





**Environmental Impact Statement (EIS)
Summary for the Public
for the
Proposed Mariveles Coal Power Plant
Project**

October 2018

**Mariveles Power Generation Corporation
(MPGC)**

A. PROJECT DESCRIPTION

Project Name	Proposed Mariveles Coal Power Plant Project (MCP)
Project Location	Mariveles Economic Zone (MEZ), Brgy. Biaan, Mariveles, Bataan
Project Type	Thermal Power Plant (Coal Fired)
Major Components of the Project	<p>Major Components</p> <ul style="list-style-type: none">• Boiler<ul style="list-style-type: none">-150 MW Drum Type, CFBC Boiler x 4 units Phase 1 (Plant 1)-150 MW Drum Type, CFBC Boiler x 4 units Phase 2 (Plant 2) <p>The primary function of the boiler and auxiliary system is to supply steam with constant pressure to the turbine generator for the generation of electric power.</p>  <p><i>Sample Photo of Typical Boiler Building</i></p> <ul style="list-style-type: none">• Steam Turbine Generator<ul style="list-style-type: none">- Total Enclosure Air Cooled Generator- Capacity: 150MW (gross) x 4 units for Phase 1 (Plant 1)- Capacity: 150MW (gross) x 4 units for Phase 2 (Plant 2) <p>The function of the steam turbine is to transform the thermal energy of the steam generated from the boiler into kinetic energy, which is further transformed into electric power.</p>  <p><i>Sample Photo of Steam Turbine Generator Room</i></p>

	<p>Support Facilities</p> <ul style="list-style-type: none"> Pier, Jetty and Jetty Trestle (Common or shared facility)  <p><i>Sample Photo of Pier and Jetty Structure</i></p> <ul style="list-style-type: none"> Fully Covered Coal Yard  <p><i>Sample Photo of Covered Coal Yard</i></p> <ul style="list-style-type: none"> Coal Handling System Ignition Light Diesel Oil System Water Supply System Feedwater System Water Treatment System Closed Cycle Cooling Water System Feedwater System Condensate System Chemical Feed System Seawater Intake and Outfall Structures Circulating Cooling Water System Compressed Air and Dryer System Combustion Air and Flue Gas System Instrumentation and Control Power Transmission System <p>Pollution Control System</p> <ul style="list-style-type: none"> Electrostatic Precipitator Exhaust Stack Continuous Emissions Monitoring System Wastewater Treatment System Ash Handling System Ash Disposal System (common/shared)
Project Area	<ul style="list-style-type: none"> 130.08 hectares of land area within the Mariveles Economic Zone (MEZ) of E-Fare Investment Holdings, Inc. (EFIHI)

	<ul style="list-style-type: none"> • 25.4 hectares of foreshore lease and miscellaneous lease areas
Project Capacity	<ul style="list-style-type: none"> • Phase I: 4x150 MW (Plant 1) • Phase II: 4x150 MW (Plant 2)
Project Technology	Circulating Fluidized Bed Technology
Resource Utilization	<p>Coal: The MCPP Project will use 715,560 tons/yr. of coal. MPGC will use imported coal from Indonesia and locally available Daguma and Semirara coal. Daguma Agro Minerals, Inc., which is a subsidiary of San Miguel Corporation, will supply the Daguma coal.</p> <p>Water: MPGC will be extracting about 144,000 m³/hr. of seawater for condenser cooling requirement and will discharge spent cooling water back to the sea.</p> <p>The freshwater requirement of MPGC will be primarily used as process water, make-up water, service water, potable water and other necessary water consumptions. The total requirement per project phase is 128 m³/h (3,072 m³/day) or a total of 256 m³/h (6,144 m³/day) for Phase 1 and Phase 2. This will be sourced from the water supply system of MEZ.</p>
Project/Investment Cost	PhP 99.080 Billion

B. PROJECT LOCATION

The proposed MCPP Project of Mariveles Power Generation Corporation (**MPGC**) will be located in an area of about 130.08 hectares (ha) of land within the Mariveles Economic Zone (**MEZ**) in Barangay Biaan, Mariveles and 25.4 hectares of foreshore lease and miscellaneous lease areas of EFIHI. **Figure 1** presents the geographical location and coordinates of the proposed project.

