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Marcventures Holdings, Inc. MARC

PSE Disclosure Form CP TR-1 - Technical Report

Reference: Implementing Rules and Regulations of the Philippine Mineral Reporting Code

TR Form No	1
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Description of the Disclosure

We submit attached Competent Person's Report in compliance with the Philippine Mineral Reporting Code as follows:

1. Marcventures Mining & Development Corporation CP report for the year 2018
2. Brightgreen Resources Corporation CP report for the year 2015
3. Alumina Mining Philippines, Inc. (AMPI) & Bauxite Resources, Inc. (BARI) CP report as of June 2017

Filed on behalf by:

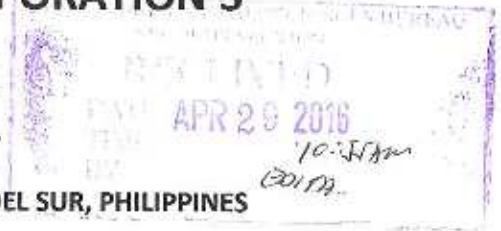
Name	Raquel Frondoso
Designation	Compliance Officer

**2015 MINERAL RESOURCE REPORT
OF BRIGHTGREEN RESOURCES CORPORATION'S**

MPSA 015-93-XI

NICKEL LATERITE PROJECT

LOCATED IN THE MUNICIPALITY OF CANTILAN, SURIGAO DEL SUR, PHILIPPINES



FOR

BRIGHTGREEN RESOURCES CORPORATION

Unit E, One Luna Place, E. Luna Street

Butuan City, Philippines

March 2016

Radegundo S. de Luna

Competent Person for Nickel (PMRC No. 071205)

Licensed Geologist (No. 0000218)

CERTIFICATE OF CONSENT

I, Radegundo S. de Luna, of legal age, with postal address at No. 10 Maries Village, Mayamot, Antipolo City, do hereby certify that:

- a. I am a graduate of the University of the Philippines with a Bachelor of Science degree in Geology in 1962.
- b. I am an accredited Competent Person under the definition of the Philippine Mineral Reporting Code (PMRC).
- c. I have worked as Geologist for a total of 53 years since my graduation.
- d. I am not an employee of BrightGreen Resources Corporation or any of its subsidiaries nor am I a holder of any share of stocks of the said company.
- e. I rendered the Mineral Resources evaluation of the BrightGreen Resources Corporation Nickel Laterite Project located in the Municipality of Cantilan, Province of Surigao del Sur.
- f. I consent to the use of this Technical Report in full by BrightGreen Resources Corporation in compliance with the rules and regulations of the Philippine Stock Exchange and for any legal purpose it may serve.
- g. I take full responsibility for all information contained in this report.

RS de Luna

RADEGUNDO S. DE LUNA

Geologist License No. 0000218

Competent Person for Nickel, PMRC No. 07-12-05

PTR No. 4856591

Issued: Jan. 7, 2016 at Antipolo City

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EXECUTIVE SUMMARY

1. BrightGreen Resources Corporation has an existing Mineral Production Sharing Agreement denominated as MPSA No. 015-93-XIII located in Barangays Panikian, Adlay and Pantukan, Municipality of Carrascal, Barangay Lubo and Cabangahan, Municipality of Cantilan, Barangay Bayogo, Municipality of Madrid, and Barangay Hinapuyan, Municipality of Carmen, all in the Province of Surigao del Sur. BGRC's MPSA was approved by the President of the Philippines on July 1, 1993.
2. The MPSA was cancelled by the DENR on February 1, 2005 thru the Department Memorandum Order (DMO) No. 2005-03. The cancellation was appealed on May 31, 2005 and it was reinstated in 2007. From then on, the MPSA was explored by various companies initially for copper-gold then for nickel-iron laterite.
3. In 2012, the company contracted the group of Dr. Carlo Arcilla, former Director of the National Institute of Geological Sciences of the University of the Philippines, Diliman, to conduct geological mapping of the MPSA as well as geochemical and geophysical studies and sub-surface sampling in areas where epithermal gold veins and nickel laterite has been observed.
4. Dr. Arcilla's group initially drilled twenty three (23) holes at random locations to check the possibility of nickel laterite in the MPSA. Out of the 23 holes, eight (8) yielded greater than three (3) meters of saprolite, concentrated in the central and northeastern portion of Sitio Mabhas and Sitio Anas, in Barangay Cabangahan.
5. To further verify, a 200-meter drilling program was implemented in the same year within the area of concentration, covering approximately 80 hectares in central Mabhas, and 15 hectares in northeast Mabhas. A total of 62 holes with an aggregate depth of 919.50 meters were drilled in 2012.
6. BGRC Management decided to conduct in-fill drilling at 50-meter interval in 2015 to come up with an estimation of the areas' mineral resources. Drilling was contracted out to JCP Geo-Ex Services, Inc. (JGSI). A total of 324 holes were drilled with an aggregate depth of 4,735.41 meters using four (4) fabricated Koken drill machines with NQ size core tubes.

7. Sampling was conducted at a nominal interval of 1 meter down the hole regardless of laterite horizon boundaries. After logging, samples are placed into plastic bags and delivered to the Sample Preparation Facility of MMDC. Prepared pulp samples are then sent to MMDC laboratory for analysis by way of X-ray Fluorescence Spectrometry (XRF).
8. Data was arranged into excel files containing the collar and assay data of each hole. A total of 4,683 samples from 2012 to 2015 were considered in the estimation of BGRC's Nickel Laterite Project Mineral Resources. This is after filtering out samples without assay results.
9. MMDC implements internal QA/QC and inter-laboratory checking to ensure the precision and accuracy of its assay results. Internal QA/QC includes insertion of in-house reference samples, and coarse and pulp duplicates in samples batches. For inter-laboratory checking, standards and samples are sent to laboratories of other mining companies such as Taganito, CNC, CTP and Biominerals.
10. Polygon method was used in estimating the mineral resources of BGRC as of December 31, 2015. The resources are classified purely as a function of drilling density, to wit:
 - Measured Resources - for limonite, where drilling is at a grid of 50x50m or less
 - Indicated Resources - for limonite, where drilling is at a grid of more than 100m
- for saprolite, where drilling is at a grid of 50x50m or less
 - Inferred Resources - for saprolite, where drilling is at a grid of more than 100m
11. This report discloses the estimated Measured, Indicated and Inferred Resources of BGRC's Nickel Laterite Project as of end of December 2015. The total Measured and Indicated Resources of BGRC is estimated at **16.03 million WMT** with an average grade of **1.17% Ni and 34.98% Fe**. This is further broken down to **3.06 million WMT saprolite** with an average grade of **1.59% Ni and 14.85% Fe**, and **12.97 million WMT limonite** with an average grade of **1.07% Ni and 39.73% Fe**. Additional Inferred Limonite and Saprolite Resource was estimated 5.03 million WMT with 0.95% Ni and 37.95% Fe.
12. A potential epithermal gold and/or porphyry copper prospect might be underlying the area within the vicinity of Barangay Lubo based on initial geological, geochemical and geophysical studies. Additional exploration activities is recommended to test if the area has economic potential.

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1.0 INTRODUCTION

1.1 Purpose and Compliance with PMRC

The author was commissioned by BrightGreen Resources Corporation (BGRC) to prepare an independent Competent Person's report on the exploration results and mineral resource estimation of its Nickel Laterite Project located within the Municipality of Cantilan, Province of Surigao del Sur.

This report was prepared in compliance to the Philippine Mineral Reporting Code (PMRC) and follows the most recent template for reporting of exploration results and mineral resources of nickel laterite to support the public disclosure of BrightGreen Resources Corporation. This report also complies with the requirements of the Mines and Geosciences Bureau in the development of a mining project.

1.2 Scope of Work

The report provides a summary of the results of the exploration program carried over the nickel project within the tenement area from 2012 to 2015. The resource report prepared by the author considers 4,683 samples from 386 drill holes from that period.

1.3 Data Verification and Field Visits

The author conducted site visits on several occasions (July 2014 and May 2015) in BGRC's project area prior to the preparation of this report.

The database used in this estimation was checked by the author and has been determined to be sufficiently reliable to support mineral resource estimation. Data was arranged into excel files containing the collar and assay data of each hole and transmitted to the author thru USB and hard copies.

1.4 Technical Report Team

The author was provided technical assistance by the BGRC Exploration Team based in Carrascal, Surigao del Sur. Technical assistance given included provision of relevant documents, reports, maps and database. The technical personnel who assisted in the preparation of this report include:

- | | | |
|-------|-------------------------|---|
| i. | Jegie T. Pereda | - former BGRC and MMDC Vice President |
| ii. | Gil B. Mozar | - MMDC Geology and Exploration Head |
| iii. | Jayvhel T. Guzman | - MMDC Chief Geologist |
| iv. | Herbert T. Villano | - MMDC Senior Geologist for Exploration |
| v. | Ralph Rey L. Tan | - MMDC Junior Geologist |
| vi. | Roi Eric V. Saludes | - MMDC Junior Geologist |
| vii. | Beda Louie G. Cagampang | - MMDC Junior Geologist |
| viii. | Ronito T. Martinez | - BGRC Mapping Specialist |

2.0 TENEMENT AND MINERAL RIGHTS

2.1 Description of mineral rights

BGRC's MPSA No. 015-93-XI is described by the following geographic coordinates (Table 2-1).

Table 2-1. Technical description of MPSA 015-93-XI in Luzon-Mindanao Datum.

Corner	Longitude	Latitude
1	125° 45' 30"	9° 19' 00"
2	125° 47' 00"	9° 19' 00"
3	125° 47' 00"	9° 15' 30"
4	125° 49' 30"	9° 15' 30"
5	125° 49' 30"	9° 16' 00"
6	125° 51' 30"	9° 16' 00"
7	125° 51' 30"	9° 15' 00"
8	125° 51' 00"	9° 15' 00"
9	125° 51' 00"	9° 13' 30"
10	125° 50' 30"	9° 13' 30"
11	125° 50' 30"	9° 14' 00"
12	125° 45' 30"	9° 14' 00"

2.2 History of mineral rights

On June 19, 1992, the Philippine Government, represented by the Secretary of the Department of Environment and Natural Resources (DENR), and Carac-an Development Corporation (CDC) made and entered into a Mineral Production Sharing Agreement (MPSA) No. 015-93-XI covering an area of 4,860 hectares situated in the Municipalities of Carrascal and Cantilan, Province of Surigao del Sur (Figure 2-1). The MPSA was approved by the President of the Philippines on July 1, 1993, granting CDC an initial mineral exploration permit of the contract area for two (2) years to undertake the required exploration activities pursuant to an approved Two (2)-Year Exploration Work Program.

