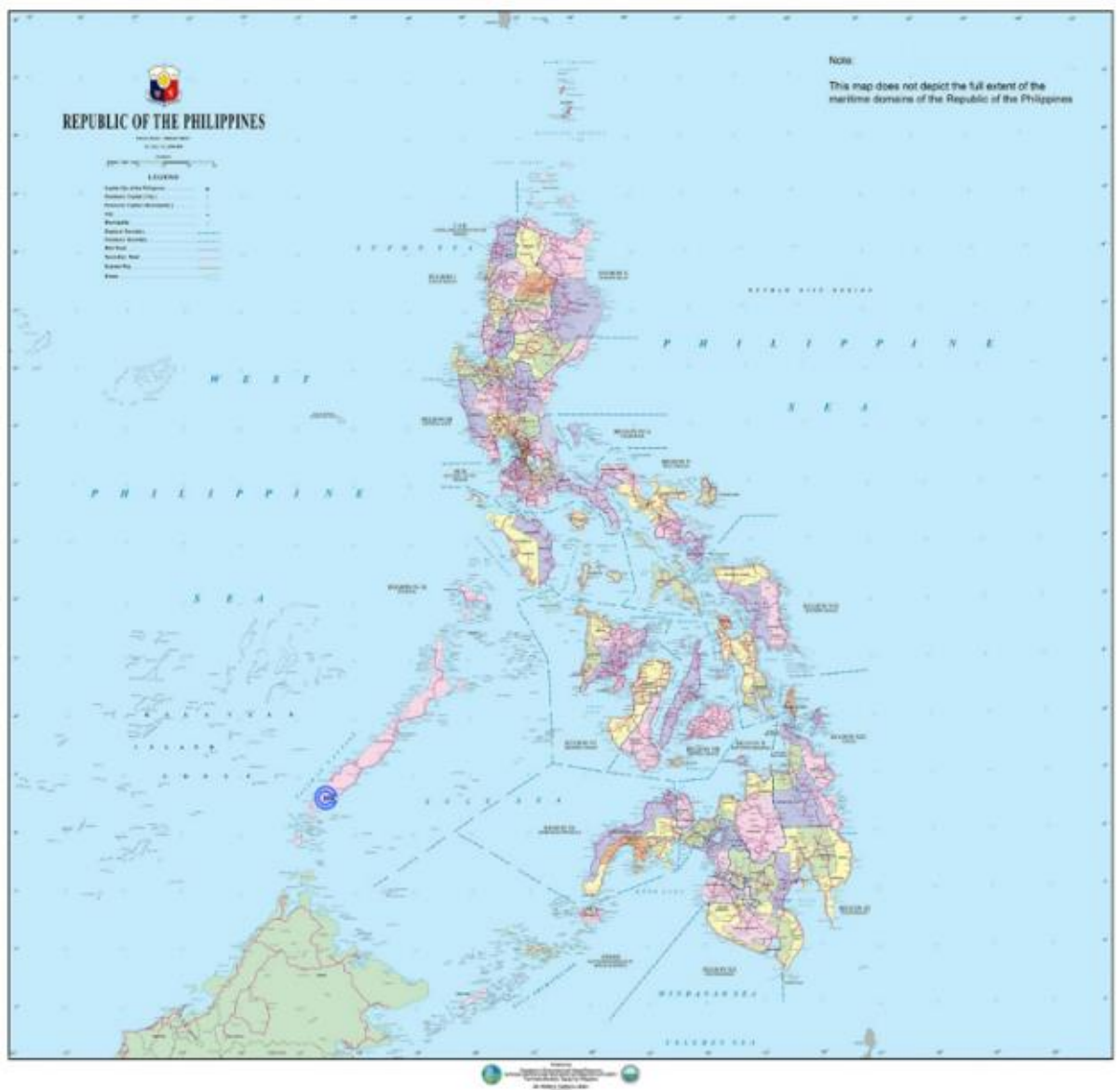
Fax No.: 8856-3930

2022 AEPEP Proposed Budget: Php 1,798,921,864 (15% of the 2022 Estimated
Milling Expense of Php 12,193,764,166)

2.0 Project Description

2.1 Project details

The Coral Bay Nickel Corporation Hydrometallurgical Processing Plant (HPP)
Line 1 & Line 2 is located at the Rio Tuba Export Processing Zone (RTEPZ)
which is within the mining areas of Rio Tuba Nickel Mining Corporation
(RTNMC) in Barangay Rio Tuba, Municipality of Bataraza, Province of
Palawan.



Source: NAMRIA

Figure 1. Map showing general location of CBNC HPP Site

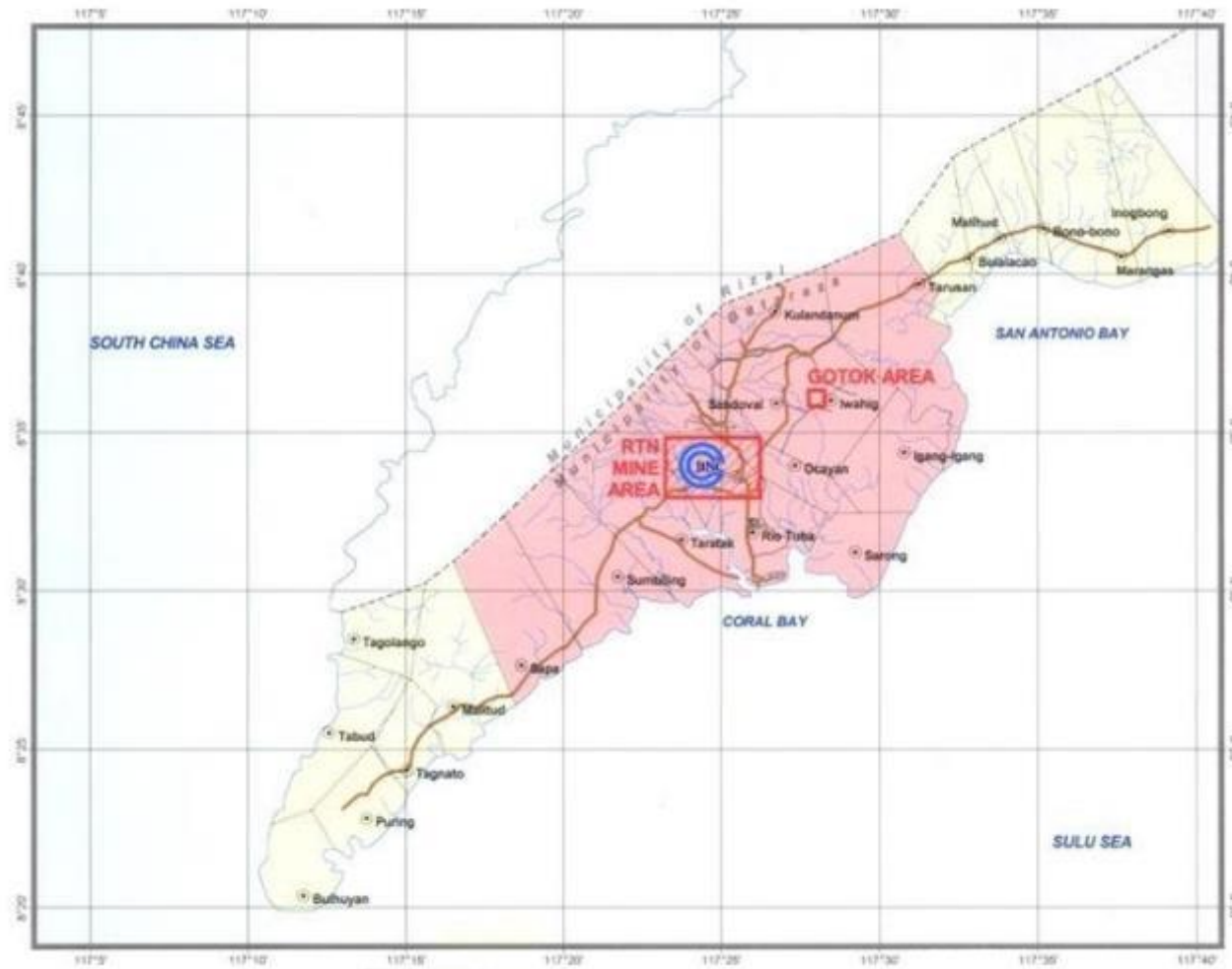


Figure 2. Map showing location of CBNC HPP Site at the Municipality of Bataraza



Figure 3. Map showing location of CBNC and its project facilities

Table 1. Geographic coordinates of the project components

Project Component	Perimeter/Boundary points (Based on OCT/TCT/etc.)	Latitude	Longitude
TSF-3 (Proposed)	Corner 1	8° 34' 11.41"	117° 25' 39.73"
	Corner 2	8° 34' 17.12"	117° 25' 39.79"
	Corner 3	8° 34' 19.27"	117° 25' 36.22"
	Corner 4	8° 34' 27.34"	117° 25' 37.33"
	Corner 5	8° 34' 36.62"	117° 25' 35.08"
	Corner 6	8° 34' 43.19"	117° 25' 28.14"
	Corner 7	8° 35' 0.94"	117° 25' 26.62"
	Corner 8	8° 35' 0.79"	117° 25' 45.61"
	Corner 9	8° 34' 41.76"	117° 25' 57.35"
	Corner 10	8° 34' 11.22"	117° 26' 3.18"
TSF- 2 (Existing)	Corner 11	8° 35' 26.78"	117° 24' 30.62"
	Corner 12	8° 35' 23.99"	117° 24' 37.12"
	Corner 13	8° 35' 23.05"	117° 24' 41.12"
	Corner 14	8° 35' 22.52"	117° 24' 48.52"
	Corner 15	8° 35' 16.51"	117° 25' 0.96"