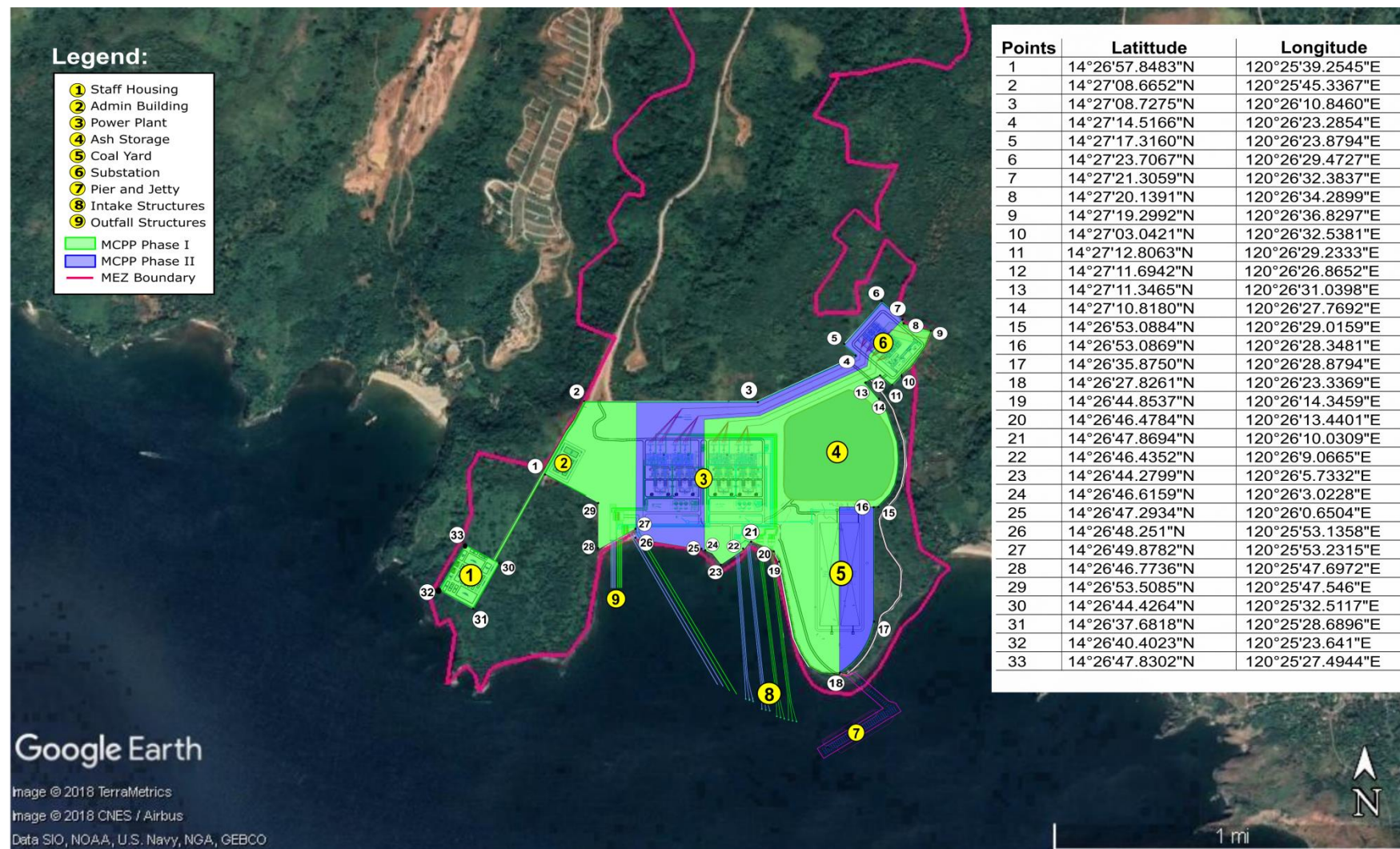


Figure 1. Geographical Location and Coordinates of the Proposed Mariveles Coal Power Plant Project