However, the MPSA was cancelled by the DENR on February 1, 2005 thru the Department Memorandum Order (DMO) NO. 2005-03 entitled "Cancellation of Non-Performing Tenements". The cancellation of the MPSA was appealed by CDC on May 31, 2005, justifying among others that Mr. Eduardo A. Dagondon, President of CDC, filed the company's Motion for Reconsideration stating, among others, that during 1992 up to 1996 CDC has conducted mineral exploration activities in the contract area and spent considerable amount of money for the said activities, in compliance with the approved Exploration Work Program under the MPSA. The MPSA was reinstated by the DENR in 2007.

The first renewal of CDC Exploration Period under the said MPSA was granted on January 5, 2011 and the second renewal on January 7, 2014.

On February 2015, Carac-an Development Corporation changed its corporate name to BrightGreen Resource Corporation due to change in control and management.

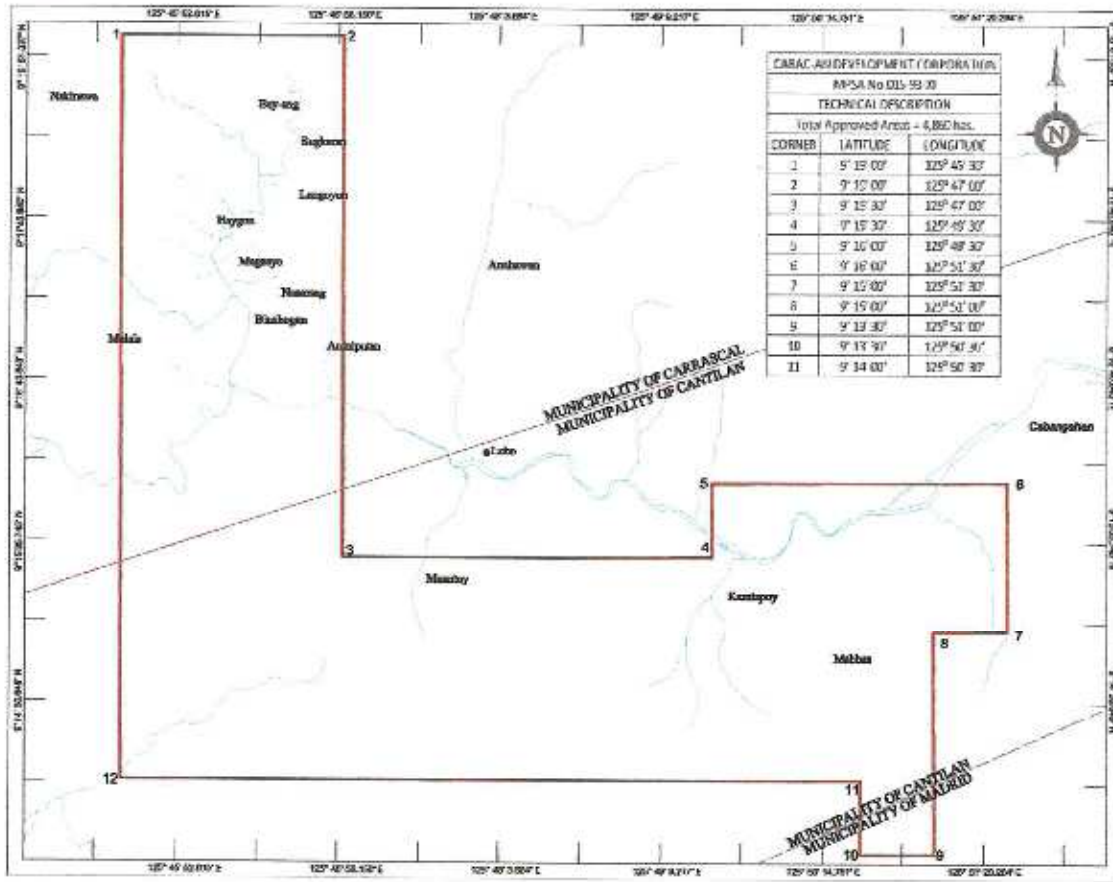


Figure 2-1. Location map showing BGRC tenement with municipal boundaries.

3.0 GEOGRAPHY

3.1 Location and Accessibility

BGRC's 4,860-hectare tenement area is located within Barangays Lubo and Cabangahan in the Municipality of Cantilan, Surigao del Sur. It is generally bounded by the geographic coordinates 125°45'30" to 125°51'30" and 9°13'30" to 9°19' (Luzon-Mindanao datum), which is covered the Madrid Quadrangle map of the National Mapping Resource Information Authority (NAMRIA).

Barangay Lubo is about thirty-two (32) kilometres and Barangay Cabangahan is fourteen (14) kilometres west of Cantilan town proper. It can be reached either by traversing the Caracan River, or by newly improve logging road from Sipangpang to Lubo.

Cantilan is 100 kilometers southeast of Surigao, accessible by two to three (2-3) hours' drive from Surigao along the Surigao City – Tandag National Highway. Cantilan can also be reached from Butuan passing through another national highway that fork at the Municipality of Sison and thereafter merges with the Surigao City – Tandag National Highway. Surigao and Butuan are both accessible from Manila by commercial flights.



Figure 3-1. Map showing BGRC tenement with road network from Surigao City and Butuan City.

3.2 Topography, Physiography and Drainage

The tenement area faces the Philippine Sea to the east. As seen in Figure 3-1, it is located at the northeastern fringe of a north-south trending mountain range that transects Surigao Peninsula. This mountain range is the Diwata Mountain Range (also called the Pacific Cordillera), a 300-kilometer-stretch of rugged mountains that extends all the way to Davao. The Diwata Mountain Range runs parallel to the east coast of Surigao, and effectively separates Surigao del Sur from the rest of Mindanao. The highest elevation in this mountain range is at 6,028 meters at the north end

and 8,207 meters at the south end. In between are two relatively topographic lows, one west of Lianga and Bislig bays, and the other between Lupo and Mati in Davao.

To the west of the Diwata Mountain Range is Tubay Valley and Lake Mainit slightly north. These topographically low areas are bordered to the west by a 70-kilometer-long elevated terrain that runs parallel to the west coast of Surigao del Norte, the Malimono Ridge.

Within the tenement area, the terrain is characterized by gently to moderately sloping and undulating terrain in Mabhas to the west, and by steep slopes and rugged terrain in Lubo to the northwest (Figure 4). In Mabhas, the gently to moderately sloping portion has elevations from 300 to 700 meters. The sides closest to Caracan River are the steepest, with slope angles of up to 80 degrees. Three dominant peaks occur at 470 meters elevation to the northernmost, and 760 and 890 meters elevation further south. From the second peak with 760 meters elevation, several ridges grow outward and downward in a radial manner. No karst topography can be inferred from topography, but along man-trails, limestone occurrences had been noted; likewise along Caracan River, limestone floats were observed. A major north-south trending tributary of Caracan River can be considered to separate Mabhas from the rest of the MPSA area.

West of Mabhas area, the terrain is more rugged and less undulating. Most ridges are thin, and seem to be aligned along a northeast direction. Elevations range from 300 to 800 meters elevation. Three peaks standing at 856 and 650 meters elevation to the west, and at 550 meters elevation further south.

In Lubo, the terrain is very rugged, especially to the north and west. Two dominant peaks stand at 360 and 400 meters elevation to the west of a north-south tributary, and another two at 650 and 750 meters elevation east of the tributary. Northwest of the tenement, the mountains steeply rise to as high as 1,300 meters elevation.

3.3 Climate

Surigao del Sur exhibits TYPE II Climate which has no dry season and with a very pronounced maximum rain period from December to February (Figure 3-2). The mean annual rainfall of the Philippines varies from 965 to 4,064 mm annually. Baguio City, eastern Samar and eastern Surigao receive the greatest amount of rainfall while the southern portion of Cotabato receives the least amount of rain. Maximum rainfall is experienced from November to February and minimum rainfall from May to April with annual rainfall not exceeding 4,500 millimeters (Kintanar, 1984).



Figure 3-2. Climate map of the Philippines based on the Modified Coronas Classification with relative location of MMDC tenement area (www.pagasa.dost.gov.ph).

3.4 Vegetation

The eastern to western mountainous section of MPSA are primarily covered by a dense growth of forest trees such as, lawaan, apitong, yakal, tangile and narra. Logged out portions are covered by secondary growth plants, such as vines, shrubs, under bushes, cogon grass and thick crawling ferns (agsam). Picher plants and rattan vines are common in open areas.

4.0 GEOLOGIC SETTING AND MINERALIZATION

4.1 Regional Geology, Tectonic Setting and Stratigraphy

The principal tectonic element of the Philippine archipelago is the elongate Philippine Mobile Belt (Rangin, 1991) which is bound to the east and west by two major subduction zone systems, and bisected along its north-south axis by the Philippine Fault (Figure 4-1).

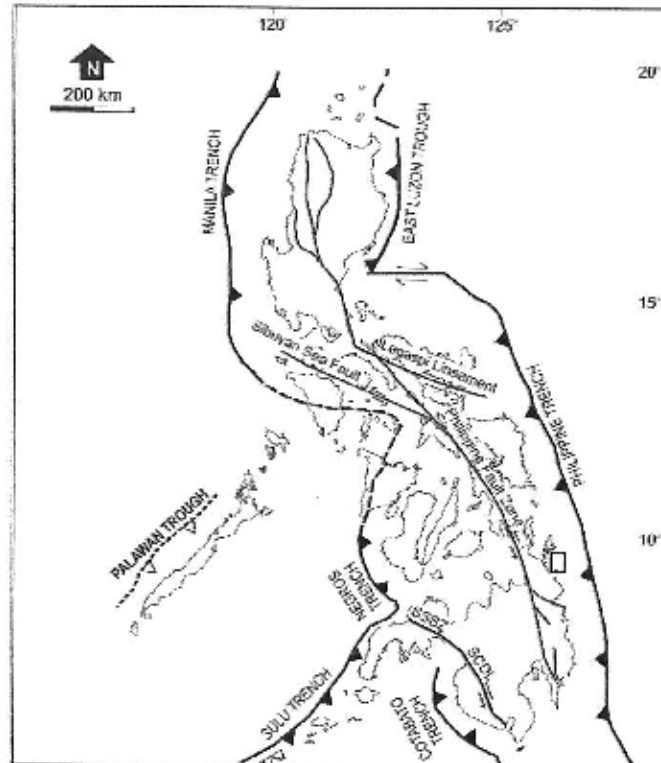


Figure 4-1. General tectonic map of the Philippines with relative location of the tenement area.

The Philippine Fault and its associated faults play an important role in the mineralization of the Surigao District. The trace of the Philippine Fault in Surigao is marked by highly rectilinear NNW-SSE trending Tubay Valley, Lake Mainit and Maniayao Volcano. These structures were formed by pull-apart mechanism associated with left-stepping left-lateral strike slip fault.

Intense physical and chemical weathering of ultramafic rocks believed to form part of ophiolite belts which became exposed to the tropical climatic conditions due to orogenetic processes produces nickel-bearing laterite. The distribution of ophiolite belts in the Philippines is shown in Figure 4-2.