Project Component	Perimeter/Boundary points (Based on OCT/TCT/etc.)	Latitude	Longitude
	Corner 16	8° 35' 9.89"	117° 25' 6.76"
	Corner 17	8° 35' 2.02"	117° 25' 11.83"
	Corner 18	8° 34' 48.24"	117° 25' 15.87"
	Corner 19	8° 34' 46.07"	117° 25' 14.99"
	Corner 20	8° 34' 28.03"	117° 24' 51.34"
	Corner 21	8° 34' 33.24"	117° 24' 32.17"
	Corner 22	8° 34' 28.84"	117° 24' 28.09"
	Corner 23	8° 34' 37.39"	117° 24' 18.36"
	Corner 24	8° 34' 50.79"	117° 24' 19.44"
	Corner 25	8° 34' 55.02"	117° 24' 24.19"
	Corner 26	8° 35' 19.5"	117° 24' 26.74"
TSF-1 (Existing)	Corner 27	8° 34' 26.83"	117° 25' 24.05"
	Corner 28	8° 34' 14.74"	117° 25' 37.40"
	Corner 29	8° 34' 1.35"	117° 25' 37.34"
	Corner 30	8° 33' 52.47"	117° 25' 21.67"
	Corner 31	8° 33' 52.64"	117° 25' 6.5"
	Corner 32	8° 33' 57.93"	117° 24' 59.44"
	Corner 33	8° 34' 10.89"	117° 24' 56.15"
	Corner 34	8° 34' 14.28"	117° 24' 58.55"
HPP Line 1 and 2 (Existing)	Corner 35	8° 33' 48.14"	117° 25' 3.9"
	Corner 36	8° 33' 48.11"	117° 25' 31.78"
	Corner 37	8° 33' 30.95"	117° 25' 31.76"
	Corner 38	8° 33' 30.98"	117° 25' 3.89"
Causeway, trestle and other associated facilities (Existing)	Corner 39	8° 30' 39.76"	117° 26' 36.38"
	Corner 40	8° 30' 43.04"	117° 26' 49.63"
	Corner 41	8° 30' 46.65"	117° 26' 49.07"
	Corner 42	8° 30' 47.96"	117° 26' 58.17"
	Corner 43	8° 30' 42.86"	117° 26' 58.96"
	Corner 44	8° 30' 42.17"	117° 26' 54.50"
	Corner 45	8° 30' 37.24"	117° 26' 56.09"
	Corner 46	8° 30' 30.20"	117° 26' 51.62"
	Corner 47	8° 30' 27.25"	117° 26' 51.62"
	Corner 48	8° 30' 14.88"	117° 27' 00.82"
	Corner 49	8° 30' 12.94"	117° 26' 58.19"
	Corner 50	8° 30' 28.68"	117° 26' 46.48"
	Corner 51	8° 30' 28.95"	117° 26' 39.94"

Photos of CBNC Project Areas



Figure 4. *Rehabilitated Tailings Storage Facility No. 1*



Figure 5. *Operational Tailings Storage Facility No. 2*



Figure 6. *CBNC Line 1 and 2 HPP Complex*



Figure 7. *Under Construction Tailings Storage Facility No. 3*



Figure 8. *CBNC Pier site Facilities*

2.2. Mineral reserves/resources

The CBNC HPP Lines 1 & 2 Project makes use of the low-grade Ni ore supplied by RTNMC under their MPSA No. 114-98-IV (Amended I).

Based on the disclosure made by Nickel Asia Corporation (NAC), the mother company of Rio Tuba Nickel Mining Corporation, in their 2020 Annual Report released last June 10, 2021, the available ore reserves at Rio Tuba as of December 31, 2020, that could possibly be available for purchase by CBNC and be used as feed material for the HPP Lines 1 & 2 is around 47.2 M DMT.

SUMMARY OF ORE RESERVES AND RESOURCES

Total Ore Reserves (1)

As of December 31, 2020

OPERATION	MINERAL TYPE	CLASSIFICATION	TONNES (KWMT)	TONNES (KDMT)	%NI	%FE	CONTAINED NI (KT)
Rio Tuba	Saprolite	Proved and Probable	39,579	25,442	1.51	13.69	384.16
	Limonite	Proved and Probable	47,216	32,980	1.11	35.79	366.08

TOTAL MINERAL RESOURCES (1) (2) (3) (4)

As of December 31, 2020

OPERATION	MINERAL TYPE	CLASSIFICATION	TONNES (KW MT)	TONNES (KDMT)	%NI	%FE	CONTAINED NI (KT)
Rio Tuba	Saprolite [®]	Measured and Indicated	43,766	28,065	1.56	15.96	438
	Limonite [®]	Measured and Indicated	48,458	33,772	1.0	35.66	378
	Saprolite	Inferred	13,823	9,028	1.48	12.72	134
	Limonite	Inferred	2,444	1,705	1.17	33.51	20

Source: Nickel Asia Corporation 2020 Annual Report p. 107-108

Table 2. Total Ore Reserves of Rio Tuba Nickel Mining Corporation as reported in the NAC 2020 Annual Report

In case additional ore feed material is necessary and could not be obtained from RTNMC, CBNC can source their ore requirements from other NAC affiliated companies such as Taganito Mining Corporation, Hinatuan Mining Corporation, Cagdianao Mining Corporation and Dinapigue Mining Corporation.

2.3. Access/transportation

2.3.1. Road

The CBNC HPP project site is accessible from Manila via an hour's travel by commercial aircraft flight or an 18~ 22-hour commercial passenger ship voyage to Puerto Princesa City. From Puerto Princesa City, vans for hire and public utility buses ply the southward Provincial Road passing through the Municipalities of Aborlan, Narra, Ursula, Sofronio Española, Brooke's

Point, and then Bataraza. Land travel from Puerto Princesa City to Brgy. Rio Tuba, Bataraza takes approximately four to five (4~5) hours. At present, there are no other alternative road routes to Bataraza.

2.3.2. Air Access

The CBNC HPP Project site may also be accessed by plane from Manila or from Puerto Princesa City. RTNMC maintains an airport at the site (8°32'57" N, 117°26'10" E).

Chartered aircraft flying directly from Manila could reach the Rio Tuba Airport within 1 ~ 1.5 hours depending on the type and speed of the aircraft. Air travel between Puerto Princesa City Airport to Rio Tuba also takes approximately 1 ~ 1.5 hours.

The Rio Tuba Airport is limited only to small aircraft that could land in its 1.7 KM length. Recently, Runway lighting has been installed at the Rio Tuba airport and there is a pending application with the Civil Aviation Authority of the Philippines (CAAP) to allow night landing and take-offs in the future.



Figure 9. *Rio Tuba Airport*

2.3.3. Shipping

RTNMC operates a pier with a loading facility that is located at the mouth of Tuba River. Marine vessels that can utilize the facility include ore transport ships at 12,000-dwt capacity; 6,000-dwt coal barge; and 2,000-dwt slaked lime barge.



Figure 10. *Rio Tuba Pier*

For large equipment and bulk materials like coal, a 14m wide Causeway has been built near the Nagoya Beach Area. This causeway also has a jetty to accommodate ships and barges that have to bring in large equipment and other bulk materials.



Figure 11. *Jetty at Causeway*

For the unloading of bulk chemicals like Sulfuric Acid and Methanol, cargo ships moor at the dolphins at the end of the trestle and unload the cargo through the pipeline that runs through the trestle and causeway to the storage tanks at CBNC stockyard area.



Figure 12. *Dolphins at the end of the Trestle*

2.4. Overview of the HPAL Process

The production of mixed sulfide involves seven (7) stages. The process stages are discussed below:

Ore preparation

The process involves screening out from the feed ore particles with more than 2 mm size fraction. This is to remove the coarser grain size of low-grade Ni ore, which contains more magnesium oxide (MgO) than the finer grained ore. MgO require higher acid consumption at the autoclave. The -2 mm fraction is slurrified, thickened and stored at the HPAL feed storage tank.

High Pressure Acid Leach (HPAL)

The ore slurry is subjected to three (3) stages of pre-heating before being fed to the autoclave together with sulfuric acid and steam to selectively leach Ni and Co. After passing through three (3) stages of flashing or depressurization, the pressure-leached slurry from this process is sent to the Counter-Current Decanter.

Counter-Current Decanter

The depressurized pressure leach slurry is fed to the seven-stage Counter Current Decantation (CCD) circuit to recover the nickel and cobalt-rich solutions from the barren leached solids. The underflow from the last thickener is discharged to the tailings treatment area at maximum solid density and minimum nickel and cobalt liquor concentration. The pregnant solution or nickel and cobalt-liquor from the first CCD thickener overflow is sent to the neutralization circuit. The washed tailings from CCD 7 are neutralized by limestone and sent to the final neutralization stage.

Neutralization

The pregnant solution from the CCD area is sent to the neutralization tanks where limestone is added in the tanks to regulate pH at 3.0 to 4.0 to precipitate Fe and Al. The neutralized solution containing the reaction product gypsum is sent to the neutralization thickener together with the flocculants to improve settling rates and is separated into neutralized solution and neutralized gypsum slurry. The neutralized gypsum slurry is sent to CCD 3, while the neutralized solution is sent to for the Zinc Removal area.

Zinc Removal

The neutralization thickener overflow is pumped to the zinc removal tanks and contacted with hydrogen sulfide gas to precipitate Zn and Cu. The entire discharge stream from the zinc precipitation tanks is directed to the zinc-free liquor polishing filters. The zinc sulfide fines sluiced from the polishing filters are re-pulped and then pumped to the final neutralization stage.

Sulfurization

The neutralization solution stripped of its Zn impurities is reacted with hydrogen sulfide (H₂S) in the range of pH 2.5 and 3.0 to recover more than 99% of Ni and Co as Ni/Co mixed sulfide (MS). Impurities such as manganese (Mn) and magnesium (Mg) remain in the solution. The

sulfurized slurry is sent to the sulfide thickener and is separated into sulfurized solution and sulfide slurry. The sulfide slurry is washed and dehydrated by pressure filter and is separated as mixed sulfide slurry. The sulfide slurry is washed and dehydrated by pressure filter and is separated as mixed sulfide (MS) while the sulfurized solution is sent to the Barren Liquor Treatment. MS products are packed in flexible plastic containers.

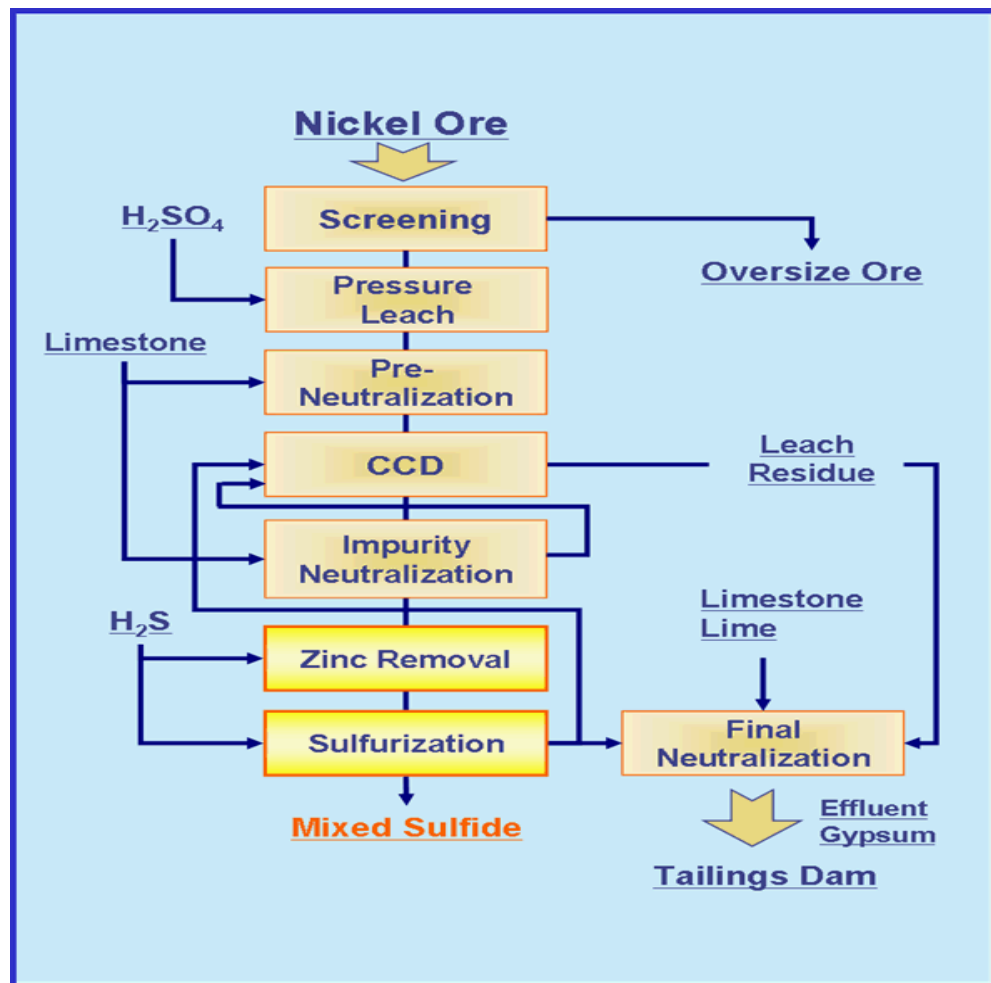


Figure 13. HPAL Simplified Flowsheet

2.5. Power Supply

Each HPP Line requires approximately 7.3 MW each or a total of 14.6 MW of electric power. The Town Site and other external facilities require about 300KW. The total requirement for power is 14.9MW.