C. PROJECT PROPONENT

Name of Proponent : **Mariveles Power Generation Corporation**
Proponent's Address : 19th Floor, San Miguel Properties Centre, No. 7 St. Francis, Mandaluyong City, Metro Manila
Authorized Signatory/ Representative : Mr. Rene R. Mendoza
Project Director
Contact Details : Telephone No.: (02) 667-5203; Mobile No. 0917-8342078
Email Address: rrmendoza@smcgph.sanmiguel.com.ph

D. PROJECTED TIMEFRAME OF THE PROJECT IMPLEMENTATION

The projected timeframe for the implementation of the proposed Project is presented in **Figure 2**. The construction will start upon securing all the needed permits and other regulatory requirements. The MCPP Phase 1 Project is targeted to begin construction within the third quarter of 2018 and completion of the first 150 MW unit by first quarter of 2021. The succeeding three units of 150 MW completion will follow thereafter with 3 months interval. Thus, MCPP Phase 1 expected project completion will be by the 4th quarter of 2021.

The MCPP Phase 2 Project is targeted to begin construction within the 3rd quarter of 2019 and completion of the first 150 MW unit will be by the 1st quarter of 2022, then succeeding three units of 150 MW completion will follow thereafter with 3 months interval. Thus, MCPP Phase 2 expected project completion will be by the 4th quarter of 2022.