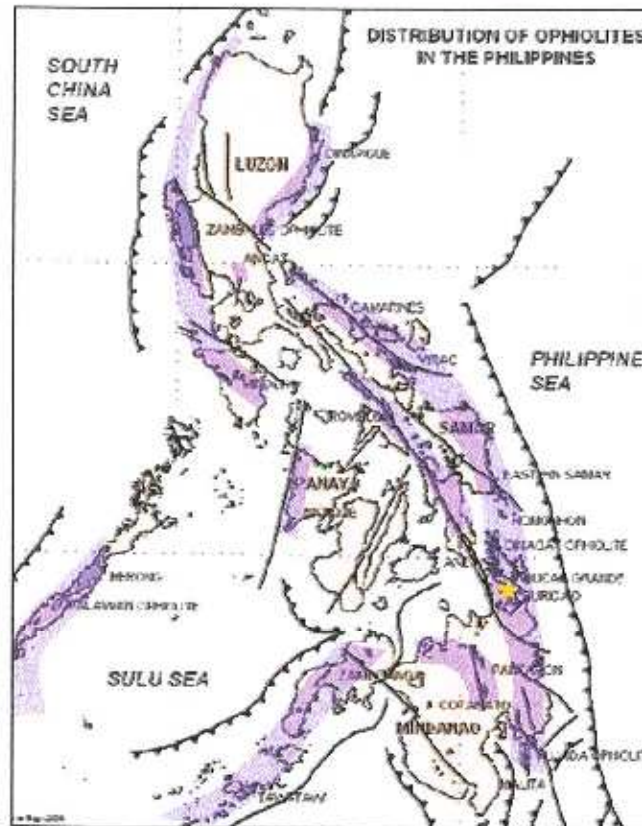


Figure 4-2. Map showing the distribution of ophiolite belts in the Philippines with relative location of MMDC tenement area.

The basement rocks in the district are basalts and slabs of the Dinagat Ophiolite and metamorphic rocks of the Cretaceous Sohoton Greenschist. The ophiolite consists of amphibolite, peridotite, pyroxenite, gabbro and dunite. They are regionally serpentized and can be found along Malimono Ridge and Northern Pacific Cordillera. These rocks were dated to be Cretaceous to Paleocene (MGB, 2010; Rohrlach, 2005).

Overlying the basement rocks are calcareous conglomerates of the Upper Eocene Madanlog Formation in Surigao, and its equivalent terrigenous and calcareous sediments of the Nabanog Formation in Agusan. These formations are in turn overlain by the Late Oligocene to Early Miocene Bacuag Formation. The Bacuag Formation consists of basaltic flow and breccia, limestone, limestone conglomerate, wackes, siltstone, and muddy limestone.

Intruding the Bacuag Formation and other older formations is the Asiga Diorite named after the river where most outcrops were to be found. The Early to Late Miocene Alipao Andesite also intrudes the Bacuag Formation in the vicinities of Alipao and Siana Mine Pits. The Bacuag Formation is overlain by the Lower to Middle Miocene Mabuhay Formation (Motherlode Turbidite by UNDP, 1987). The Middle Miocene Timamana Limestone unconformably overlies the Bacuag and Mabuhay Formations. This consists of massive coralline limestone (MGB, 2010).

Andesitic pyroclastic eruption and lava flows formed the Tugunan Formation (Mabuhay Clastics by UNDP, 1987) during the Pliocene. Associated magmatism brought about the epithermal mineralization of the Surigao District (Rohrlach, 2005), and produced the andesites reported as the Andesite Group by Santos et.al. (1962) and as the Andesite Series by Santos-Ynigo (1944). These were separated by MGB (2010) into the Early to Late Pleistocene Ipil Andesite, Late Pliocene Bad-as Dacite and the Pleistocene Maniayao Andesite. Pleistocene deposits in the region are the

Mainit Formation, Hinatigan Formation and Placer Conglomerate (MGB, 2010), all of which are dominated by conglomerates and sandstones. Figure 4-3 shows the updated stratigraphic column of the Northern Pacific Cordillera by MGB, 2010.

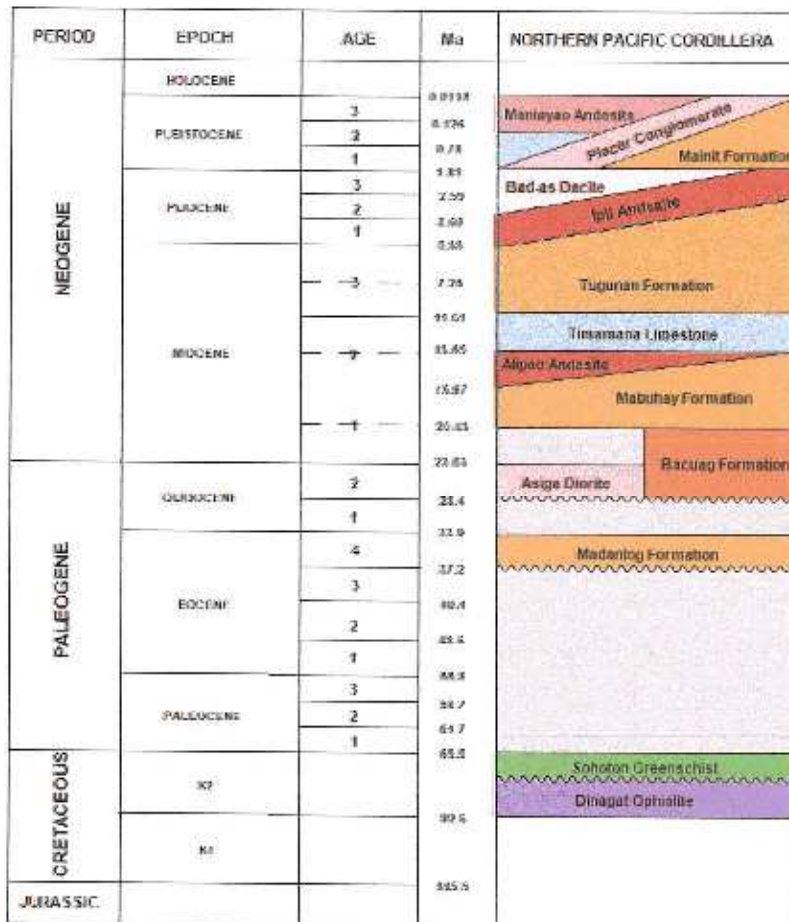


Figure 4-3. Updated stratigraphic column of the Northern Pacific Cordillera (MGB, 2010).

4.2 Local Geology

BGRC tenement is covered by lateritic deposit derived from the physical and chemical weathering in place of the underlying ultramafic rocks. The geology of the project area is characterized by four (4) rock units, namely: Quaternary Alluvium, Late Oligocene Asiga Diorite, Sohoton Greenschist and Dinagat Ophiolite Complex (Figure 4-4).

4.2.1 Quaternary Alluvium

The alluvium is mostly confined in the valleys and associated confluent alluvial fans and plains of the principal rivers. Continued uplift of the western coast of the island resulted in a regressive overlap of the flood-plain debris, so that thin, younger alluvium caps marine sediments. Repeated uplift is evidence by both river and beach terraces.

4.2.2 Asiga Diorite

Alipao andesite was named by UNDP (1987) after the hornblende andesite plugs in Alipao and Siana Mine pit, Surigao del Norte. Intruding all older units, it is assigned to a Middle Miocene age by UNDP (1987).

Outcrops are light to dark colored, moderately weathered, and highly jointed. Quartz veins and stringers and accompanying sulphides were observed in the outcrops. Hand specimens of diorite contain amphibole and plagioclase crystals with sizes ranging from 2mm to 1cm with disseminated crystals of pyrite and other sulphides which sometimes also occur as veinlets. Some xenoliths contain amphibole and plagioclase crystals that are larger than those in the diorite samples, as well as pyroxene.

4.2.3 Sohoton Greenschist

The Sohoton Greenschist is composed of greenschist, phyllite, and low-grade metamorphic sedimentary and volcanic rocks with marble interbeds. It was previously named as Sohoton Formation by Santos-Ynigo (1944) in reference to a metasedimentary and metavolcanic sequence near Sitio Sohoton, Malimono, Surigao del Norte.

4.2.4 Dinagat Ophiolite Complex

The Dinagat Ophiolite, the oldest stratigraphic unit in the area, is equivalent to the Basement Rocks of UNDP (1987) which is composed of serpentized harzburgite, ophiolite suites, but including low-grade metamorphic rocks, metavolcanics and metasediments. It is previously named as Ultramafic Rocks by Santos-Ynigo (1944) and Santos et. al (1966) and renamed by MGB (2004). Exposures of this formation are located in the Mabhas area in the southeast part of the tenement with some sporadic occurrences of limestone, possibly part of Hinatigan Limestone Formation. Lateritic deposits from the weathering of this formation are present in this area.

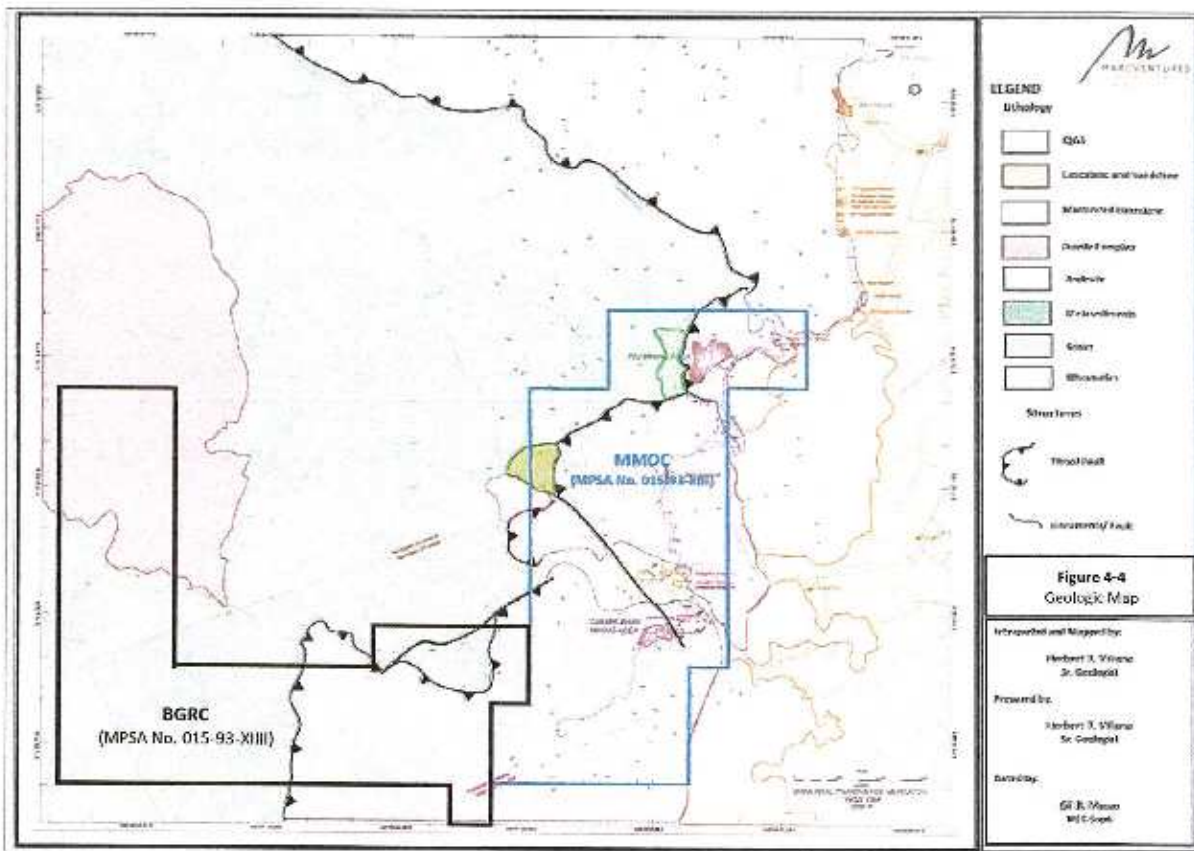
Serpentinized peridotite, pyroxenite and dunite are exposed along road cuts in Barangay Panikian and Barangay Cabangahan. Fresh rock samples are greenish black to black. Dunite is predominantly composed of olive green grains of olivine. Pyroxene occurs as fine to coarse black crystals in peridotite and pyroxenite.