For HPP Line 1, an 11 MW coal-fired boiler and turbine generator supports the operation. The boiler supplies 30 % of the steam generated for the HPAL process and the remaining 70% is used to drive the turbine for power generation. Three (3) substations distribute power to each of the load facilities in the Plant area. Two (2) 1.5 MW diesel generators provides back up power totaling 3.0 MW for the HPP 1 operations. At the pier site and port facilities, two (2) units of 0.072 MW diesel generators have been installed.

For HPP Line 2, another power plant that is a replica of Line 1's 11 MW coal-fired boiler and turbine generator has been installed. Three (3) 1.64 MW diesel generators or a total of 4.92 MW will provide back-up power. One of the three 1.62 MW diesel generators will be used to provide additional power to the townsite.

In case of maintenance or breakdowns, the power plants of either HPP Line 1 or HPP Line 2 could be used to support the operations of the other plant. A comfortable available power capacity has been incorporated in the design of the power plants.

The HPP's Power Plants are not connected to the Philippine National Power Grid.

2.6. Mining Equipment

CBNC HPP is not a mining company but is engaged in the Hydrometallurgical Processing of low-grade nickel ore through the High Pressure Acid Leach process. Mining equipment that are used to feed the low-grade nickel ore for the HPP's operation belong to RTNMC.

Lines 1 and 2 of the HPP each have the following major equipment for the production of Ni-Co Mixed Sulfide:

High-Pressure Acid Leach

Direct heat exchanger	3 sets, SAF 2507 or Ti clad CS
-----------------------	--------------------------------

Autoclave	1 set Ti clad, 25.23 m (tangent to tangent length), 29.89 m (overall inside Ti lining), 4.66 mm Ø
Flash tank	3 sets CS + ML (membrane-lined) and brick lined tank
CCD Thickener	27 m Ø x 7 sets

Purification

Neutralization tank	533 m3 capacity x 2 sets 7.7 m Ø
Neutralization thickener	21 m Ø
Zn removal tank height	167 m3 capacity x 3 sets, 4.8 m Ø, 9.1 m height
ZnS filter	Polishing filter x 2 sets

Sulfurization

Sulfurization tank	167 m3 capacity, 4.5 m Ø, 9.0 m height 276 m3 capacity x 1 set, 5.7 m Ø, 8.9 m height
MS filter	Larox filter x 2 sets
BL filter	Polishing filter x 2 sets

Barren Liquor Treatment

Final neutralization tanks	200 m3 capacity x 3 sets, 5.8 m Ø, 7.6 m height 287 m3 capacity x 1 set, 6.8 m □, 9.7 m height
----------------------------	---

2.7. Workforce Information

As of the end of October 2021 total employment for the two HPP Lines and including personnel at the Manila Office are 689 direct employees and 2,498 personnel from contractors.

Meanwhile, the organizational chart showing the Mine Environmental Protection and Enhancement Office (MEPEO) as of 01 April 2021 is shown in Table 3.

2.8. Development Schedule

Since CBNC is engaged in the hydrometallurgical processing of nickel ore and not in mining, instead of a development schedule, it had instead a Work Program from 2020-2024 that was submitted by CBNC to the MGB as part of the requirement of the approved Mineral Processing Permit (MPP) No. 006-2004-IVB (3rd Renewal) effective April 26, 2020. The 5-year Work Program that was submitted with the MPP renewal application is shown below and is for reference only.

Table 4. Production Schedule 2020-2024

	2020	2021	2022	2023	2024	TOTAL
Projected Output HPP 1 & HPP 2 (Ni DMT)	21,500	21,500	21,500	21,500	21,500	107,500
Ore Consumption (DMT)	2,060,000	2,060,000	2,060,000	2,060,000	2,060,000	10,300,000
Estimated Milling Cost (M-PHP)	11,200	11,200	11,200	11,200	11,200	56,000

The above schedule was submitted in anticipation of the approval and development of RTNMC's Bulanjao Expansion, that would assure a regular and stable supply of ore feed to the CBNC plant. However due to recent events related to the delay in the development of the Bulanjao Expansion and also the circumstances related to the CoVid-19 pandemic, CBNC's management is planning to reduce the 2022 target production output to 20,000 DMT.

CBNC's management is also considering the possibility of sourcing feed ore of approximately 500,000 WMT from other affiliate mines of Nickel Asia. This will supplement the any shortfall of suitable feed ore from RTNMC.

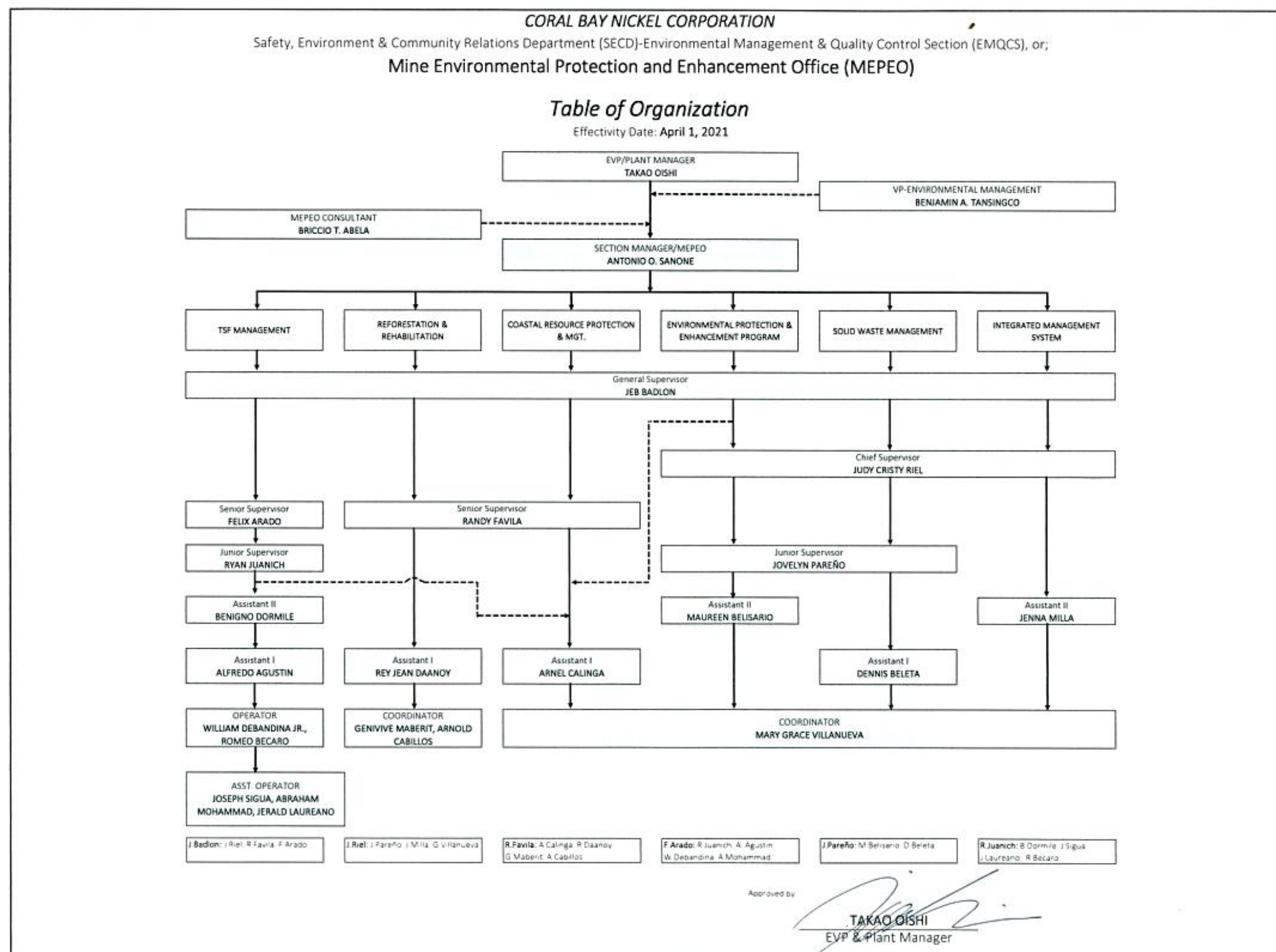


Table 5. Organizational chart showing the Mine Environmental Protection and Enhancement Office (MEPEO) of Coral bay Nickel Corporation as of 01 April 2021

However, please note that the above schedule may be revised if there are events that would warrant the management of CBNC to revise its projections.

2.8.1 Tailings Storage Facility No. 3 Construction



Figure 14. *TSF3 Area Boundaries on Photomosaic of the area from September 12, 2021 Topographic Survey*

The December 2018 Environmental Performance Report and Management Plan (EPRMP) of CBNC discussed the project phases of Tailings Dam No. 3 in details.

Basically, the implementation of the project is divided into four (4) major phases: pre-construction phase; construction phase; operational phase; and abandonment phase. The pre-construction and construction phase generally, will involve mobilization, demobilization, site clearing and development for the preparation of the tailings storage facility, and the stockyard construction. The operational phase shall start as soon as TSF3 have been completed and commissioned. As for the abandonment phase, the TSF3 is estimated to have an economic life of five (5) years. After which, the programmed closure activities as indicated in CBNC's Final Decommissioning Plan shall be implemented which is similar to the rehabilitation plan for TSF1.

The timeline of construction schedule of TSF No. 3 as of September 30, 2021 is shown below.

TSF-3 Construction Progress Report

As of September 30, 2021

Activities	2018				2019				2020				2021				2022				2023	2024
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1 → 4	Q1 → 4
ECC Amendment	Completed																					
Excavation Work																						
Filling Embankment Works																						
Tailings Slurry Piping Works																						
Tailings Slurry Discharge																						
Supernatant Water Piping Works																						
Completion																						©

Overall Progress	Physical	Expense	
		kUSD	kPhp (49Php/\$)
Target: →	47.97%	51,018	2,499,882
Actual: →	28.98%	8,375	410,384.80

Note 1) "Filling Embankment Works" in the table refers to filling work in the preparatory stage and embankment work for embankment.
Note 2) Embankment Work is still not started and awaiting MGB MIMAROPA instruction.