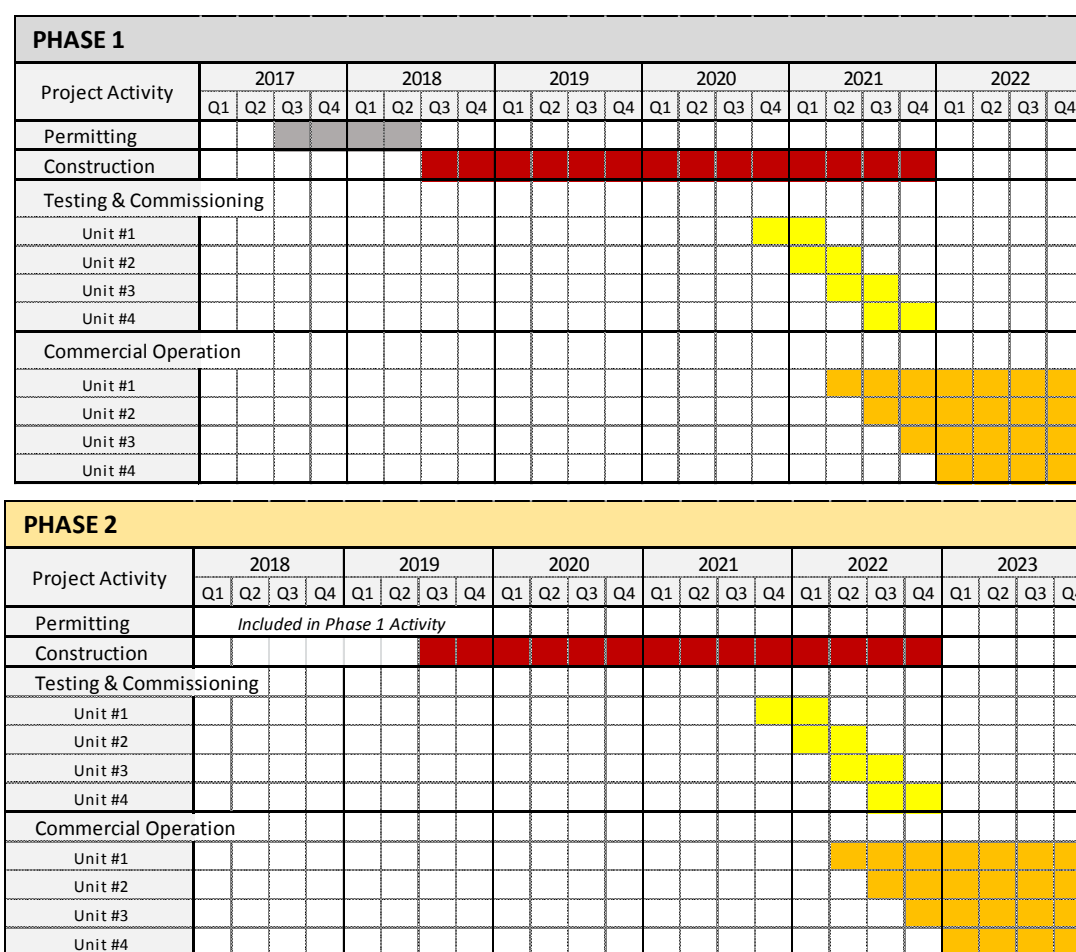


Figure 2. Project Timeframe

E. SUMMARY OF MAJOR IMPACTS AND RESIDUAL EFFECTS AFTER MITIGATION

Table 3 presents the summary of major environmental impacts caused by the project and residual impacts after mitigation.

Table 3. Summary of the Environmental Impacts, Mitigating and Enhancement Measures, and Residual Impacts

Environmental Component Likely to be Affected	Potential Impact	Prevention/Mitigation/ Enhancement Measures	Residual Effects
CONSTRUCTION PHASE			
LAND			
Land use and Classification	• Change/ Inconsistency in Land Use	• The Project site is an industrial area and consistent with the general land use of Mariveles and therefore there is no issue with the change in land use.	None
	• Encroachment to ECA	• The project site has not encroached an ECA	None
	• Impairment of visual aesthetic	• Establishment of buffer zones • Coordination with Camaya Coast Resort owner	Acceptable change in visual landscape
	• Devaluation of land due to improper solid waste management.	• Implementation of the Solid Waste Management Plan • Utilization of the ash storage facility within MCPP	None
Geology/ Geomorphology	• Change in surface landform/terrain/slope	• Backfill materials shall be compacted to the required density. • Soft materials will be excavated and replaced by engineering backfill	Permanent change in surface landform
	• Change in sub-surface underground geomorphology	• Strict conformance to the recommendations of the geotechnical study.	Permanent change in surface landform
	• Inducement of subsidence, liquefaction, landslides, mud/debris flow	• Since the area is already developed as an economic zone, the possibility of experiencing landslides and/or mud/debris flow is nil.	None
Pedology	• Soil erosion	• Construction of soil erosion control measures either by engineering structure such as silt traps and sedimentation basins and/or planting of grasses/trees. • Placement of excavated soil materials in appropriate stockpile areas with avoidance of stockpiling along drainage ways/creeks. • The soil stockpiles will be covered with plastic sheets/geotextile, or planted with grasses/small shrubs for erosion control. • Scheduling of excavation work/earth movement during dry months.	None
	• Soil Contamination	• Development and implementation of a solid waste management program	Minimal soil contamination

Environmental Component Likely to be Affected	Potential Impact	Prevention/Mitigation/ Enhancement Measures	Residual Effects
		including proper waste segregation and good housekeeping. <ul style="list-style-type: none"> • Proper handling of oil products and equipment maintenance. • Oil sludges shall be properly contained in leak proof containers prior disposal. Oil contaminated materials should be collected, stored and disposed by DENR-accredited waste treater. • Fuel storage shall be contained with an impervious bund designed to handle 110% of the tank capacity. 	
Terrestrial Ecology	<ul style="list-style-type: none"> • Revegetation of areas identified as buffer zone 	<ul style="list-style-type: none"> • MPGC shall establish a 24.53 ha buffer zone and native species shall be used for vegetation, as these would be expected to have to have good survival rate 	Positive impact
WATER			
Water Quality	<ul style="list-style-type: none"> • Degradation of surface and groundwater quality 	<ul style="list-style-type: none"> • Provision of containment structures and canals in the storage areas for oil and the motor pool area • Return of contaminated cans/containers of hazardous materials such as paints, thinners, wood preservatives and others to the supplier/producer for treatment and safe disposal • Putting in place erosion control measures along drainage ways prior to construction such as silt traps and sedimentation basins • Scheduling of construction activities during the dry season, when necessary • Immediate stabilization of exposed soil/s/barren areas with indigenous plants • Work to minimize destruction to seabed through the use of geotextile curtains or other measures to control the spread of sediment • Prohibit the discharge of bilge water from attending vessels and other delivery vessels • Ensure compliance with the following: MARPOL, PCG-MC 01-94, DAO No. 08 S. 2016 to be stipulated in the Contract with Contractors • Regular monitoring of surface and groundwater quality 	Minimal change in surface water quality due to wastewater discharge that meets the standards No residual effect on groundwater quality is expected
Marine Ecology	<ul style="list-style-type: none"> • Threat to existence and/or loss of corals • Threat to abundance, frequency and distribution of 	<ul style="list-style-type: none"> • Construction of siltation ponds to prevent sediment from being washed into the bay area • Stockpiles shall have appropriate drainage to prevent erosion of silt to the bay 	Minimal loss in coral cover; increase in abundance, frequency and distribution of