4.3 Mineralization

4.3.1 Laterite Mineralization

The Laterite mineralization on the eastern part of MPSA is a typical wet tropical laterite similar to other deposit in the region that occurred in the weathered ultramafic basement rock. The lateritisation process of the parent rocks at BGRC Laterite Deposit involves the dissolution of the original rock mineralogy, the leaching of certain elements, and the eventual deposition of those elements elsewhere. The most soluble of the compounds, such as magnesium oxides, are thus removed, increasing the relative concentration of the remaining minerals, which include iron oxides and any contained nickel and cobalt. The nominal weathering depth is approximately 12 meters.

The weathering profile at the MPSA area is best described from the base upwards. At the base of the weathering profile, the parent bedrock consists of massive to highly jointed ultramafic rocks consisting of harzburgite whose surface can be highly irregular with numerous peaks and troughs. Conversely, preferential weathering within the bedrock along joints and fractures produces narrow weathered zones that extend deep into the bedrock. The narrow weathered zones are generally composed of saprolite and are known to commonly contain high nickel grades. The saprolite of Mabhas and Anas has average thickness of 5 m.



Also, near surface accumulations of limonitic laterite ore containing little or no residual rocky material exist. The limonite zone is generally less than 6.0m thick and often thins on steeper slopes.

Nickel is relatively mobile over a wide range of environment. Its fixation in the limonite zone is in oxide form. Nickel is absorbed and included in the goethite and other oxide form. Its values generally increase in depth and attain maximum values at the saprolite layer. Iron content is highest in the limonite zone but decreases rapidly from the bottom of the limonite zone to the saprolite zone (Figure 4-5).

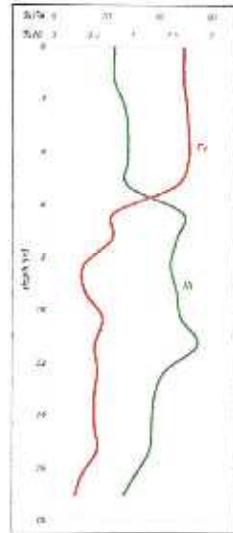


Figure 4-5. Plot of Ni and Fe values of a BGRC drill hole (E6 N250 E350) versus depth in meters. Note the sudden decrease in Fe and sudden increase in Ni marks the transition from the top limonite portion to saprolite below.

Nickel and iron grade histogram shown in Figure 4-6 demonstrates presence of limonite and saprolite within the project area. This is manifested by high count of nickel values with more than 1.2%. The iron grade distribution shows that the typical trend observed for most laterite deposits in the country wherein there is observable clustering of iron values from 7.5 to 12.5% and from 47.5 to 52.5%.

Trend of nickel grade distribution observed so far in other laterite deposits in the country show normal or bell-shaped distribution with the peak at medium grades or around 1%.

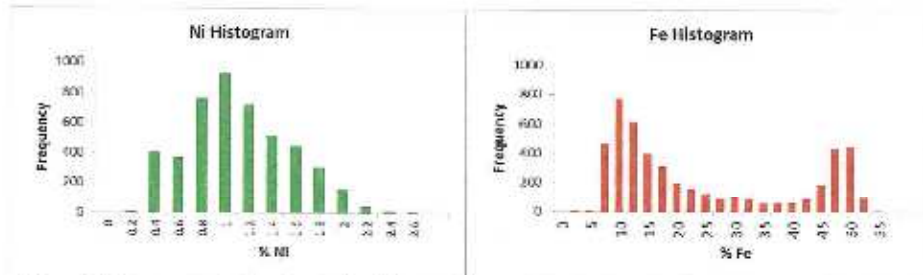


Figure 4-6. Frequency distribution graphs (histogram) of nickel and iron values of samples from Mabhas-Anas Area.

4.3.2 Gold and Copper Mineralization

Indication of gold and copper mineralization is found on the western portion of the MPSA. According to an unpublished report of Mendoza and AUSA (2007), concentrations of alluvial gold are believed to be coming from the Langoyon area and to be deposited along the Binaogan creek and Carac-an River at Lubo. Traces of small scale mining for gold were observed along the Langoyon Creek, northern Sugkaran area, and the southern Nasarsag area. Hydrothermal alterations in Pinohagan Creek were also noted. Assay results from the collected samples yielded generally low values for gold and copper and regional stream sediment samples shows no potential gold and copper drainage anomaly except from those along the Binaogan and Aniniputan Rivers which are both draining from the Langoyon gold workings.

A possible epithermal gold deposit based from structures and features observed, such as irregular or branching fissures, vesicle fillings, stockworks, breccia pipes and sulfide disseminations, along the creeks of Lubo. A 10-meter wide highly silicified zone of parallel or criss-crossing quartz veins or veinlets containing medium to strong pyrite disseminations with copper sulphides, was traced on the surface (extending 1-3 km.) along the Aniniputan River. This km-long quartz vein system is probably the most substantial delineation of economic potential done in the Lobo area. (Adarle, 2010).

Four intrusive phases of diorites (hornblende quartz diorite, quartz diorite, diorite and microdiorite) consisting of plagioclase, hornblende and minor biotite. Quartz diorite is the main host of copper and gold mineralization while the hornblende quartz diorite is the least mineralized. Argillic alteration is common while propylitic alteration, characterized by chlorite, calcite, pyrite and epidote, is rarely observed, though no thorough alteration mapping was done. They speculated that during overprinting in phyllic-argillic alteration, copper must have been introduced. Portions of the potential porphyry copper system are possibly exposed in the surface with a probable significant mineralization at deeper levels, due to the occurrence of a widespread argillic alteration. (Adarle and Barata Jr., 2010).

5.0 EXPLORATION

Semi-detailed geologic mapping of BGRC's MPSA in 2010 and 2012 revealed important economic geological targets within the property. These are the 1) nickel laterite deposit in Barangay Cabangahan and 2) epithermal gold-porphyry copper prospect in Barangay Lubo. This report focuses on the exploration of the nickel laterite deposit. The following sub-sections describes the details of the drilling activities that was done over the nickel laterite deposit to estimate its resources.

5.1 Drilling and Sampling

5.1.1 2012 Exploration Drilling

In 2012, BGRC contracted Dr. Carlo Arcilla, Director of the University of the Philippines National Institute of Geological Sciences to explore the company's tenement area to determine its potential for nickel and gold-copper deposits. By the 3rd quarter of that year, twenty three (23) holes were drilled at 500 to 1,000 meter spacing within approximately 300 hectares area with delineated laterite deposit. Out of the 23 holes, eight (8) yielded greater than 3 meters of saprolite, concentrated in the central and northeastern portion of Mabhas.

To further verify, a 200m x 200m drilling program was implemented in the same year within the area of concentration, covering approximately 80 hectares in central Mabhas, and 15 hectares in northeast Mabhas. Results of the 200m x 200m drill program prompted an infill (100m x 100m) drilling program in areas surrounding the high-nickel, thick saprolite areas. A total of 62 holes were drilled with an aggregate depth of 919.50 meters (Table 5-1). This includes the previous 23 holes that were drilled at 300-meter interval.

Table 5-1. Summary of 2012 exploration drilling accomplishments.

Location	No. of DHs	Meterage	Ave. Depth/Hole
Mabhas-Anas	62	919.50	14.3

5.1.2 2015 Exploration Drilling

After the 2012 drilling campaign, it has been confirmed that Mabhas and Anas Areas have potential for nickel laterite. In 2015, BGRC Management decided to conduct 50m x 50m in-fill drilling within these areas to come up with an estimation of the areas' measured and indicated resources. The in-fill drilling program commenced on April 2015 and was completed by the month of October of the same year.

BGRC Exploration Team implemented the following procedure in conducting the Phase 2 exploration drilling program (Figure 5-1).

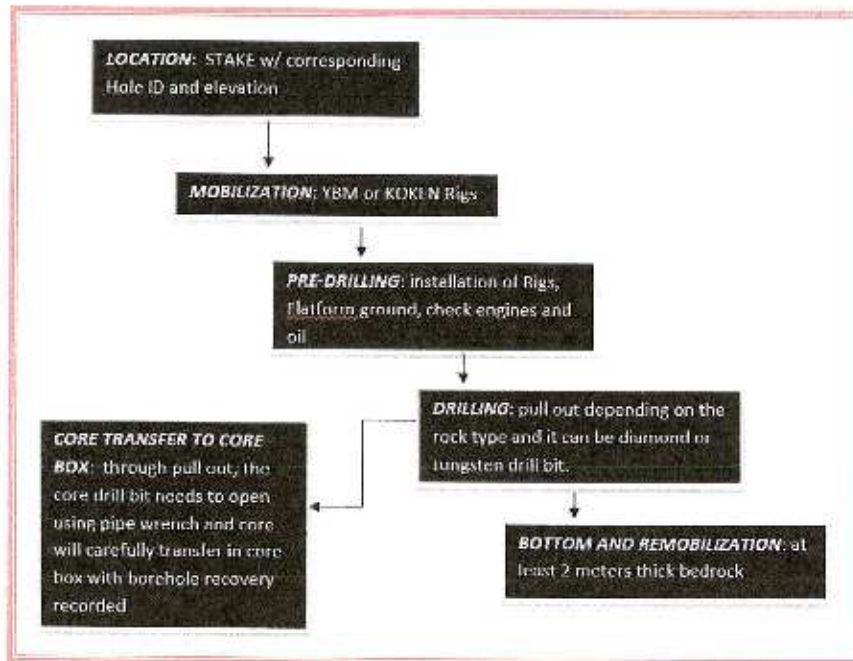


Figure 5-1. Exploration drilling procedure.