Figure 15. TSF3 Construction Progress as of September 30, 2021



Figure 16. *TSF3 Construction Site as of October 15, 2021*

The TSF3 construction activity was temporarily suspended as a result of MGB-MIMAROPA's order against SMCC dated 18 September 2020 that was received last 22 September 2020. On a letter dated 27 January 2021 from MGB MIMAROPA, SMCC was allowed to re-commence the construction of TSF3 if the activity would not involve the extraction of quarry materials within the MPSA area of RTNMC and/or the use of the mobile crushers. On the later weeks of March 2021, SMCC started foundation preparation only at the areas permitted by MGB MIMAROPA.

On June 30, 2021, MGB MIMAROPA issued the PTO for the two (2) mobile crushers.

On September 14, 2021, MGB MIMAROPA authorized the extraction of the suitable materials and the construction of TSF-3 embankment after CBNC complied with the requested joint topographic surveying activity as baseline data for TSF-3 construction area.

2.8.2. Pier Site Material Stockyard Expansion

In order to accommodate additional incoming raw materials, the material stockyard at the Pier Site has been expanded. The expansion area is now being utilized. This area is included in the PEZA Zone Proclamation No. 1352 dated August 3, 2007.



Figure 17. *Pier Site Storage Expansion as of October 15, 2021*

2.8.3. Application and Acquisition of Permits for the future TSF4

In 2022, CBNC intends to start the process of acquiring the necessary permits for the construction of TSF4. The preliminary design and location of the TSF4 is still being discussed with RTNMC.

3.0 Specific Strategy to Limit and Control the Impacts

3.1 Land resources

Activity/ Aspect	Description of Impact	Source	Areas Affected	Mitigating Measures	2022 BUDGET (Php)
Development of Areas by RTNMC for CBNC Operation	Barren areas can cause silted runoff that will pollute water bodies.	Areas opened due to mining operation of RTNMC (Host Mine) and related activities of the CBNC operation.	Surface, estuarine and marine water systems around the mine area and CBNC Project.	RTNMC Maintained 17 silt traps, 6 siltation ponds The whole site will be rehabilitated after utilization. Included in the FMRDP.	8,547,238
Clearing of areas for operation	Barren landscape due to clearing activities that can cause silted runoff, dust formation and wildlife dispersion.	HPP Project and Ancillary Facilities	CBNC Project Areas, Total 583 hectares. 418ha. Is active/utilized. 165 is currently planted for rehabilitation, as of 3Q 2021.	Reforestation and other Landscaping Activities. CBNC engages on Mangrove forest protection and enhancement.	
Closure of TSF-1 after storage capacity was reached last 2010.	After TSF-1 utilization, the area is barren that can cause dust from the dried silty tailings and silted runoff during rain. The barren area is not habitable by wildlife. Embankment is susceptible to erosion.	Exposed embankment	TSF-1 embankment and impounded tailings.	Revegetation and rehabilitation activities for TSF-1 was already conducted and continuously being enhanced.	

Completed TSF-2 construction / TSF-2 operation	Land Disturbance due to operation of Tailings Storage Facility # 2 (TSF-2).	Embankment areas and borrow areas where rock and clay materials for the TSF2 were sourced.	Tailings Storage Facility slopes and areas near the vicinity that were used as material borrow areas.	Stabilization and protection of dam slopes by grass planting. Revegetation and rehabilitation of areas disturbed for its construction in order to control siltation and restore to a visually appealing condition. The whole site will be rehabilitated after utilization. Included in the FMRDP.
On-going construction of TSF-3. Expected to finish on the year 2024.	Dust, silted runoff and noise from the construction site and activity can affect the environment.	Barren Area of the construction site.	The area where TSF-3 is constructed.	Speed limits, regular watering and planting of trees at the buffer zone to mitigate environmental impacts during construction. Site will be rehabilitated after utilization. Included in the FMRDP.

3.2 Water

Activity/ Aspect	Description of Impact	Source	Areas Affected	Mitigating Measures	2022 BUDGET (Php)
Management of Tailings and effluent.	Possible degradation of nearby river/marine waters.	Surface run-offs and effluent from the treated tailings of the HPP operation.	Rio Tuba, Ibelnan, and Ocayan rivers as well as the groundwater wells and coastal areas.	Operation of 17 silt traps and 6 siltation ponds to mitigate silted run-offs. Operation of water pollution control facilities (Final Neutralization Plant and TSF).	1,396,932,020
Management of coal ash.	Possible surface and ground water contamination due to coal ash storage/disposal.	Coal ash which is waste product of the operation of CBNC's Power Plants.	Water bodies in the vicinity of CBNC.	Coal Ash Pit prepared and maintained. Natural permeability of clay prevents any possible leaching of heavy metals to ground water.	

3.3 Noise

Activity/ Aspect	Description of Impact	Source	Areas Affected	Mitigating Measures	2022 BUDGET (Php)
Noise from equipment and transport vehicles	Increase in noise level.	Plant Equipment & Transport Vehicles	HPP Plant Site, Barangay Rio Tuba and	Maintain vegetated buffer zone around the HPP Site to diffuse any noise.	2,100

needed for HPP operation and activities could cause discomfort to workers and nearby residences.			Barangay Ocayan.	<p>Reduction of vehicle/equipment speed to reduce engine noise.</p> <p>Regular maintenance of equipment and transport vehicle to assure working condition of noise control devices.</p> <p>Require the use of PPEs to employees and contractors who work at areas with high noise levels.</p>	
--	--	--	------------------	---	--

3.4 Air Quality

Activity/ Aspect	Description of Impact	Source	Areas Affected	Mitigating Measures	2022 BUDGET (Php)
Management of Air Pollution Sources and Control Facilities.	Degradation of ambient air quality.	Coal Fired Power Plant Operation. Production Process Operation.	Vicinity of Rio Tuba, Taratak, Ocayan, Iwahig and Sandoval in the Municipality of Bataraza	<p>Operation of HPP's air pollution control facilities.</p> <p>Annual conduct of Cylinder Gas Audit (CGA) to validate accuracy of the installed Continuous Emissions Monitoring System (CEMS) to determine air quality of emitted air to the Air Pollution Control Facilities (APSCF).</p>	366,515,913

				Stack emission sampling of air pollution source and control facilities.	
--	--	--	--	---	--

3.5 Conservation values

3.5.1 Nature issues

Activity/ Aspect	Description of Impact	Source	Areas Affected	Mitigating Measures	2022 BUDGET (Php)
The HPP operation and related activities	<p>Possible degradation of the Coastal Resources (Mangroves, Corals, Seagrasses and Fishes).</p> <p>The operation may cause changes in the population and conditions of the plants, corals, sea grass and other marine habitats.</p>	Various materials and equipment used in the processing plant and ancillary areas.	Rio Tuba, Nagoya beach, Ocayan rivers and nearby coastal areas.	<p>Operation of 17 silt traps, 6 siltation ponds.</p> <p>Operation of HPP's water treatment facilities</p> <p>Monitoring the effectivity of installed Coral garden to enhance coral population.</p> <p>Operation and maintenance of Water Bio-indicator projects</p> <p>Fish Pen at Causeway and sea grass enhancement at causeway as Marine Water Bio-Indicator</p> <p>Maintenance of Live Fish at Lower Kinurong Siltation Pond as a Fresh Water Bio-Indicator</p>	6,544,389

The HPP operation and related activities	<p>Degradation of Flora and dispersion of Fauna.</p> <p>The operation may cause changes in the population of wildlife and natural vegetation.</p>	Various equipment used in the processing plant and ancillary areas.	Vicinity of Rio Tuba, Taratak, Ocayan, Iwahig and Sandoval, Bataraza	<p>Operation of HPP's air pollution control facilities</p> <p>Rehabilitation and reforestation of disturbed areas in order to restore lost faunal habitat. Native trees are planted in order to enhance biodiversity</p> <p>Establish buffer zone around CBNC perimeter to defuse noise causing disturbance to wildlife.</p> <p>Monitoring of Bee Colony found living inside HPP as Air Bio Indicator.</p>	
Grounding of barge loaded with coal	Possible degradation of marine ecosystem	Accidental grounding of coal barge.	Vicinity of Ameril and Ursula Islands	<p>Regular monitoring of Ameril and Ursula Islands to allow the natural regeneration of coral reefs.</p> <p>Provide logistical support to all patrol activities of PAMB.</p>	

3.5.2 Heritage and Cultural Values

Activity/ Aspect	Description of Impact	Sources	Areas Affected	Mitigating Measures	2022 Budget (in Php)
HPP Operation	Change in the demographics of Brgy. Rio Tuba and the municipality of Bataraza. The operation of HPP generate jobs and many people coming from other provinces migrate. The migration has direct effects on the population growth of the Barangay	Employment at CBNC	Barangay Rio Tuba and its neighboring barangays	IP communities are given employment at CBNC. Of the 616 CBNC employees, 372 or 60% are residents of the Municipality of Bataraza. Another 158 employees (26%) are from the other municipalities of Palawan.	Under SDMP

3.6 Environmental Research

Activity/ Aspect	Description of Impact	Source	Areas Affected	Mitigating Measures	2022 BUDGET (Php)
Research for Environmental Mitigation and Rehabilitation Activities.	Improved effectivity and establishment of new technologies and best practices.	Environmental Protection and Enhancement Activities	Scope of CBNC AEPEP	Conduct research to improve the AEPEP	2,209,200

3.7 Others(Administration, Compliance Management and MEPEO Operation)

Activity/ Aspect	Description of Impact	Source	Areas Affected	Mitigating Measures	2022 Budget (in Php)
Administration, Compliance Management and MEPEO Operation	Possible issuance of penalty, NOV or stoppage of operation	Local and National government Rules Regulations, International Guidelines and ISO Standard for Environmental Management.	Entire scope of CBNC MEPEO	PDCA of Environmental Management System in Accordance to Local Regulations, International Guidelines and ISO Standard for Environmental Management.	17,583,359

4.0 Strategy for

4.1 Monitoring

Sources of Impact, Mitigating Measure	Environmental Monitoring Plan				
	Parameters	Purpose	Station	Method	Frequency
Instabilities along the roads, channels, and slopes of the Project	Subsidence, cracks, ponding or overflows, scouring, extent of slide materials at the toe	To ensure stability of structures	Project area wide	Visual assessment and survey	Weekly
Ground clearings by the Project	Areas cleared or disturbed	To minimize disturbed areas	Project area wide	Area measurement	During clearing
Solid waste	Generated solid waste characterized into recyclables, biodegradables, and residual; individual tonnages measured	To ensure effectiveness of solid waste management	Project area wide	Characterization of solid waste and tonnage measurement	Daily, consolidated into weekly
	Volume of compost generated	To ensure effectiveness of solid waste management	Nursery	Volume measurement	Monthly