Environmental Component Likely to be Affected	Potential Impact	Prevention/Mitigation/ Enhancement Measures	Residual Effects
	corals, reef fishes, plankton and marine benthic organisms	<ul style="list-style-type: none"> Adequate and proper drainage system Careful planning for the layout of offshore facilities to avoid significant adverse impacts on the marine habitat in the area To control the spread of sediment, silt curtains will be utilized so that sediments disturbed are contained in the vicinity. In swift moving waters, it may be necessary to have more than one wall of silt curtains Regular monitoring of plankton and marine benthic invertebrates shall be conducted to evaluate effects of siltation on the composition and abundances of these biota Support marine sanctuary to be established by MEZ in cooperation with LGU 	coral and coral-dependent communities in the marine sanctuary to be established by MEZ in cooperation with LGU; over the long time, the pier piles of the jetty can serve as artificial refuge for a wide variety of marine animals in the area and can enhance the diversity of marine organisms.
AIR			
Meteorology/ Climatology	<ul style="list-style-type: none"> Change in local micro-climate and local temperature 	<ul style="list-style-type: none"> MPGC shall establish a 24.53 ha buffer zone using native species for vegetation, as these would be expected to have good survival rate. MPGC will also participate in reforestation program of the government 	Minimal change in local micro-climate and temperature
Air Quality and Noise	<ul style="list-style-type: none"> Degradation of Air Quality 	<ul style="list-style-type: none"> Every main haul road shall be paved with concrete, bituminous materials, hardcores or metal plates; keep the road clear of dusty materials; spray the road with water or dust suppression chemical so as to maintain the entire road surface wet; and immediately before leaving a construction site, every vehicle shall be washed to remove any dusty materials from its body and wheels; Where a vehicle leaving a construction site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle; The working area of any excavation or earth moving operation shall be sprayed with water or a dusty suppression chemical immediately before, during and immediately after the dust generating activities so as to maintain the entire surface wet; Exposed earth shall be properly 	Minimal degradation of air quality, confined only to construction site and away from sensitive receptors

Environmental Component Likely to be Affected	Potential Impact	Prevention/Mitigation/ Enhancement Measures	Residual Effects
		<p>treated by compaction, turfing, hydroseeding, vegetation planting or other suitable surface stabilizer within six (6) months after the last construction activity at the construction site or part of the construction site where the exposed earth lies;</p> <ul style="list-style-type: none"> Any stockpile of dusty materials shall be either covered entirely by impervious sheeting; placed in an area sheltered on the top and the three (3) sides; or sprayed with water or a dust suppression chemical so as to maintain the entire surface wet. Periodic watering of aggregates storage piles or covering or enclosure if material is especially dusty; Provision of water sprays and chemical dust suppressants or oil on roadways; Ambient air (TSP) monitoring 	
	<ul style="list-style-type: none"> Increase in ambient noise level 	<ul style="list-style-type: none"> Scheduling certain high noise emitting works to more acceptable times of the day Use of the most environmentally acceptable equipment which is properly maintained and silenced Use of the least intrusive method of work Proper instruction and supervision of staff It is advisable that electrically powered equipment shall be preferred, where practicable, to mechanically powered alternatives. If mechanical powered equipment will be used, it shall be fitted with suitable silencers and mufflers Defective equipment/parts with abnormal noise and/or vibration will be either repaired/replaced Schedule use of equipment/ machines emitting high noise like pile driver during day time operation while minimize use during night time operation All employees working on site will be provided with proper ear protectors Conduct noise level monitoring 	Increase in ambient noise levels within noise standards, and confined only to construction site and away from sensitive receptors
PEOPLE			
Local residents	<ul style="list-style-type: none"> Increase income for residents 	<ul style="list-style-type: none"> Positive impact 	Increased income of the local residents with
	<ul style="list-style-type: none"> Increase in local employment 	<ul style="list-style-type: none"> Priority employment for qualified local residents without discrimination 	