The baseline used in laying out the location of the proposed in-fill drill holes was established by traversing from a reference point within MMDC MPSA Area to Mabhas-Anas Area using a TOPCON Total Station. After establishing the baseline, the proposed drill holes were laid out at 50-meter interval and marked with stakes with corresponding northing, easting and elevation. A total of 349 drill holes were laid out, 189 of which are in Anas and 160 are in Mabhas (Table 5-2).

Table 5-2. Summary of 2015 survey activity.

LOCATION (50m x 50m grid)	Actual holes	No. of surveyed	Cycle time	No. of days
ANAS (47.25has)	178	189	8 holes/day	23.62
MABHAS A (40 has)	153	160	8 holes/day	20

Drilling was contracted out to JCP Geo-Ex Services, Inc. (JGSI) owned by Mr. Jesus C. Palma. JGSI used four (4) fabricated Koken drill machines with NQ size core tubes. The activity was supervised by Geologists Ralph Rey L. Tan, Roi Eric V. Saludes and Beda Louie O. Cagampang with Mapping Specialist Ronito T. Martinez. Summary of drilling accomplishment is presented in Table 5-3.

Table 5-3. Summary of 2015 drilling accomplishments.

Location	No. of DHs	Meterage	Ave. Depth/Hole
Anas	171	2,012.25	11.77
Mabhas A	153	1,803.66	11.79
TOTAL	324	3,815.91	11.78

Figure 5-2 shows photograph of actual drilling activity and core samples collected during the 2015 drilling campaign. Location of drill holes from 2012 to 2015 is shown in Figure 5-3.



Figure 5-2. a) JGSI fabricated Koken drill machine, b) core samples placed in core boxes by the core checker, c) sample of core photograph taken once samples of a drill hole is delivered to the field sample house, d) sample of saprolite ore intercepted in one of the drill holes.

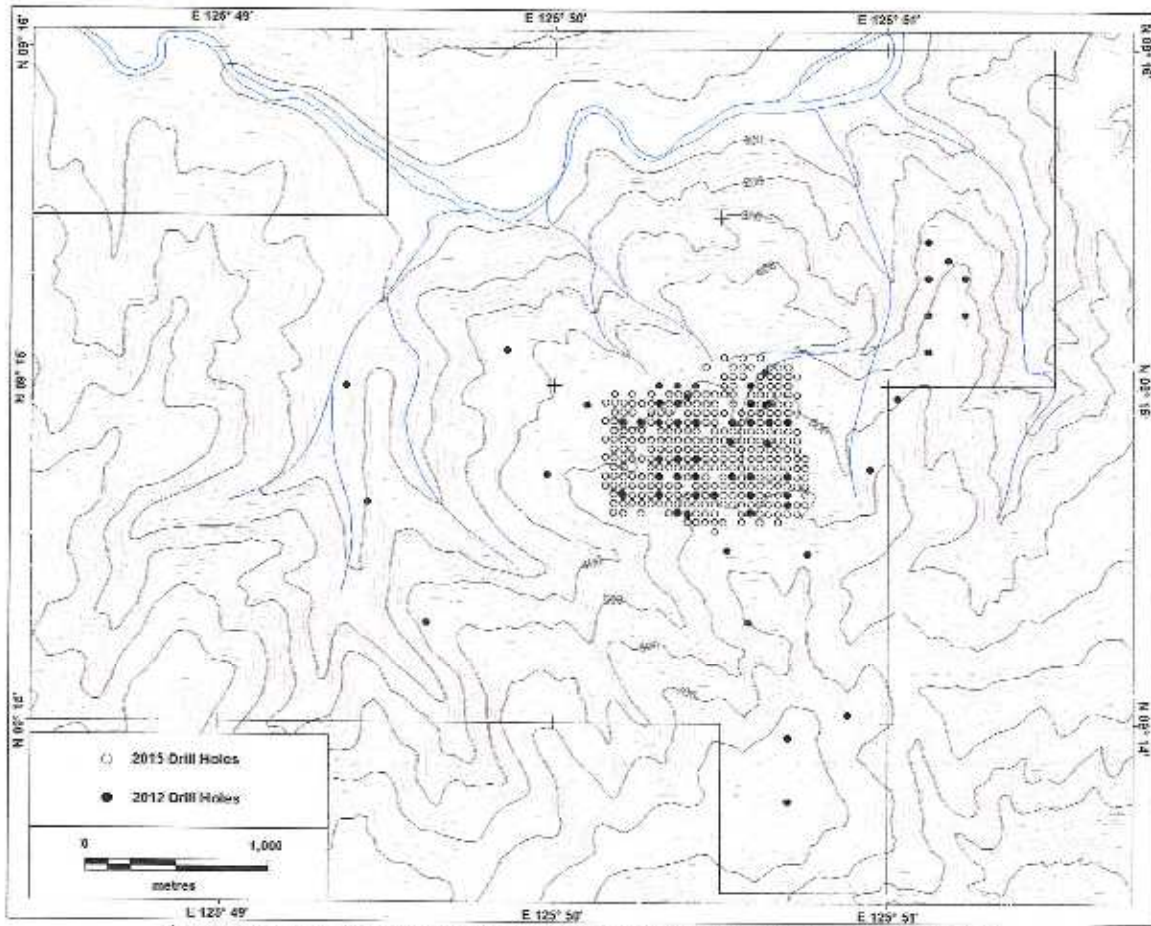


Figure 5-3. Map showing location of drill holes completed on 2012 (black circles) and on 2015 (circle).

5.2 Sample Preparation, Analyses and Security

A Core Checker trained by BGRC Geologist or Mapping Specialist is present during coring operation to record drilling activities such as core recovery, drill run, type of material recovered including problems encountered during drilling. Once a hole is bottomed, the core boxes containing the samples are delivered to the Field Sample House where the Geologist or Mapping Specialist takes photograph of the samples and conducts core logging.

Once core logging is done, sampling is done at a nominal interval of one (1) meter down the hole regardless of laterite horizon boundaries. Samples are placed into pre-labelled plastic samples bags and delivered to MMDC Assay Laboratory for sample preparation and analyses.

The Sample Preparation Lead Man checks the delivered samples against the Sample Despatch and signs the despatch form.

Samples are manually crushed on a steel plate using a sledge hammer then placed on labelled metal trays. To dry the samples, the metal trays containing the samples are placed into the electric oven at 105°C for 8 hours or more if needed. The sample is then passed through a crusher to crush "lumps" that formed while drying the sample. A riffle splitter is used to divide the sample into two (2) parts. One (1) part is retained and stored as coarse reject that can be used for check analysis in the future. The other part is pulverized to 150 mesh where about 1 gram sample is taken to be analysed.

Analyses of core samples by the MMDC Assay Laboratory using Atomic Absorption Spectrometry (AAS) and using X-ray Fluorescence (XRF) Spectrometry.

Coarse duplicates are temporarily stored at the MMDC core house located adjacent to the laboratory and sample preparation facility. The pulp duplicates are kept in the sample preparation facility. Maximum holding period of coarse duplicates is one (1) year. Afterwards it will be properly disposed or used as filling material, if applicable.

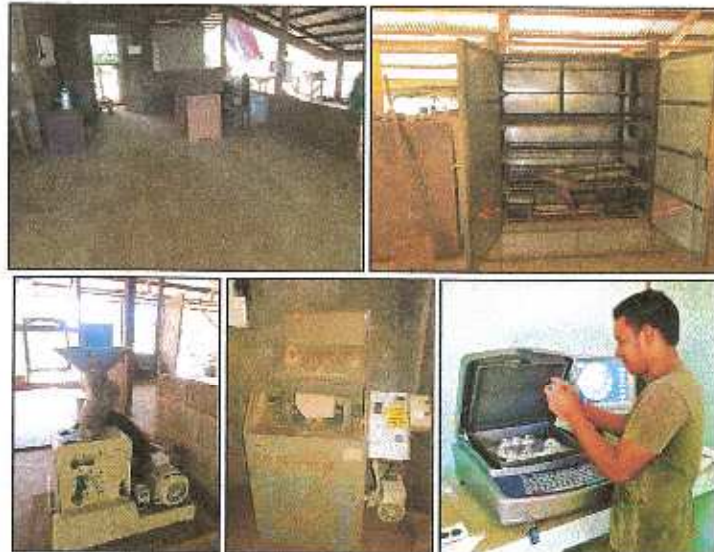


Figure 5-4. a) Steel plate used to manually crush saprolite and bedrock samples, b) Metal trays containing crushed samples are placed into the electric oven to be heated at 105°C for 8 hours, c) crusher used to reduce the size of the sample after drying, d) pulverizer used to further reduce the size of the sample after splitting, e) XRF machine used to analyse the pelletized samples.

6.0 DATA VERIFICATION

6.1 Drilling database

Data was arranged into excel files containing the collar and assay data of each hole. A total of 4,683 samples of 386 drill holes from the 2012 and 2015 exploration drilling activities were considered in the determination of BGRC's mineral resource (Table 6-1).

Table 6-1. Summary of BGRC database record.

	Ni	Fe
N of cases	4,683	4,683
Sum	4,787.11	108,343.52
Minimum	0.03	0.62
Maximum	2.51	54.47
Range	2.48	53.85
Median	0.97	15.75
Mean	1.02	23.14
Standard deviation	0.44	15.80
Mode	0.92	9.71
Variance	0.19	249.51
Coefficient of variation	0.43	0.68

6.2 QA/QC

MMDC in-house laboratory was chosen to analyse the samples due to its proximity to the project area. The laboratory ensures precise and accurate results through internal Quality Assurance/Quality Control (QA/QC) procedure and inter-laboratory checking. The accuracy and precision of MMDC's laboratory is also demonstrated by its capability to conduct its own determination of grade of materials transported in MMDC's shipments which agrees with the values determined by the buyer's laboratory in China.

6.2.1 Internal QA/QC

Internal QA/QC includes the incorporation of in-house reference samples, and coarse and pulp duplicate samples in sample batches. In-house reference samples are prepared from core samples that have good or ore-grade values.

6.2.2 Inter-laboratory checking

Inter-laboratory checking is conducted by sending some of MMDC's standards and samples to laboratories of other mining companies such as Taganito, CNC, CTP and Biominerals.

The accuracy and precision of MMDC's laboratory is also demonstrated by its capability to conduct its own determination of grade of materials transported in each of MMDC's shipment which agrees with the values determined by buyer's laboratory in China.

7.0 RESOURCE ESTIMATION

Polygon method was used to determine BGRC's mineral resource. In this method, each drill hole is assigned a polygon that represents the extent of the area of influence of the drill hole. The assumption is that everywhere within the polygon, the thickness and grade of the resource material is uniform and more or less the same to the resource material of the drill hole enclosed by the polygon.

The area of influence of each drill hole is based on the halfway rule, which states that the influence of a drill hole sample extends halfway to other samples laterally adjacent to it. The resource is classified only as resource potential due to the limited data available for the area.