Sources of Impact, Mitigating Measure	Environmental Monitoring Plan				
	Parameters	Purpose	Station	Method	Frequency
Project revegetation activities	Areas planted along buffer zones and other areas	To ensure effectiveness of buffer zone's purpose of minimizing impact	Project area wide	Area measurement and count of seedlings planted	Quarterly
Receiving water bodies (including control stations)					
East Ibelnan Creek (Control)	<ul style="list-style-type: none"> • BOD, Cl⁻, color, DO, fec. col., NO₃-N, pH, PO₄-P, temperature, TSS • COD, SO₄²⁻, O&G, NH₃-N, tot. col. • Mn, As, Cd, Pb, Ni, Se, Fe, Cu, Zn, Hg, B, Cr 	To determine influent water quality	WQ11	Azide modification (dilution technique) - BOD Standard Method (SM) 4500 Cl B (Argentometric method) – Cl ⁻ Visual comparison method (Platinum cobalt scale) – Color Membrane electrode (DO meter)	Monthly
Pinamsan Creek and Tuba River – Sanitary landfill, HPP, power plant, TSF1, TSF2, TSF3; RTNMC; UMPI	<ul style="list-style-type: none"> • BOD, Cl⁻, color, DO, fec. col., NO₃-N, pH, PO₄-P, temperature, TSS • COD, SO₄²⁻, O&G, NH₃-N, tot. col. • Mn, As, Cd, Pb, Ni, Se, Fe, Cu, Zn, Hg, B, Cr 	To monitor water quality of surrounding water bodies and effectiveness of water pollution control programs	WQ9, WQ8, WQ12	Multiple-tube fermentation technique – Fec. and tot. col. Brucine method for saline waters; specific ion electrode meter for freshwater – NO ₃ -N Hydrogen ion selective electrode - pH Stannous chloride method – PO ₄ -P Thermistor sensor – Temp.	Monthly
				Gravimetric method - TSS SM2540 C (Gravimetric) - TDS Atomic absorption spectrophotometer (AAS) for heavy metals in non-saline water	Monthly
Ocayan River (Control) - Community	<ul style="list-style-type: none"> • BOD, Cl⁻, color, DO, fec. col., NO₃-N, pH, PO₄-P, temperature, TSS Mn, As, Cd, Pb, Ni, COD, Se, Fe, Cu, Zn, Hg 	To monitor water quality of surrounding water body	WQ2, WQ13	Inductively coupled plasma mass spectrometry (ICP-MS) with collision cells for	Monthly
Monitoring wells – TSF1, TSF2, TSF3	pH, temperature, TSS, Mn, As, Cd, Pb, Ni, COD, Se, Fe, Cu, Zn, Hg	To monitor ground water quality	WQ3, WQ6		Monthly

Sources of Impact, Mitigating Measure	Environmental Monitoring Plan				
	Parameters	Purpose	Station	Method	Frequency
Coral Bay (Control) - Community	<ul style="list-style-type: none"> BOD, Cl⁻, color, DO, fec. col., NO₃-N, pH, PO₄-P, temperature, TSS Mn, As, Cd, Pb, Ni, COD, Se, Fe, Cu, Zn, Hg 	To monitor water quality of surrounding water bodies and effectiveness of water pollution control programs	WQ15, WQ16	heavy metals in saline water SM 5220 B (Open Reflux Method) – COD SM4500-SO ₄ E (Turbidimetric) – SO ₄ Gravimetric method (Petroleum ether extraction) – O&G	Monthly
Coral Bay – Supernatant discharge point, causeway, trestle, community	<ul style="list-style-type: none"> BOD, Cl⁻, color, DO, fec. col., NO₃-N, pH, PO₄-P, temperature, TSS Mn, As, Cd, Pb, Ni, COD, Se, Fe, Cu, Zn, Hg 	To monitor water quality of the effluent's receiving water body	WQ18, WQ19, WQ20, WQ21, WQ22, WQ23, WQ24	SM4500-NH ₃ F (Phenate method) – NH ₃ -N	Monthly
Ameril Island - Control	<ul style="list-style-type: none"> BOD, Cl⁻, color, DO, fec. col., NO₃-N, pH, PO₄-P, temperature, TSS Mn, As, Cd, Pb, Ni, COD, Se, Fe, Cu, Zn, Hg 	To monitor water quality of surrounding water body	WQ25		Monthly
Sanitary landfill	pH, Cl, color, NO ₃ -N, PO ₄ -P, temperature, TSS, COD, SO ₄ ²⁻ , O&G, NH ₃ -N, tot. col.	To monitor water quality of landfill's leachate	WQ1	AAS for heavy metals in non-saline water ICP-MS with collision cells for heavy metals in saline water SM 5220 B (Open Reflux Method) – COD	Monthly
HPP, power plant	<ul style="list-style-type: none"> pH, temperature, TSS, Mn, As, Cd, Pb, Ni, COD, Se, Fe, Cu, Zn, Hg Cl, PO₄-P, SO₄²⁻, B, Cr, O&G 	To monitor water quality of water used for the process	WQ5	SM4500-SO ₄ E (Turbidimetric) – SO ₄ Gravimetric method (Petroleum ether extraction) – O&G	Monthly

Sources of Impact, Mitigating Measure	Environmental Monitoring Plan				
	Parameters	Purpose	Station	Method	Frequency
Sanitary landfill, TSF3, HPP, power plant	<ul style="list-style-type: none"> pH, Cl, color, NO₃-N, PO₄-P, temperature, TSS, COD, SO₄²⁻, O&G, NH₃-N, Tot. col. Mn, As, Cd, Pb, Ni, Se, Fe, Cu, Zn, Hg, B, Cr, O&G 	To monitor water quality and effectiveness of water pollution control programs	WQ7	SM4500-NH ₃ F (Phenate method) – NH ₃ -N	Monthly
TSF1, TSF2	pH, temperature, TSS, Mn, As, Cd, Pb, Ni, COD, Se, Fe, Cu, Zn, Hg	To monitor effectiveness of water pollution control facilities	WQ10		Monthly
Coal stockyard	Color, pH, TSS, NO ₃ -N, SO ₄ , Mn, Fe, As, Cd, Hg, Pb	To monitor water quality of Coal Silt Pond as pollution control facility	WQ14		Monthly
TSF supernatant discharge	pH, temperature, TSS, Mn, As, Cd, Pb, Ni, COD, Se, Fe, Cu, Zn, Hg	To monitor effluent water quality and the effectiveness of water pollution control program	WQ17		
Abstraction of the Project's water requirements from East Ibelnan Creek	Water flow and volume	To determine the volume used for CBNC's Process	WQ11	Flowmeter	Daily
Ambient air quality and noise					
HPP, power plant, coal ash, borrow area, TSF3 dam build-up, sanitary landfill, unsuitable materials disposal, transport, and hauling; RTNMC's surface mine,	TSP, PM10	To determine the effectiveness of Air Pollution Control Program for Particulate Matter	AQ1, AQ2, AQ3, AQ4, AQ5, AQ6, AQ11, AQ12, AQ13, AQ14, AQ15	United States Environmental Protection Authority (USEPA) 40 CFR, Part 50 Appendix B (Gravimetric) – TSP	Monthly (1 hour) for all stations Annually (24 hours) for AQ2, AQ6, AQ14
	SO ₂ , NO ₂	To determine the effectiveness of Air Pollution Control Program for Sox and NOx	AQ2, AQ6, AQ14	PM-10 USEPA 40 CFR, Part 50, Appendix J (Gravimetric) Gas Bubbler and Pararosaniline Method (West and	Monthly (1 hour) Annually (24 hours)

Sources of Impact, Mitigating Measure	Environmental Monitoring Plan				
	Parameters	Purpose	Station	Method	Frequency
transport, hauling, stockpiling, ore loading, and generator sets; UMPI; community	Acid mist	To determine the effectiveness of Air Pollution Control Program for Acid Mist	AQ7, AQ8, AQ9, AQ10	Gaeke Method), USEPA 40CFR, Part 50, Appendix A – SO ₂ Gas Bubbler Griess-Saltzman, USEPA 40CFR, Part 50, Appendix F – NO ₂	Monthly (1 hour)
	H ₂ S, H ₂ , CO ₂	To determine the effectiveness of Air Pollution Control Program for H ₂ S, H ₂ , CO ₂	Gas detectors at strategic locations inside the HPP complex	SM 4500-S ² (Distillation, Methylene Blue Flow Injection Analysis Method) – H ₂ S	Continuing
	Noise	To determine the effectiveness of Noise Reduction and Control Program	N1, N2, N3, N4, N5, N6, N7, N8, N9, N10	Titration – H ₂ SO ₄ Noise meter - Noise	Monthly
Power plant stack	TSP, PM-10, SO ₂ , CO, CO ₂ , As, Cd, Cr, Cu, Pb, Hg	To determine the effectivity of Air Pollution Control for the Power Plant's Emission	EP Line 1, EP Line 2	CEMS	Continuing
MS and H ₂ S plant	H ₂ S	To determine the effectivity of Air Pollution Control for the MS and H ₂ S Plant	Gas scrubber Line 1, GS Line 2, GS Backup	CEMS	Continuing
HPAL	Condensed steam pH	To determine the scrubber's effectiveness	Venturi-type scrubber Line 1, VTS Line 2	CEMS	Continuing
Dust, fumes, emissions including noise of the HPP and power plant; dust, noise, and emissions from vehicles of CBNC, RTNMC, contractors, UMPI, and community; natural phenomena and variations	Flora Species composition, importance value, diversity, evenness, endemism, conservation status, dominant tree growth performance, stand density, canopy cover and height, ground/litter/shrub cover, stags, stable soil surface <u>Wildlife</u> <u>vertebrates</u>	To determine the effectiveness of CBNC's Environmental Management Programs to prevent adverse impact to the surrounding flora and fauna		Flora Sample plots, sub-plots, transects, LFA soil and vegetation transects <u>Wildlife</u> <u>vertebrates</u> Transects and mist nets – birds Mist nets – volant mammals Live and snap traps, tracks and signs analyses – non-volant mammals Habitat search, visual and auditory cues, capture methods –	Flora Annually <u>Wildlife</u> <u>vertebrates</u> Annually

Sources of Impact, Mitigating Measure	Environmental Monitoring Plan				
	Parameters	Purpose	Station	Method	Frequency
	Species composition, richness, population density, presence or absence of sensitive species, diversity, evenness, endemism, conservation status			amphibians and reptiles	
CBNC's and RTNMC's coastal operations and community	Coral reefs – Composition and relative cover of hard corals and other benthic features including sediment accumulation and other coral stressors	To determine the effectiveness of CBNC's Environmental Management Programs to prevent adverse impact to the surrounding Coastal Areas Coral Reefs	Mooring dolphin reef, Small sandbar reef, Discharge area, Rio Tuba MPA, Maranto Pt., Ameril Island	Intensive photographic surveys of benthic organisms and features on fixed transects	Annually – Same month as that for freshwater biology
	Reef fishes – Species composition, structure, and biomass	To determine the effectiveness of CBNC's Environmental Management Programs to prevent adverse impact to the surrounding Coastal Areas' Fish Abundance	Causeway, Mooring dolphin reef, Small sandbar reef, Discharge area, Rio Tuba MPA, Maranto Pt., Ameril Island	Fish visual census	
	Plankton - Taxa listing, individual counts, mean densities, biodiversity, evenness, dominance	To determine the effectiveness of CBNC's Environmental Management Programs to prevent adverse impact to the surrounding Coastal Areas' Planktons	Lower Kinurong, Ocayan River, Causeway, Mooring dolphin reef, Discharge area, Tagdalungon	Sample collection using plankton net, placement of subsample in a cell counter and microscopic examination	
	Seagrass – Species composition, percentage	To determine the effectiveness of CBNC's	Tagdalungon, Rio Tuba MPA, Small	Regular quadrat sampling along replicate transects	