Environmental Component Likely to be Affected	Potential Impact	Prevention/Mitigation/ Enhancement Measures	Residual Effects
		to women	consideration to gender equality and vulnerable group
	<ul style="list-style-type: none"> Construction-related hazards 	<ul style="list-style-type: none"> Environment, health and safety training prior to construction 	
Local community	<ul style="list-style-type: none"> Improvement in infrastructures and social services 	<ul style="list-style-type: none"> Diligent payment of taxes/revenues 	Increased income of the host LGUs
OPERATION PHASE			
LAND			
Geology	<ul style="list-style-type: none"> Subsidence and Liquefaction 	<ul style="list-style-type: none"> Structural monitoring of buildings/facilities especially after each earthquake Formulation of detailed Emergency Preparedness and Response Plan 	None
Pedology	<ul style="list-style-type: none"> Soil contamination with heavy metals 	<ul style="list-style-type: none"> Regular monitoring of heavy metals in soil (Pb, Hg, Cd, Cr⁺⁶, etc.) through sampling and analysis 	None or nil residual effect on soil contamination
	<ul style="list-style-type: none"> Soil Erosion 	<ul style="list-style-type: none"> Planting of trees that serve as buffer for soil erosion Sedimentation ponds will be established within the power plant vicinity 	None
Terrestrial Ecology	<ul style="list-style-type: none"> Possible off-site impacts from power plant emissions 	<ul style="list-style-type: none"> MPGC shall establish a buffer zone and native species shall be used for vegetation, as these would be expected to have good survival rate 	None or nil
WATER			
Oceanography	<ul style="list-style-type: none"> Change in coastal processes 	<ul style="list-style-type: none"> Implementation of shoreline protection measures such as sand bypass and engineering and vegetation measures, in the event of shoreline erosion and accretion Open design for jetty/pier structures 	Minimal change in coastal processes
Water Quality	<ul style="list-style-type: none"> Degradation of water quality 	<ul style="list-style-type: none"> Installation of WWTS that will treat operation wastewater prior to discharge to the sea Installation of STP to treat the domestic wastewater generated prior to discharge to the sea MPGC shall install thermistors to monitor the seawater temperature on a monthly basis 	None to minimal change for treated wastewater discharges within standards
Marine Ecology	<ul style="list-style-type: none"> Threat to abundance, frequency and distribution of species Loss of important species Loss of habitat 	<ul style="list-style-type: none"> Installation of intake structure which includes trash rack, static screen, electric hoist, stop gate and trash sluice to prevent impingement of marine life Frequent cleaning and maintenance of intake structure Using the lowest possible hypochlorite concentration and proper and regular maintenance of the underwater structures Installation of sensor mechanism to 	<p>None to minimal loss in abundance, frequency and distribution at intake structures;</p> <p>Increase in abundance, frequency and distribution of</p>