The volume of each block is the product of the area of influence and the combined thickness of samples that fall within the set cut-off grades of each ore type (Figure 7-1). To determine the equivalent Wet Metric Tonnage (WMT), the total in-situ volume is multiplied to a swell factor of 1.35 and 1.37, and to the bulk density of 1.16 and 1.46 for soft and hard materials, respectively. The soft materials contain about 38% moisture while hard materials contain about 15% moisture.

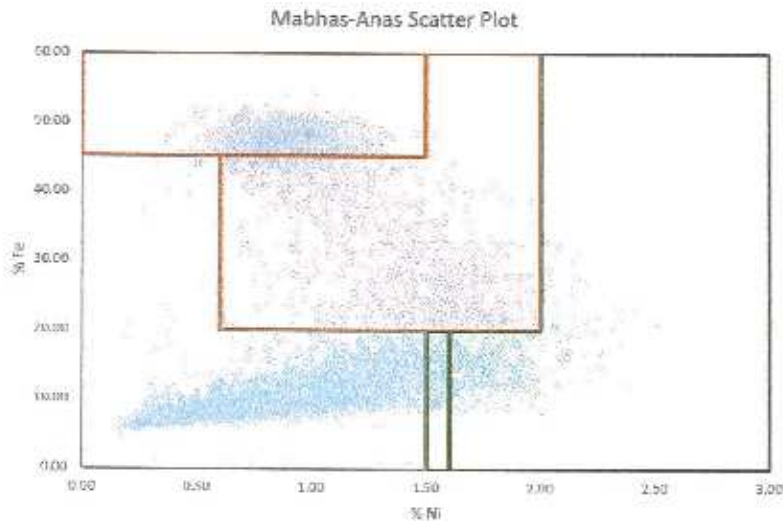


Figure 7-1. Scatter plot of nickel and iron values of core samples collected within Mabhas-Anas Area. Note the clustering of points within 0.6-1.1% Ni and 45-52% Fe which corresponds to the grade of high iron limonite. Saprolite samples are lesser and are more scattered compared to limonite samples.

BGRC's mineral resource estimates is summarized in Table 7-1. The property's total measured and indicated mineral resources was estimated to be about 16.03 million WMT with 1.17% Ni and 34.98% Fe. This is equivalent to about 3.06 million WMT of saprolite with 1.59% Ni and 14.85% Fe, and 12.97 million WMT limonite with 1.07% Ni and 39.73% Fe.

Figure 7-2 shows the grade-tonnage curve of the laterite deposit which demonstrates that as nickel grade increase, tonnage decreases. This denotes that there is more low nickel limonite than high nickel saprolite in the area. The extent of the Indicated and Inferred Resources in the area is presented in Figure 7-3.

Table 7-1. Summary of BGRC mineral resource estimates as of December 31, 2015.

Category	Ore Class	WMT	DMT	%Ni	%Fe	Ni Tonnes
Measured	Sap III	-	-	-	-	-
	Sap IV	-	-	-	-	-
	Sub-total	-	-	-	-	-
	Lim low iron	2,466,000	1,529,000	1.34	32.47	21,000
	Lim high iron	2,088,000	1,294,000	0.89	47.80	12,000
	Sub-total	4,554,000	2,823,000	1.13	39.49	33,000
	TOTAL	4,554,000	2,823,000	1.13	39.49	33,000
Indicated	Sap III	1,295,000	803,000	1.82	15.84	15,000
	Sap IV	1,760,000	1,093,000	1.42	14.11	16,000
	Sub-total	3,055,000	1,896,000	1.59	14.85	31,000
	Lim low iron	4,328,000	2,683,000	1.23	31.66	33,000
	Lim high iron	4,090,000	2,536,000	0.84	48.53	21,000
	Sub-total	8,418,000	5,219,000	1.04	39.86	54,000
	TOTAL	11,473,000	7,115,000	1.19	33.19	85,000
Measured and Indicated Total		16,027,000	9,938,000	1.17	34.98	118,000
Inferred	Sap III	219,000	136,000	1.72	16.86	2,000
	Sap IV	110,000	68,000	1.39	9.05	1,000
	Sub-total	329,000	204,000	1.61	14.25	3,000
	Lim low iron	2,255,000	1,398,000	1.10	29.68	15,000
	Lim high iron	2,443,000	1,515,000	0.73	48.78	11,000
	Sub-total	4,698,000	2,913,000	0.90	39.61	26,000
	TOTAL	5,027,000	3,117,000	0.95	37.95	29,000
MEASURED and INDICATED	Sap III	1,295,000	803,000	1.82	15.84	14,617
	Sap IV	1,760,000	1,093,000	1.42	14.11	15,520
	Sub-total	3,055,000	1,896,000	1.59	14.85	30,137
	Lim low iron	6,794,000	4,212,000	1.27	31.95	53,380
	Lim high iron	6,178,000	3,830,000	0.86	48.29	32,837
	Sub-total	12,972,000	8,042,000	1.07	39.73	86,218
	TOTAL	16,027,000	9,938,000	1.17	34.98	116,354

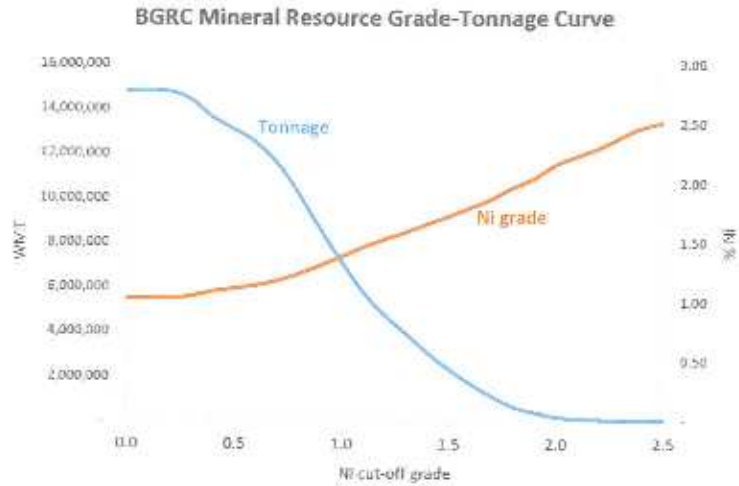


Figure 7-2. Grade-tonnage curve of Mabhas-Anas assay results.

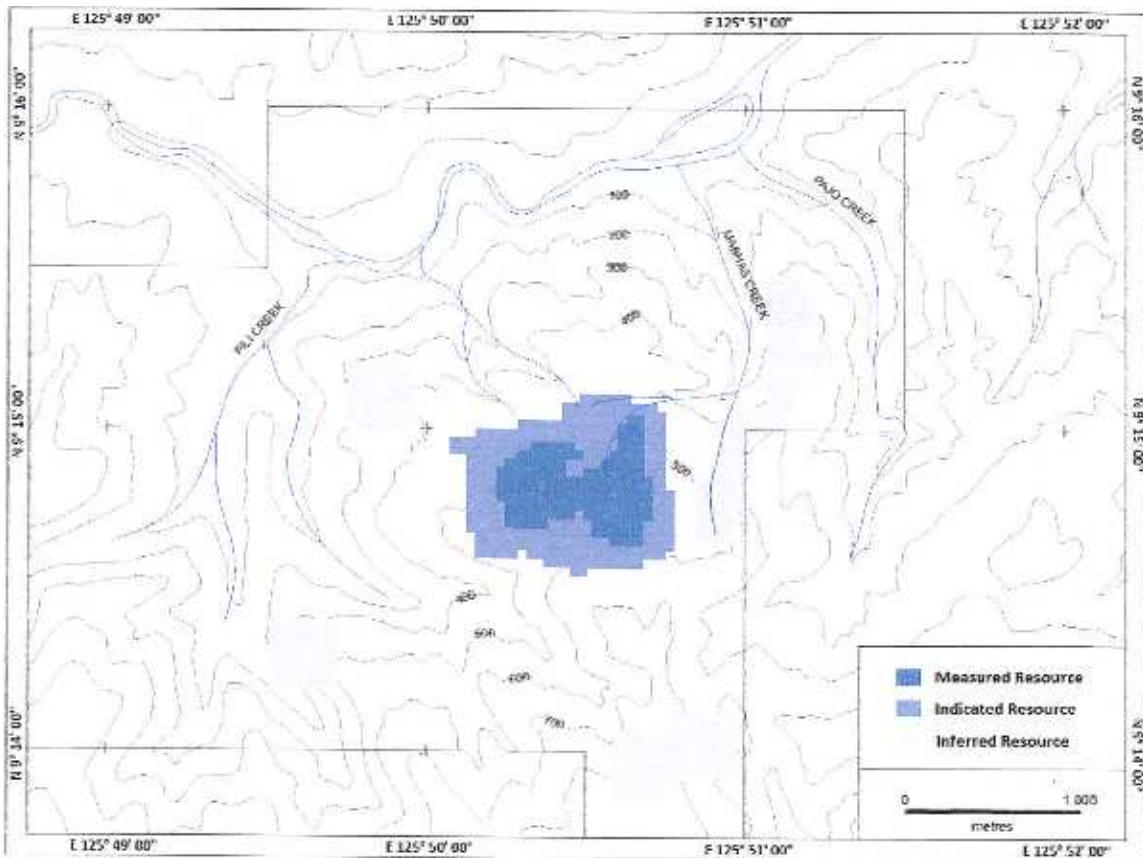


Figure 7-3. Location map showing location of Indicated and Inferred Resources estimated using manual polygon method.

8.0 CONCLUSION AND RECOMMENDATION

The occurrence of high-nickel saprolite and high-iron limonite in MMDC tenement area prompted the exploration for possible nickel laterite within BGRC tenement area, specifically the Mabhas-Anas Area. Results of 62 holes drilled on 2012 revealed areas with high-nickel saprolite and high-iron limonite located at about 400 to 600 masl. These areas are located west of MMDC's Languag Area which has also been explored and proven to have potential for saprolite and limonite.

An estimation of the area's resource potential was reported on 2014 by the company's in-house geologist using manual polygon method and based on the results of the 62 drill holes. The project's total nickel laterite resource potential is about 6.39 million WMT with 1.13% Ni and 37.60% Fe. This is equivalent to 1.32 million WMT of saprolite with 1.80% Ni and 16.01% Fe, and 5.07 million WMT limonite with 0.98% Ni and 42.63% Fe.

A more detailed drilling program was conducted within the delineated area in 2015 to come up with an estimates of its mineral resources. A total of 324 holes was drilled at 50 meters interval with a total of 3,815.91 meters depth. Samples were analysed using XRF machine and results were prepared in excel files which were used in the manual polygon method of estimation.

From a resource potential of about 6.39 million WMT, the Measured and Indicated Resource of the project was estimated to be about **16.03 million WMT with average grade of 1.17% Ni and 34.98% Fe**. This is equivalent to about 3.06 million WMT of saprolite with 1.59% Ni and 14.85% Fe, and 12.97 million WMT limonite with 1.07% Ni and 39.73% Fe. Additional Inferred limonite and saprolite resource was estimated at **5.03 million WMT with 0.95% Ni and 37.95% Fe**.