Sources of Impact, Mitigating Measure	Environmental Monitoring Plan				
	Parameters	Purpose	Station	Method	Frequency
	frequency and cover, and density	Environmental Management Programs to prevent adverse impact to the surrounding Coastal Areas' Sea Grass Meadows	sandbar reef, Ocayan	with photo-documentation	
	Mangroves – Species composition, community structure, plant biomass	To determine the effectiveness of CBNC's Environmental Management Programs in preserving or enhancing mangroves	Tagdalungon 1, Tagdalungon 2	Transect line plots with photo-documentation	
CBNC Expansion Project	Employment of residents of Bataraza	To determine the effect of CBNC's operation to the employment status	22 barangays	Measurement of proportion of directly employed residents to total direct employment of the Project Number of training programs and number of trainees against number of trainees employed	Annual
	Community programs - SDMP	To determine the community's development as a result of the SDMP's programs	22 barangays and province of Palawan	Measurement of number of alternative means of livelihood created and number of people actually benefited and incomes realized	Annual

4.2 Research

Other items for research under the SDMP's MTG program will be proposed and submitted separately to MGB MIMAROPA. For Research on the improvement of CBNC's Environmental Protection and Enhancement Programs, below items will be conducted.

- a. Conduct an audit and review of CBNC's TSF facilities in order to comply with the International Council of Mining and Metals (ICMM) Guidelines on Global Industry Standard in Tailings Management.
- b. Conduct study on bamboo growth performance on tailings soil.
- c. Conduct study on sea grass and sea weeds plant survival at the CBNC Pier Site Causeway.
- d. Conduct study on fish survival and propagation at the Lower Kinurong Siltation Pond.

4.3 Reporting

Based on the conditions of CBNC's MPP and as required by Section 270, Chapter XXIX, of the DAO No. 2010-21, the following reports shall be submitted to MGB and MGB4B:

- a. MGB Form 29-05 – Monthly Report on Production, Sales, Inventory of Metallic Minerals and Employment Data - Nickel (Mixed Sulfide)
- b. MGB Form 29-16 – Integrated Annual Report
- c. Quarterly Energy Consumption Report (MGB Form 29-18)
- d. Monthly General Accident Report (MGB Form 15-5)
- e. Semiannual Report on Mine Waste and Mill Tailings Produced, Contained, and/or Utilized (MGB Form 18-1)

Other reports as required by MGB and MGB4B may be submitted upon written advise by the said offices.

Reports for submission to EMB and copy-furnished to MGB are as follows:

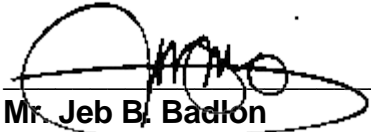
- a. Quarterly Self-Monitoring Report (SMR)
- b. Semi-Annual Compliance Monitoring Report (CMR)
- c. Reports for special studies:
 - i. Annual Flora & Fauna Monitoring Report
 - ii. Annual Coastal Resources Monitoring Report

5.0 Total Cost of AEPEP


2022 AEPEP Activities	Purpose	2022 BUDGET, Php
1. Land Resource	Rehabilitation and Reforestation of Project Areas	8,540,270
2. Water Resource and Quality	Protection of Waters	1,396,932,020
3. Noise	Mitigation of Noise from Plant Operation	2,100
4. Air Quality	Protection of Air	366,832,526
5. Conservation Values	Enhancement and Monitoring of Environmental Program Performance	6,544,389
6. Environmental Research	Activities to Improve Environmental Programs	2,209,200
7. Others (Administration, Compliance Management and MEPEO Operation)	Administration, Compliance Management and MEPEO Operation	17,861,359
GRAND TOTAL		1,798,921,864

Please see attachment for the details.

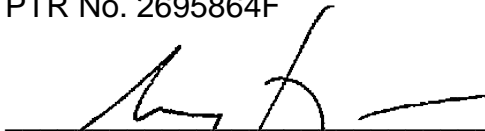
6.0 Name and Signature of Applicant or Person(s) preparing the AEPEP (Specify PRC and PTR numbers)



Mr. Jeb B. Badlon
Pollution Control Officer
PCO COA No. 2017-R4B-01425

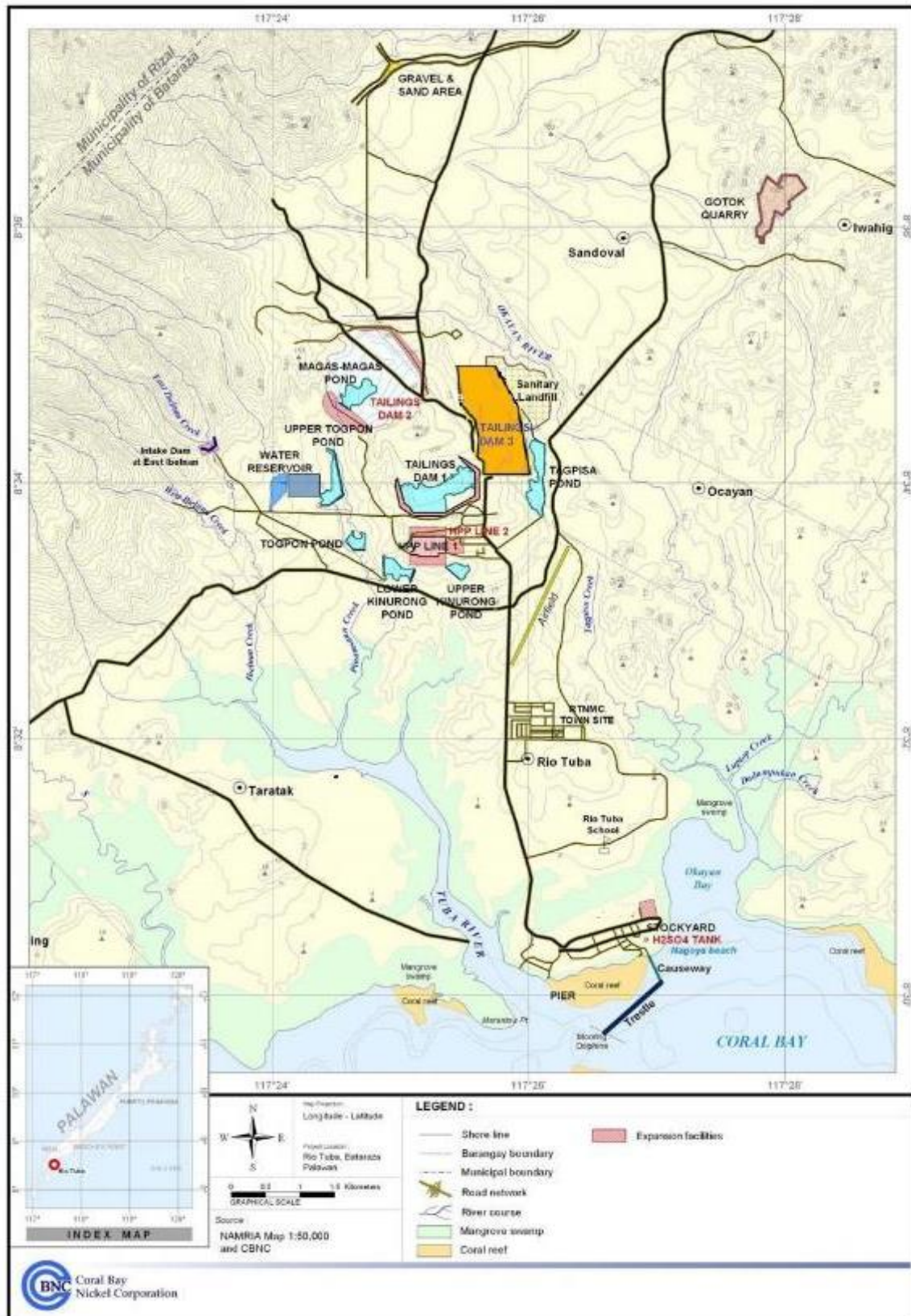


Engr. Antonio O. Sanone
MEPEO
Metallurgical Engineer
PRC Met. E. - 0000333
PTR No. 2695864F



Engr. Benjamin Armand A. Tansingco
VP- Environmental Management
Metallurgical Engineer
PRC Met. E. - 291
PTR No. A-4768140 Taguig City

7.0 Plan(s)/Map(s) of the Proposed Operations showing location of area(s) subject of operations, access to property, location of works and roads, water courses, working areas, camps and other surface facilities.



CORAL BAY NICKEL CORPORATION

MEPEO or Environmental Management and Quality Control Section (EMQCS)

2022 Annual Environmental Protection and Enhancement Program

2022 Target	Nickel, DMT	20,000
	Cobalt, DMT	1,605
	Operating Days	326

39 Days of Maintenance Shutdown

2022 AEPEP Activities	Unit of Work Measure (UWM)	Annual Physical / Financial Target, Php	Quarterly Physical / Financial Target				REMARKS
	Unit Cost, Php		1stQ	2ndQ	3rdQ	4thQ	
1. Land Resource							
a. Progressive Rehabilitation							
a.1 New Area established	Area planted (hectares)	5			3	2	
	239,555	1,197,774			718,665	479,110	
	No. of seedlings planted	13,332			13,332		
	Grass planted (in hectares)	2				2	
a.2 Maintenance of established areas	Total Area maintained (hectares)	167	167	167	167	167	Replanting, enrichment, protestation and maintenance especially during dry season of the total 167 has.
	27,885	4,656,838	1,164,210	1,164,210	1,164,210	1,164,210	
	No. of seedlings to be replanted	4,444		2,222	2,222		Only 10 hectares out of the 167 hectares old plantation is estimated to be replanted for mortality.
	No. of seedling planted for enhancement	25,556			12,778	12,778	30,000 trees to enrich the TSF-1 and TSF-2 planted areas. This is in order to achieve tree density target of 1.5x1m spacing in y2025.
b. Mangrove reforestation							
b.1 New Area established	Area planted (hectares)	15			15		
	12,500	187,500			187,500		
	No. of seedlings planted	37,500			37,500		
b.2 Maintenance of established areas	Area maintained (hectares)	51	51	51	51	51	51 has. Of mangrove area was planted (2015-2021)
	-	-	-	-	-	-	No cost since Maintenance is part of the service agreement between CBNC and Community Based Service provider. Before we engage with them for this year's planting, we inspect the previously planted areas and if the mangroves are well growing and the mortality were being replanted, that is the time we agree to still continue their services of planting and mangrove protection for another area this year. This strategy is effective in successfully bringing out the commitment of protecting the mangroves from the community based planters.
	Maintenance of mangrove planted	100%	100%	100%	100%	100%	No. of mangrove propagules planted to the 51 hectares is 173,800. (2015-2018, spacing 1x1m, 10,000 plant density/ha. (2019-2021, spacing 2.5x2.5m, 2,500 plant density/ha.
c. Bamboo Plantation							
c.1 New Area established	Area planted (hectares)	20			20		
	15,580	311,600			311,600		
	No. of propagules planted	4,080			4,080		204 Culms per Hectare
c.2 Maintenance of established areas	Area maintained (hectares)	30	30	30	30	30	
	27,885	836,558	209,139	209,139	209,139	209,139	
	No. of propagules maintained	6,120	6,120	6,120	6,120	6,120	
d. Seedlings production	No. of seedlings produced	90,000	30,000	30,000	15,000	15,000	This seedling will be produced in 2022 for the 2023 planting to new area for rehab, enrichment, donation and ornamental plants.
	15	1,350,000	450,000	450,000	225,000	225,000	
SUB Total		8,540,270	1,823,349	1,823,349	2,816,114	2,077,459	