Environmental Component Likely to be Affected	Potential Impact	Prevention/Mitigation/ Enhancement Measures	Residual Effects
		control dosage of the sodium hypochlorite level at the outlet to 2 ppm • Support the establishment of marine sanctuary by EFIHI of MEZ in cooperation with LGU	coral and coral-dependent communities in marine sanctuary area
Groundwater Quantity	• Groundwater contamination	• Daily supervision of possible leaks or spillages in the fuel storage tanks • Regular maintenance to minimize pipe tank leaks or ruptures • Use of coal ash by cement plants	None to minimal
AIR			
Air Quality	• Degradation of Air Quality	• The CFB Technology allows the fuel to be burned at a relatively lower temperature, which reduces the NO _x formation by approximately 60% due to low combustion temperature of 800-900°C. • Limestone injection shall capture up to 98% of sulfur impurities from the fuel by reacting with it to form calcium sulfate, an inert material that is removed with the combustion and, thereby reducing SO _x formation • EP shall be installed to remove 99.5% of particulates, particularly fly ash from the flue gas prior to its release through the stacks • CEMS shall be installed to have real time monitoring of emissions at the stack • Stack will be constructed at 100m to have proper air dispersion • Conduct ambient air quality monitoring and stack emissions testing	Minimal change in air quality within standards
	• Dust Generation from Material Handling in ADF	• Implement wet handling of ash • Loading directly into trucks to be transported to cement plants to minimize storage volume	Minimal dust generation
Noise Quality	• Increase in ambient noise level	• Air compressors and emergency generators will be equipped with noise attenuation enclosures; • Steam turbine and boiler equipment will be enclosed and provided with silencers at the exhaust; and • The steam drum, super heater and re-heater safety valves will be provided with an absorptive silencer. • Conduct noise level monitoring • Presence of buffer zones around the plant	Minimal increase in ambient noise level and within standards
PEOPLE			
Waste Management	• Generation of sewage/solid waste	• Provision of STP, no litter signs, waste can • Applying the hierarchy of measures:	None

Environmental Component Likely to be Affected	Potential Impact	Prevention/Mitigation/ Enhancement Measures	Residual Effects
		Reduce, Segregate, Re-use, Recycle and Dispose <ul style="list-style-type: none"> Proper disposal of non-recyclable wastes through an accredited contractor 	
Population	<ul style="list-style-type: none"> Change in population (size, distribution) In-migration 	<ul style="list-style-type: none"> Priority hiring of qualified local residents in coordination with the AFAB, Municipal Gov't and host barangay Training program and skill transfer for local residents 	None to minimal change in population
Social Services	<ul style="list-style-type: none"> Overburdening of public social services 	<ul style="list-style-type: none"> Priority hiring of qualified local residents On-site medical clinic staffed by at least a doctor and a nurse Provision of an ambulance 	None to minimal burden to public social services
Health	<ul style="list-style-type: none"> Introduction of disease between migrant and local workers 	<ul style="list-style-type: none"> Clean bill-of-health as a condition for employment based on work description Medical check-up shall be included in CSR program to monitor the occurrence of unusual health problems that can be associated with the proposed Project. Provision of potable water, sanitary facilities and garbage bins for workers Provision of Medical clinic and a safety officer to monitor safe working conditions Provision of Medical/First Aid kits in all work places Provision of an ambulance 	Minimal probability of disease contacted between migrant and local workers
Local Residents	<ul style="list-style-type: none"> Increased social and economic financial activity 	<ul style="list-style-type: none"> Positive impact, no mitigation required 	Increased social and economic financial activity
Local Properties	<ul style="list-style-type: none"> Fire Hazard 	<ul style="list-style-type: none"> Regular compaction and watering of coal pile once the temperature exceeds 90°C Installation of temperature monitoring system, water sprinkler system and fire hydrants in the coal yard Provision of fire suppression systems, fire detection systems, fire host stations and portable fire extinguishers Full enclosure of the coal yard A "first-in-first out policy of handling of coal Transferring, cooling and immediate use of affected portions of the stock Provision of a fire truck 	None