Another potential economic geological target in the vicinity of Barangay Lubo should be explored by the company, which based on geological, geochemical and induced polarization studies suggest that a substantial porphyry copper prospect might underlie the area. Exploratory shallow drilling and a few deep diamond drill holes were recommended by Dr. Arcilla to test if the geochemical and geophysical anomalies delineated constitute significant ore resources.

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Hole	From	To	Ni	Fe					
5 N400 E45	0.00	1.40	0.67	12.19	5 N300 E45	10.26	11.26	0.69	6.77
5 N400 E45	1.40	2.40	0.67	20.90	5 N300 E45	11.26	12.00	0.87	7.31
5 N400 E45	2.40	3.40	1.04	11.81	5 N450 E30	0.00	1.49	0.71	49.59
5 N400 E45	3.40	4.40	0.73	12.43	5 N450 E30	1.49	2.49	0.84	50.98
5 N400 E45	4.40	5.40	0.62	12.31	5 N450 E30	2.49	3.49	0.90	50.32
5 N400 E45	5.40	6.40	0.73	11.96	5 N450 E30	3.49	4.49	1.00	49.09
5 N400 E45	6.40	7.00	0.97	12.32	5 N450 F30	4.49	5.49	1.50	13.66
5 N450 E35	0.00	0.69	0.49	50.33	5 N450 F30	5.49	6.49	1.13	9.71
5 N450 E35	0.69	1.69	0.65	50.61	5 N450 F30	6.49	7.49	0.93	9.36
5 N450 E35	1.69	2.69	0.76	50.54	5 N450 F30	7.49	8.00	0.61	7.42
5 N450 E35	2.69	3.69	0.86	43.35	5 N500 E35	0.00	1.20	0.69	49.07
5 N450 E35	3.69	4.69	1.18	34.75	5 N500 E35	1.20	2.20	0.80	49.81
5 N450 E35	4.69	5.69	1.55	28.10	5 N500 E35	2.20	3.20	0.86	49.56
5 N450 E35	5.69	6.69	1.58	18.42	5 N500 E35	3.20	4.20	0.98	49.65
5 N450 E35	6.69	7.69	1.37	16.28	5 N500 E35	4.20	5.20	0.93	49.13
5 N450 E35	7.69	8.69	1.29	15.14	5 N500 E35	5.20	6.20	0.85	48.64
5 N450 E35	8.69	9.69	1.30	16.15	5 N500 E35	6.20	7.20	0.94	50.34
5 N450 E35	9.69	10.69	1.04	12.09	5 N500 E35	7.20	8.20	1.00	49.08
5 N450 E35	10.69	11.69	1.03	13.99	5 N500 E35	8.20	9.20	1.42	38.49
5 N450 E35	11.69	12.69	0.62	8.24	5 N500 E35	9.20	10.20	1.84	21.81
5 N450 E35	12.69	13.69	0.55	8.46	5 N500 E35	10.20	11.20	1.70	35.76
5 N450 E35	13.69	15.00	0.55	7.39	5 N500 E35	11.20	12.20	1.09	14.72
5 N400 E35	0.00	1.30	0.67	49.69	5 N500 E35	12.20	13.20	0.85	12.32
5 N400 E35	1.30	2.30	0.90	49.77	5 N500 E35	13.20	14.20	0.49	7.64
5 N400 E35	2.30	3.30	0.68	50.58	5 N500 E35	14.20	15.00	0.39	6.47
5 N400 E35	3.30	4.30	0.74	49.80	5 N250 E15	0.00	0.71	0.83	48.53
5 N400 E35	4.30	5.30	0.83	50.16	5 N250 E15	0.71	1.71	0.93	47.32
5 N400 E35	5.30	6.30	1.39	37.11	5 N250 E15	1.71	2.71	0.97	49.22
5 N400 E35	6.30	7.30	1.64	27.15	5 N250 E15	2.71	3.71	0.94	19.80
5 N400 E35	7.30	8.30	1.64	23.72	5 N250 E15	3.71	4.71	0.81	17.59
5 N400 E35	8.30	9.30	1.28	19.08	5 N250 E15	4.71	5.71	0.90	14.87
5 N400 E35	9.30	10.30	0.88	13.58	5 N250 E15	5.71	6.71	1.19	15.67
5 N400 E35	10.30	11.30	1.07	20.42	5 N250 E15	6.71	7.71	1.06	13.90
5 N400 E35	11.30	12.30	1.02	17.38	5 N250 E15	7.71	8.71	1.05	15.40
5 N400 E35	12.30	13.00	0.57	10.56	5 N250 E15	8.71	9.71	0.75	11.04
5 N350 E45	0.00	1.70	1.14	29.22	5 N250 E15	9.71	10.71	0.50	10.15
5 N350 E45	1.70	2.70	1.65	29.93	5 N250 E15	10.71	11.80	0.48	9.03
5 N350 E45	2.70	3.70	0.62	46.00	5 N400 E30	0.00	1.07	0.70	45.26
5 N350 E45	3.70	4.70	1.50	22.95	5 N400 E30	1.07	2.07	0.95	49.76
5 N350 E45	4.70	5.70	1.13	13.15	5 N400 E30	2.07	3.07	0.88	49.90
5 N350 E45	5.70	6.70	0.87	11.81	5 N400 E30	3.07	4.07	0.97	49.79
5 N350 E45	6.70	7.70	1.15	11.25	5 N400 E30	4.07	5.07	0.96	50.83
5 N350 E45	7.70	8.70	1.07	13.19	5 N400 E30	5.07	6.07	0.91	49.46
5 N350 E45	8.70	9.70	1.05	12.41	5 N400 E30	6.07	7.07	1.02	45.32
5 N350 E45	9.70	10.70	1.24	14.90	5 N400 E30	7.07	8.07	1.67	32.07
5 N350 E45	10.70	11.70	1.04	10.42	5 N400 E30	8.07	9.07	1.28	24.87
5 N350 E45	11.70	12.70	0.58	7.87	5 N400 E30	9.07	10.07	0.85	8.87
5 N350 E45	12.70	13.00	0.96	11.31	5 N400 E30	10.07	11.07	0.51	8.96
5 N350 E40	0.00	1.27	0.66	49.05	5 N400 E30	11.07	12.07	0.62	9.71
5 N350 E40	1.27	2.27	0.82	50.86	5 N250 E25	0.00	1.25	0.71	46.15
5 N350 E40	2.27	3.27	0.85	50.68	5 N250 E25	1.25	2.25	1.01	46.29
5 N350 E40	3.27	4.27	1.15	36.97	5 N250 E25	2.25	3.25	1.04	46.42
5 N350 E40	4.27	5.27	0.78	7.37	5 N250 E25	3.25	4.25	1.21	48.07
5 N350 E40	5.27	6.27	0.77	13.21	5 N250 E25	4.25	5.25	1.29	42.10
5 N350 E40	6.27	7.27	0.77	12.42	5 N250 E25	5.25	6.25	1.37	38.81
5 N350 E40	7.27	8.27	0.51	8.40	5 N250 E25	6.25	7.25	1.55	16.65
5 N350 E40	8.27	9.00	0.50	8.20	5 N250 E25	7.25	8.25	1.10	11.21
5 N50 E30i	0.00	0.82	0.59	47.63	5 N250 E25	8.25	9.00	0.70	7.13
5 N50 E30i	0.82	1.82	0.74	51.11	6 N200 E40	0.00	0.95	0.78	48.44
5 N50 E30i	1.82	2.82	0.72	50.03	6 N200 E40	0.95	1.95	1.04	23.79
5 N50 E30i	2.82	3.82	0.91	50.58	6 N200 E40	1.95	2.95	1.00	27.59
5 N50 E30i	3.82	4.82	1.55	35.77	6 N200 E40	2.95	3.95	0.86	18.14
5 N50 E30i	4.82	5.82	1.86	23.32	6 N200 E40	3.95	4.95	0.38	7.47
5 N50 E30i	5.82	6.82	2.17	19.48	6 N200 E40	4.95	5.95	0.29	7.56
5 N50 E30i	6.82	7.82	2.05	20.22	6 N200 E40	5.95	6.95	0.27	7.67
5 N50 E30i	7.82	8.82	2.09	16.24	6 N200 E40	6.95	7.95	0.27	7.24
5 N50 E30i	8.82	9.82	0.87	9.71	6 N200 E40	7.95	9.00	0.26	6.82
5 N50 E30i	9.82	10.82	0.57	7.77	5 N350 E15	0.00	0.77	0.81	44.95
5 N50 E30i	10.82	11.82	0.59	7.08	5 N350 E15	0.77	1.77	1.07	51.17
5 N300 E45	0.00	1.26	0.82	48.05	5 N350 E15	1.77	2.77	0.68	48.41
5 N300 E45	1.26	2.26	1.17	46.61	5 N350 E15	2.77	3.77	0.67	50.53
5 N300 E45	2.26	3.26	1.51	32.20	5 N350 E15	3.77	4.77	0.76	49.94
5 N300 E45	3.26	4.26	1.54	29.24	5 N350 E15	4.77	5.77	0.90	50.12
5 N300 E45	4.26	5.26	1.49	16.49	5 N350 E15	5.77	6.77	0.89	47.36
5 N300 E45	5.26	6.26	1.31	10.86	5 N350 E15	6.77	7.77	1.18	47.93
5 N300 E45	6.26	7.26	1.28	10.66	5 N350 E15	7.77	8.77	1.76	15.01
5 N300 E45	7.26	8.26	1.08	10.49	5 N350 E15	8.77	9.77	1.72	20.42
5 N300 E45	8.26	9.26	1.32	17.43	5 N350 E15	9.77	10.77	1.96	20.81
5 N300 E45	9.26	10.26	1.06	10.62	5 N350 E15	10.77	11.77	1.25	24.44
					5 N350 E15	11.77	12.77	1.19	11.83