2022 AEPEP Activities	Unit of Work Measure (UWM)	Annual Physical / Financial Target, Php	Quarterly Physical / Financial Target				REMARKS
	Unit Cost, Php		1stQ	2ndQ	3rdQ	4thQ	
2. Water Resource and Quality							
a. Water Pollution Control Facilities							
a.1 Operation of Final-Neutralization Plant	No. of fully operational final neutralization plant	2	2	2	2	2	2 & 4 Q has 22 days maintenance shutdown
	No. of days operational final neutralization plant	365	90	91	92	92	
	3,727,008	1,360,357,747	335,430,677	339,157,685	342,884,692	342,884,692	
a.2 Operation of Tailings Storage Facilities (TSF)	No. of fully operational TSF	1	1	1	1	1	TSF must be fully operational throughout the year.
	No. of days of fully operational TSF	365	90	91	92	92	
	54,809	20,005,191	4,932,787	4,987,595	5,042,404	5,042,404	
b. Water Sampling							
b.1 Water Quality Monitoring - (Effluent) and Water Bodies	No. of submissions to laboratory for analysis	12	3	3	3	3	
	26,406	316,876	79,219	79,219	79,219	79,219	
	No. of lots of sampling materials/equipment utilized	12	3	3	3	3	
	6,192	74,300	18,575	18,575	18,575	18,575	
	No. of sampling conducted	264	66	66	66	66	Sampling conducted per month to 22 stations
	No. of parameters measured per sample	16	16	16	16	16	Parameters: As, Cd, COD, Cu, Fe, Pb, Mn, Hg, Ni, O&G, pH, Se, Temp. TSS, Zn, Cr6+.
b.2 Water Quality Monitoring - Ground Water Quality Monitoring	No. of sampling conducted	24	6	6	6	6	3 water wells as ground water sampling station per month
	No. of parameters measured per sample	14	14	14	14	4	pH, Temp., TSS, Mn, As, Cd,Pb,Ni, COD, Se, Fe, Cu, Zn, Hg
c. Solid Waste Management							
c.1 Non-Hazardous Waste Management	No. of days of wastes collection	313	77	78	79	79	
	41,102	12,865,000	3,164,872	3,205,974	3,247,077	3,247,077	
	Amount of wastes generated (Tons)	2,600	650	650	650	650	Base on historical data. Actual must be less than the target.
c.2 Hazardous Waste Management	No. of Transport and Treatment	3	1		1	1	
	878,333	2,635,000	878,333		878,333	878,333	
	Amount of wastes generated (Tons)	100	25	25	25	25	Base on historical data. Actual must be less than the target.
d. Coal ash sampling & analysis	No. of analysis conducted	2	1		1		
	133,153	266,306	133,153		133,153		
	No. of sampling conducted	4	2		2		2 stations per sampling (Line 1 and 2 coal ash)
	No. of parameters measured per sample	8	8		8		Parameters: Pb, As, Hg, Cd, Cr, Ba, Se, F
e. Fish tissue & sediment sampling & analysis	No. of analysis conducted	2	1		1		
	205,800	411,600	205,800		205,800		
	No. of sampling conducted	34	17		17		17 stations per sampling

2022 AEPEP Activities	Unit of Work Measure (UWM)	Annual Physical / Financial Target, Php	Quarterly Physical / Financial Target				REMARKS
	Unit Cost, Php		1stQ	2ndQ	3rdQ	4thQ	
	No. of parameters measured per sample	7	7		7		Parameters: As, Cr, Co, Ni, Pb, Hg and Cd
SUB Total		1,396,932,020	344,843,417	347,449,049	352,489,254	352,150,301	
3. Noise							
a. Noise Monitoring Activities	No. of monitoring conducted	12	3	3	3	3	
	175	2,100	525	525	525	525	
	No. of sampling stations	84	21	21	21	21	
SUB Total		2,100	525	525	525	525	
4. Air Quality							
a. Air Pollution Control Facilities	no. of fully operational Air Pollution Control Facilities plant	4	4	4	4	4	
	no. of days operational final neutralization plant	326	87	75	88	76	
	1,118,327	364,574,655	96,789,732	83,884,434	98,940,614	84,959,875	
b. Air Quality Monitoring - TSP/PM 10 Air Sampling (1hour), NOx and Sox (1hour), Acid Mist Inside Plantsite (1hour)	Monthly Lab. Analysis Cost	12	3	3	3	3	
	5,864	70,364	17,591	17,591	17,591	17,591	
	Monthly Materials/Equipment Cost	12	3	3	3	3	
	42,957	515,479	128,870	128,870	128,870	128,870	
	No. of sampling conducted	204	51	51	51	51	17 Stations per Month
	No. of parameters measured per sample	1	1	1	1	1	1 parameter per station. Some for TSP/PM10 and Acid Mist, Nox and Sox for others
c. Stack Sampling	No. of Activity	1			1		
	1,355,415	1,355,415			1,355,415		
	No. of sampling conducted	13		13			
	No. of parameters measured per sample	3		39			
d. Cylinder Gas Audit (CGA) for Continuous Emission Monitoring System (CEMS)	No. of CGA conducted	1			1		Operational Expense
		316,613			316,613		Cost for the gas standard. 6,332.25 USD = Php 316,612.50
	No. of sampling conducted	7			7		5 Scrubbers and 2 Boiler CEMS
	No. of parameters measured per sample	3			3		Nox, Sox, CO for Boiler CEMS and H2S only for MS Scrubbers
SUB Total		366,832,526	96,936,192	84,030,895	100,759,103	85,106,336	
5. Conservation Values							
a. ICRMP (Partner with Bataraza LGU)	No.of project implemented	1	1	1	1	1	
		3,550,000	412,500	1,155,357	1,155,357	826,786	
	Progress report prepared	4	1	1	1	1	
a.1 Development of CRMP Plan	No. of Activity	1	1				

2022 AEPEP Activities	Unit of Work Measure (UWM)	Annual Physical / Financial Target, Php	Quarterly Physical / Financial Target				REMARKS
	Unit Cost, Php		1stQ	2ndQ	3rdQ	4thQ	
	200,000	200,000	200,000				
a.2 Biodiversity Project	Project implemented	7		3	3	1	
	171,428.57	1,200,000		514,286	514,286	171,429	
a.3 IEC Activity	Quarterly Cost	4	1	1	1	1	
	87,500	350,000	87,500	87,500	87,500	87,500	
a.4 Law Enforcement Support	Quarterly Cost	4	1	1	1	1	
	125,000	500,000	125,000	125,000	125,000	125,000	
a.5 Livelihood Project	Cost per Project	7		3	3	1	
	142,857	1,000,000		428,571	428,571	142,857	
a.6 Monitoring and Evaluation	Cost per Activity	2				2	
	150,000	300,000				300,000	
b. Carbon Sink Program (Mangrove Forest Protection & Enhancement)	MOA signed	1		1			
	40,000	40,000		40,000			
c. Maintenance of Bio Indicators	No.of project implemented	1	1	1	1	1	
		367,800	91,950	91,950	91,950	91,950	
	Progress report prepared	4	1	1	1	1	
c.1 Fishpen at Causeway	Monthly Cost	12	3	3	3	3	
	12,250	147,000	36,750	36,750	36,750	36,750	
c.2 Fishpen at L. Kinurong Siltation Pond	Monthly Cost	12	3	3	3	3	
	6,150	73,800	18,450	18,450	18,450	18,450	
c.3 Culture of Butterfly at TSF-1	Monthly Cost	12	3	3	3	3	
	3,267	39,200	9,800	9,800	9,800	9,800	
c.4 Seaweeds/grass meadow enhance	Monthly Cost	12	3	3	3	3	Operational Expense
	-						
c.5 Beehive colony recording inside Pla	Monthly Cost	12	3	3	3	3	Operational Expense
	-						
c.6 TSF-1 Eco Trail (Goat Farm, Poultry, Tar	Monthly Cost	12	3	3	3	3	
	8,983	107,800	26,950	26,950	26,950	26,950	
d. CRA	No. of Activity	1		1			
	239,940	239,940		239,940			
e. Fauna	No. of Activity	1		1			
	309,441	309,441		309,441			
f. Flora	No. of Activity	1		1			
	265,100	265,100		265,100			
g. Coastal Resources Protection and Enhancement of Ameril and Ursula Islands	No. of Activity	4	1	1	1	1	
	290,277	1,161,108	290,277	290,277	290,277	290,277	

2022 AEPEP Activities	Unit of Work Measure (UWM)	Annual Physical / Financial Target, Php	Quarterly Physical / Financial Target				REMARKS
	Unit Cost, Php		1stQ	2ndQ	3rdQ	4thQ	
h. Piersite Nursery (Mangrove and other Trees)	No. of nursery maintained	1	1	1	1	1	
	18,500	74,000	18,500	18,500	18,500	18,500	
i. Support to National and International Environmental Activities							
i.1 Solid Waste Month (Jan)	No. of Activity	1	1				
	101,000	101,000	101,000				
i.2 World Wildlife Day (Mar)	No. of Activity	1	1				
	116,000	116,000	116,000				
i.3 Earth Hour (Mar)	No. of Activity	1	1				
	80,000	80,000	80,000				
i.4 Month of the Ocean (May)	No. of Activity	1		1			
	80,000	80,000		80,000			
i.5 Arbor Day, Shokoju Day and World Environment Day (Jun)	No. of Activity	1		1			
	80,000	80,000		80,000			
i.6 International Coastal Cleanup and World Bamboo Day (Sep)	No. of Activity	1			1		
	80,000	80,000			80,000		
SUB Total		6,544,389	1,110,227	2,570,565	1,636,084	1,227,513	