Environmental Component Likely to be Affected	Potential Impact	Prevention/Mitigation/ Enhancement Measures	Residual Effects
ABANDONMENT PHASE			
LAND			
Pedology	<ul style="list-style-type: none"> Soil contamination with heavy metals 	<ul style="list-style-type: none"> The Abandonment Rehabilitation Plan shall be followed strictly with emphasis on the strategy of sustaining erosion/ sedimentation control within and adjacent vicinity of the power plant and rendering the Project area free of soil contamination for heavy metals (Pb, Hg, Cd and Cr ⁺⁶) 	None to minimal contamination
Terrestrial Ecology	<ul style="list-style-type: none"> Increase biodiversity due to retention of buffer zone 	<ul style="list-style-type: none"> Positive impact, no mitigation needed 	Increase biodiversity due to retention of buffer zone
WATER			
Water Quality	<ul style="list-style-type: none"> Degradation of water quality 	<ul style="list-style-type: none"> Collection of spills Removal and/or neutralization of chemicals Continuous water quality monitoring 	Minimal degradation of water quality
AIR			
Air Quality and Noise	<ul style="list-style-type: none"> Degradation of air quality Increase in noise levels 	<ul style="list-style-type: none"> Watering during dismantling to minimize dusts Proper maintenance of vehicles Use of noise suppressors/mufflers Limiting noisy activities during daytime Conduct noise level monitoring 	Minimal dust generation; Minimal increase in noise levels confined to daytime only
PEOPLE			
Local Residents	<ul style="list-style-type: none"> Increase of temporary employment New skills developed for decommissioning may be marketable elsewhere 	<ul style="list-style-type: none"> Priority for qualified local residents 	None
Demographic	<ul style="list-style-type: none"> Reduction in employment opportunities to include the staff of local contractors with long-standing service contracts with the project Out-migration of affected project personnel to seek work elsewhere 	<ul style="list-style-type: none"> Six (6)-month notice prior to termination of contract to give ample time to look for next employment Effective management via consultation, planning and communications with affected workers Financial support within a human resources plan 	Minimal out-migration of affected personnel
Local Community	<ul style="list-style-type: none"> Nuisance due to increased road traffic, noise, etc. 	<ul style="list-style-type: none"> Formulation and implementation of decommissioning impact management plan 	Effect is temporary and during decommissioning only

F. IDENTIFIED STAKEHOLDERS

The following are the identified stakeholders of the proposed Project:

- LGU of the host municipality: Mariveles
- LGU of the host barangay: Brgy. Biaan
- Authority of Freeport Area of Bataan (AFAB)
- Sectoral Representatives (Education, Health, Livelihood, Religious, Business, Senior Citizens, Women) at the host LGUs
- Non-Government Organizations at the host LGUs
- EMB-DENR Region 3
- Philippine Institute of Volcanology and Seismology (PHIVOLCS) Region 3
- Department of Energy (DOE) Regional Office-Luzon

G. STATEMENT OF COMMITMENT AND CAPABILITY TO IMPLEMENT NECESSARY MEASURES TO PREVENT NEGATIVE IMPACTS

The MPGC as the Proponent commits to provide overall policy and guidance with regards to implementation of the Project. MPGC shall ensure that all necessary mitigating measures including budgets and agreements with other concerned national and local government agencies are included in all contracts to prevent and/or minimize the negative impacts of the project and enhance the positive impacts.

H. INFORMATION WHERE TO GET COPY OF THE EISR

The draft Environmental Impact Statement Report (EISR) and this ESP will be posted in the EMB website (www.emb.gov.ph) at least 20 days before the public hearing. After the review process, the final EISR of the proposed Mariveles Coal Power Plant Project will be available at the following:

Authority Freeport Area of Bataan 2/F AFAB Administration Bldg. The Freeport Area of Bataan, Mariveles, Bataan 2106. Tel. No.: +63 47 935 4004 Email: info@afab.gov.ph	Environmental Management Bureau DENR Compound, Visayas Ave, Diliman, Quezon City, 1116 Metro Manila Contact No: (02)920-2240
Municipal Government of Mariveles Mariveles Municipal Hall	

For more information about the proposed project, the following people may be contacted:

Proponent: Mr. Rene R. Mendoza Project Director Mariveles Power Generation Cooperation 19th Floor, San Miguel Properties Centre, No. 7 St. Francis, Mandaluyong City, Metro Manila Telephone No: (02) 667-5203 E-mail: rrmendoza@smcgph.sanmiguel.com.ph	EIA Preparer: Engr. Leticia T. dela Cruz Managing Director Geosphere Technologies, Inc. 19D Eisenhower Tower, Eisenhower St., Greenhills, San Juan City Tel: (02) 724-5665/67 E-mail: gti0722@geospheretech.com
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