6. Environmental Research							
a. Bamboo Growth Performance on Dried	Research conducted	1	1	1	1	1	Same manpower to be used for Rehab
	-						Operational Expense
	Progress Report submitted/prepared	4	1	1	1	1	
b. Seagrass Enhancement	Research conducted	1	1	1	1	1	
							Operational Expense
	Progress Report submitted/prepared	4	1	1	1	1	
c. Fish at Kinurong	Research conducted	1	1	1	1	1	
							Operational Expense
	Progress Report submitted/prepared	4	1	1	1	1	
d. Soil Amelioration	Research conducted	1	1	1	1	1	
	Progress Report submitted/prepared	4	1	1	1	1	
	Established Plots	15		5	5	5	
	147,280	2,209,200		736,400	736,400	736,400	
SUB Total		2,209,200	0	736,400	736,400	736,400	

2022 AEPEP Activities	Unit of Work Measure (UWM)	Annual Physical / Financial Target, Php	Quarterly Physical / Financial Target				REMARKS
	Unit Cost, Php		1stQ	2ndQ	3rdQ	4thQ	
7. Others (Administration, Compliance Management and MEPEO Operation)							
a.1 MEPEO Operation	MEPEO Operationalized	1	1	1	1	1	
	No. of months operated	12	3	3	3	3	
	155,306.77	1,863,681	465,920	465,920	465,920	465,920	
a.2 Office Management (inc. safety, PPE issuance, transportation, materials & Equipment for Envi. Mgt., etc.)	No. of months managed	12	3	3	3	3	
	7,667	92,000	23,000	23,000	23,000	23,000	
a.3 Covid-19 Prevention Activities in the Workplace	No. of Activity	12	3	3	3	3	
	3,333	40,000	10,000	10,000	10,000	10,000	
a.4 Calibration of Monitoring Instruments	No. of Calibration	1			1		
	39,375	39,375			39,375		
a.5 Envi. Monitoring Equipment Maintenance & Repairs	No. of maint and repair	12	3	3	3	3	
	108,692	1,304,298	326,075	326,075	326,075	326,075	
b. Maintenance of Integrated Management System	Audit conducted	4		2	2		
	156,000	623,999		312,000	312,000		
c. Permitting and Compliance (Regulatory Fees, New Application, Amendment and Renewal)	Permitting Compliance Activity conducted	4	1	1	1	1	
	2,791,908	11,167,631	2,791,908	2,791,908	2,791,908	2,791,908	
d. MMT validation and sampling	MMT Monitoring Conducted	4	1	1	1	1	
	413,560	1,654,240	413,560	413,560	413,560	413,560	
e. MRFC Meeting	Meeting conducted	4	1	1	1	1	
	118,400	473,600	118,400	118,400	118,400	118,400	
f. EMB Monitoring/Validation	Monitoring conducted	1			1		
	53,908	53,908			53,908		
g. MGB Inspections							
g.1SHES (RO)	SHES Monitoring conducted	1			1		
	50,000	50,000			50,000		
g.2 TSHES/MPP (RO)	TSHES/MPP monitoring conducted	1	1				
	60,000	60,000	60,000				
g.3 Mill Tailings Fee Inspection	Inspection conducted	2	1		1		
	5,314	10,628	5,314		5,314		520
h. PEZA Annual Inspection for PTO Renewal	Inspection conducted	1	1				9230
	150,000	150,000	150,000				
i. IEC for Stake Holders, Visitors and Workers.	IEC Conducted	6	1	2	1	2	Includes activities to environmental award giving bodies (PMIEA< MFP, AMA, etc.)
	46,333	278,000		139,000		139,000	
SUB Total		17,861,359	4,364,176	4,599,862	4,609,459	4,287,863	
GRAND TOTAL		1,798,921,864	449,077,886	441,210,645	463,046,938	445,586,396	Php 1,798,921,864 is15% of the total Milling Cost for 2022.

Prepared by:



JEB B. BADLON
Pollution Control Officer

Approved by:



ANTONIO O. SANONE
MEPEO



TAKAO OISHI
Plant Manager



BENJAMIN A. TANSINGCO
VP - Environmental Management

CORAL BAY NICKEL CORPORATION
BREAKDOWN OF ESTIMATED MILLING EXPENSE 2022

Amounts in USD

I. SUPPLIES & MATERIALS

A. Sub-materials	
Flocculant	4,466,076.84
Sulfuric Acid	26,161,928.11
Lime Stone	8,196,155.15
Sodium Hydroxide (Caustic Soda)	2,548,000.00
Slaked Lime	19,191,490.05
Methanol	2,464,000.00
Sulfur	5,655,000.00
Coagulant	132,000.00
Diesel for H ₂ S	298,200.00
Soda Ash	290,496.00
Other sub-materials	173,254.43
Total Sub-materials	69,576,600.58

B. Supplies	
Laboratory Supplies	453,240.17
Maintenance Supplies	1,807,916.58
Office Supplies	155,699.60
Mixed Sulfide Bags	696,490.00
Filter Bags	230,000.00
Screen for Ore Preparation	132,940.00
Alumina and Iron Balls	100,000.00
Chemicals and Reagents	225,989.53
Safety Supplies (PPE)	135,756.54
Other supplies	1,828,682.05
Total Supplies	5,766,714.48

C. Fuel Cost (Production Related)	-
Coal	27,533,321.21
Diesel	1,667,916.57
Total Fuel Cost	29,201,237.78

I. TOTAL SUPPLIES & MATERIALS	104,544,552.84
--	-----------------------

II. LABOR EXPENSE

Basic Salaries	7,821,630.93
Overtime	1,634,461.34
Allowances and CBA Benefits	932,878.19
13th Month Pay & Other Incentives	1,992,124.05
Vacation Leave/Sick Leave Conversion	301,090.53
SSS, PhilHealth and HDMF Premiums	361,295.36
Other Employee Benefits	1,651,497.77
Other labor expense	277,567.05
II. TOTAL LABOR EXPENSE	14,972,545.21

CORAL BAY NICKEL CORPORATION
BREAKDOWN OF ESTIMATED MILLING EXPENSE 2022

Amounts in USD

III. OTHER EXPENSES

A. RENTALS AND LEASES	
Infrastructure Lease PEZA Developer	148,494.04
Machine Lease	115,631.23
Automobile Lease	14,082.52
Other rentals and leases	598,854.72
TOTAL RENTALS AND LEASES	877,062.51

B. POWER AND WATER SUPPLY	
Water Supply Charges	94,012.15
Gas Supply Charges	18,238.46
Other Power and Water Supply Expenses	10,769.23
TOTAL POWER AND WATER SUPPLY	123,019.84

C. INSURANCE EXPENSE	
Vehicle Insurance	82,692.31
Fire and Property Insurance Expense	1,953,742.63
Other Insurance Expense	16,884.62
TOTAL INSURANCE EXPENSE	2,053,319.55

D. REPAIRS AND MAINTENANCE	
Spare Parts Cost	10,419,747.43
Consignment Parts Cost	4,028,161.35
Maintenance Contract Fee	3,634,244.51
Contract Work	3,960,695.74
Consignment Contract Service Fee	548,116.00
Software Maintenance	307,869.38
Vehicle Repairs and Maintenance	86,160.92
Maintenance of Leased Facilities from RTN	797,510.42
Other Repairs and Maintenance	8,707,616.14
TOTAL REPAIRS AND MAINTENANCE	32,490,121.91

E. TRANSPORTATION EXPENSE	
Gasoline/Diesel Expenses (General Services)	85,319.18
Other Transportation Expenses	7,815.38
Delivery and Handling	562,232.63
Package Expenses	29,046.15
Working Transfer	60,769.23
TOTAL TRANSPORTATION EXPENSE	745,182.58

F. TRAVELLING EXPENSE	
Air Transportation	3,109,591.84
Official Foreign & Domestic Travel	125,383.56
TOTAL TRAVELLING EXPENSE	3,234,975.40

CORAL BAY NICKEL CORPORATION
BREAKDOWN OF ESTIMATED MILLING EXPENSE 2022

	Amounts in USD
G. COMMUNICATION EXPENSE	
Telecommunication Provider Charges	160,026.65
Other Communication Charges	35,388.92
TOTAL COMMUNICATION EXPENSE	195,415.57
H. OUTSOURCING EXPENSES	
Security Provider Services	2,030,576.80
External Manpower Services	2,002,580.57
Outsourcing Cost _ Technical Fees	6,573,869.83
TOTAL OUTSOURCED SERVICES EXPENSE	10,607,027.19
I. PROFESSIONAL FEES	
Legal Fees	600,229.49
Audit Fees	31,722.40
Advisory and Consultancy Fees	424,196.81
Royalty Fee	2,563,085.59
Other Professional Fees	143,000.00
TOTAL PROFESSIONAL FEES	3,762,234.30
J. TAXES, DUES AND LICENSES	
Property Taxes	56,673.04
Community Tax - Corporate and Employee	586.54
Occupation/Profession Tax	871.15
Registration Fees	2,557.69
Vehicle Registration Fees	12,038.46
Fringe Benefit Taxes	173,076.92
Other Permits and Fees	71,791.00
TOTAL TAXES, DUES AND LICENSES	317,594.80
I. GENERAL EXPENSES	
Representation and Entertainment Expenses	34,478.71
Membership and Condominium Dues	8,326.92
Training and Seminar Expense	131,730.77
Books and Other Reference Materials	1,287.47
Bank Charges	10,076.15
Advertising Expense	6,057.69
External Affairs - Govt.	65,916.25
External Affairs - Others	16,500.00
Research and Development	150,000.00
Donation Expense - RTNFI	2,545,081.54
SDMP Devt. Of Host and Neighboring Communities	2,899,154.76
SDMP DMTG	423,368.04
Comrel Assistance and CSR	855,040.09
Information and Education Campaign	563,193.34
Site Rehabilitation Expense	172,000.00
Miscellaneous Expense	41,561.36
TOTAL GENERAL EXPENSES	7,923,773.11

CORAL BAY NICKEL CORPORATION
BREAKDOWN OF ESTIMATED MILLING EXPENSE 2022

Amounts in USD	
J. DEPRECIATION AND AMORTIZATION	
Depreciation expense - Buildings	3,309,531.17
Depreciation expense - Structures	19,320,847.69
Depreciation expense - Vehicles	621,237.92
Depreciation expense - Building improvements	7,739.93
Depreciation expense - Machineries & Equipment	37,907,970.95
Depreciation Expense - Mechanical Spares	101,991.15
Depreciation Expense - E & I Spares	46,219.20
Depreciation expense - Office equipment	179,288.67
Depreciation expense- Laboratory equipment	237,176.77
Depreciation expense - Furniture & fixtures	16,628.81
Depreciation expense- Tools	105,979.13
Amortization expense - Software	25,394.67
Depreciation expense- LS M&E	45,507.36
Depreciation expense- LS - Land	102,945.11
TOTAL DEPRECIATION AND AMORTIZATION	62,028,458.52
III. TOTAL OTHER EXPENSES	
	124,358,185.26
	-
TOTAL EXPENSES (USD)	243,875,283.32
ASSUMED 2022 EXCHANGE RATE (PHP/USD):	50
ESTIMATED 2022 MILLING EXPENSE (PHP)	12,193,764,165.76