5 N350 E15	12.77	13.77	1.01	13.47	6 N350 E35	15.22	16.22	0.86	14.93
5 N350 E15	13.77	14.77	0.88	13.04	6 N350 E35	16.22	17.22	1.00	19.76
5 N350 E15	14.77	15.77	0.83	13.28	6 N350 E35	17.22	18.22	1.02	22.95
5 N350 E15	15.77	16.77	0.75	11.67	6 N350 E35	18.22	19.00	0.46	8.09
5 N350 E15	16.77	17.77	0.65	9.84	5 N250 E20	0.00	1.00	0.81	45.47
5 N350 E15	17.77	19.00	0.41	8.30	5 N250 E20	1.00	2.00	1.02	47.21
5 N350 E35	0.00	1.08	0.92	46.11	5 N250 E20	2.00	3.00	1.00	49.13
5 N350 E35	1.08	2.08	0.96	46.01	5 N250 E20	3.00	4.00	1.56	40.26
5 N350 E35	2.08	3.08	1.11	46.42	5 N250 E20	4.00	5.00	1.42	23.19
5 N350 E35	3.08	4.08	1.27	45.95	5 N250 E20	5.00	6.00	1.64	22.37
5 N350 E35	4.08	5.08	1.36	35.52	5 N250 E20	6.00	7.00	1.14	14.27
5 N350 E35	5.08	6.08	1.38	29.59	5 N250 E20	7.00	8.00	0.95	12.22
5 N350 E35	6.08	7.08	1.60	28.63	5 N250 E20	8.00	9.00	1.12	11.94
5 N350 E35	7.08	8.08	1.35	21.77	5 N250 E20	9.00	10.00	1.15	12.68
5 N350 E35	8.08	9.08	1.23	17.03	5 N250 E20	10.00	11.00	0.90	10.88
5 N350 E35	9.08	10.08	1.09	15.28	5 N250 E20	11.00	12.00	0.78	10.48
5 N350 E35	10.08	11.08	1.00	15.95	5 N250 E20	12.00	12.80	0.82	12.59
5 N350 E35	11.08	12.08	0.92	16.02	6 N50 E45f	0.00	1.35	0.91	36.79
5 N350 E35	12.08	13.08	0.83	12.80	6 N50 E45f	1.35	2.35	1.77	27.48
5 N350 E35	13.08	14.08	0.87	17.91	6 N50 E45f	2.35	3.35	1.49	15.31
5 N350 E35	14.08	15.08	0.51	10.68	6 N50 E45f	3.35	4.35	1.56	15.36
5 N350 E35	15.08	16.08	0.39	7.49	6 N50 E45f	4.35	5.35	1.59	20.26
5 N350 E35	16.08	17.08	0.44	8.21	6 N50 E45f	5.35	6.35	1.36	13.98
6 N300 E30	0.00	0.50	0.69	43.25	6 N50 E45f	6.35	7.35	1.05	9.73
6 N300 E30	0.50	1.50	0.87	47.35	6 N50 E45f	7.35	8.35	0.95	16.61
6 N300 E30	1.50	2.50	0.88	48.30	6 N50 E45f	8.35	9.35	0.61	9.93
6 N300 E30	2.50	3.50	1.12	35.04	6 N50 E45f	9.35	10.20	0.50	8.14
6 N300 E30	3.50	4.50	1.35	11.11	6 N300 E35	0.00	1.27	0.90	49.31
6 N300 E30	4.50	5.50	1.34	18.51	6 N300 E35	1.27	2.27	0.93	50.00
6 N300 E30	5.50	6.50	1.37	28.16	6 N300 E35	2.27	3.27	0.98	50.13
6 N300 E30	6.50	7.50	1.03	10.46	6 N300 E35	3.27	4.27	1.06	49.37
6 N300 E30	7.50	8.50	1.25	28.74	6 N300 E35	4.27	5.27	1.30	46.51
6 N300 E30	8.50	9.50	0.73	9.23	6 N300 E35	5.27	6.27	1.44	44.34
6 N300 E30	9.50	11.00	0.40	7.37	6 N300 E35	6.27	7.27	1.41	18.41
5 N250 E4C	0.00	1.29	0.73	44.80	6 N300 E35	7.27	8.27	0.73	9.17
5 N250 E4C	1.29	2.29	0.60	12.05	6 N300 E35	8.27	9.27	1.54	11.87
5 N250 E4C	2.29	3.29	0.70	12.30	6 N300 E35	9.27	10.27	1.32	13.97
5 N250 E4C	3.29	4.29	0.56	8.01	6 N300 E35	10.27	11.27	1.40	15.32
5 N250 E4C	4.29	5.29	0.68	8.76	6 N300 E35	11.27	12.27	1.27	16.38
5 N250 E4C	5.29	6.29	0.40	7.18	6 N300 E35	12.27	13.27	0.78	8.51
5 N250 E4C	6.29	7.29	0.42	8.91	6 N300 E35	13.27	14.00	0.64	8.80
5 N250 E4C	7.29	8.00	0.38	6.98	5 N200 E4C	0.00	0.60	0.84	45.77
5 N200 E25	0.00	0.73	0.55	44.62	5 N200 E4C	0.60	1.60	1.07	46.16
5 N200 E25	0.73	1.73	0.82	49.14	5 N200 E4C	1.60	2.60	0.69	9.35
5 N200 E25	1.73	2.73	1.06	47.39	5 N200 E4C	2.60	3.60	0.45	7.70
5 N200 E25	2.73	3.73	1.14	47.52	5 N200 E4C	3.60	4.60	0.37	7.53
5 N200 E25	3.73	4.73	1.29	47.13	5 N200 E4C	4.60	5.60	0.34	7.25
5 N200 E25	4.73	5.73	1.43	44.10	5 N200 E4C	5.60	6.60	0.34	7.67
5 N200 E25	5.73	6.73	1.71	27.85	5 N200 E4C	6.60	8.00	0.32	7.07
5 N200 E25	6.73	7.73	1.74	23.84	5 N250 F10	0.00	0.97	0.82	46.34
5 N200 E25	7.73	8.73	1.70	12.31	5 N250 F10	0.97	1.97	1.06	18.69
5 N200 E25	8.73	9.73	1.78	16.44	5 N250 F10	1.97	2.97	0.86	11.45
5 N200 E25	9.73	11.00	1.15	12.78	5 N250 F10	2.97	3.97	0.83	10.77
6 N350 E2C	0.00	1.49	0.73	41.83	5 N250 F10	3.97	4.97	0.49	8.56
6 N350 E2C	1.49	2.49	1.06	31.06	5 N250 F10	4.97	5.97	0.37	7.55
6 N350 E2C	2.49	3.49	0.90	14.78	5 N250 F10	5.97	6.97	0.35	7.25
6 N350 E2C	3.49	4.49	0.94	16.51	5 N250 F10	6.97	8.00	0.34	6.81
6 N350 E2C	4.49	5.49	1.35	22.85	D5 NO E40C	0.00	0.86	0.73	48.17
6 N350 E2C	5.49	6.49	1.26	26.05	D5 NO E40C	0.86	1.86	0.83	48.69
6 N350 E2C	6.49	7.49	1.24	21.64	D5 NO E40C	1.86	2.86	0.77	40.75
6 N350 E2C	7.49	8.49	1.12	16.61	D5 NO E40C	2.86	3.86	1.42	13.54
6 N350 E2C	8.49	9.49	1.09	15.17	D5 NO E40C	3.86	4.86	1.36	12.46
6 N350 E2C	9.49	10.49	0.70	11.23	D5 NO E40C	4.86	5.86	1.30	11.30
6 N350 E2C	10.49	11.49	0.79	9.36	D5 NO E40C	5.86	6.86	0.92	8.66
6 N350 E2C	11.49	12.00	0.87	8.22	D5 NO E40C	6.86	7.86	0.81	10.43
6 N350 E35	0.00	1.22	0.83	40.17	D5 NO E40C	7.86	8.86	0.51	9.44
6 N350 E35	1.22	2.22	0.87	42.89	D5 NO E40C	8.86	9.86	0.61	8.23
6 N350 E35	2.22	3.22	1.43	33.73	D5 NO E40C	9.86	10.86	0.51	7.97
6 N350 E35	3.22	4.22	1.74	21.83	D5 NO E40C	10.86	12.86	0.28	6.28
6 N350 E35	4.22	5.22	1.04	40.75	6 N150 E15	0.00	0.78	0.74	45.38
6 N350 E35	5.22	6.22	1.09	40.13	6 N150 E15	0.78	1.78	0.97	49.94
6 N350 E35	6.22	7.22	1.12	41.29	6 N150 E15	1.78	2.78	1.12	47.87
6 N350 E35	7.22	8.22	1.19	38.57	6 N150 E15	2.78	3.78	1.14	47.63
6 N350 E35	8.22	9.22	1.05	36.54	6 N150 E15	3.78	4.78	1.70	33.27
6 N350 E35	9.22	10.22	1.25	37.38	6 N150 E15	4.78	5.78	1.47	38.40
6 N350 E35	10.22	11.22	1.46	27.71	6 N150 E15	5.78	6.78	1.32	45.50
6 N350 E35	11.22	12.22	1.22	17.56	6 N150 E15	6.78	7.78	1.77	28.84
6 N350 E35	12.22	13.22	1.13	12.66	6 N150 E15	7.78	8.78	1.73	19.34
6 N350 E35	13.22	14.22	1.06	22.52	6 N150 E15	8.78	9.78	1.46	9.34
6 N350 E35	14.22	15.22	0.92	14.07	6 N150 E15	9.78	10.78	1.70	17.09

6 N150 E15	10.78	11.78	1.58	14.92	6 N250 E25	11.72	12.72	1.07	47.96
6 N150 E15	11.78	12.78	1.73	15.31	6 N250 E25	12.72	13.72	1.42	34.87
6 N150 E15	12.78	13.78	1.69	13.25	6 N250 E25	13.72	14.72	1.59	32.90
6 N150 E15	13.78	14.78	1.56	16.03	6 N250 E25	14.72	15.72	1.60	26.30
6 N150 E15	14.78	15.78	1.17	11.40	6 N250 E25	15.72	17.00	0.54	9.24
6 N150 E15	15.78	17.00	0.61	6.91	TH4	0.00	0.69	0.60	45.98
6 N200 E45	0.00	1.46	0.96	41.48	TH4	0.69	1.69	0.89	47.32
6 N200 E45	1.46	2.46	1.00	13.72	TH4	1.69	2.69	1.07	48.00
6 N200 E45	2.46	3.46	1.09	14.94	TH4	2.69	3.69	1.01	48.41
6 N200 E45	3.46	4.46	0.37	6.76	TH4	3.69	4.69	1.04	47.96
6 N200 E45	4.46	5.46	0.34	6.99	TH4	4.69	5.69	1.18	48.00
6 N200 F45	5.46	6.46	0.46	8.31	TH4	5.69	6.69	1.36	34.28
6 N200 F45	6.46	7.46	0.56	10.41	TH4	6.69	7.69	1.89	21.14
6 N200 F45	7.46	8.00	0.34	6.74	TH4	7.69	8.69	1.80	23.25
6 N300 F40	0.00	1.48	1.16	45.48	TH4	8.69	9.69	1.34	12.78
6 N300 F40	1.48	2.48	0.86	10.51	TH4	9.69	10.69	1.59	23.91
6 N300 F40	2.48	3.48	1.37	14.11	TH4	10.69	11.69	1.63	23.62
6 N300 F40	3.48	4.48	0.91	11.63	TH4	11.69	12.69	1.11	11.37
6 N300 F40	4.48	5.48	1.28	13.83	TH4	12.69	13.69	1.10	12.67
6 N300 F40	5.48	6.48	0.53	7.60	TH4	13.69	14.69	1.41	16.26
6 N300 F40	6.48	8.00	0.55	7.58	TH4	14.69	15.69	1.74	20.86
6 N100 E35	0.00	1.19	0.73	46.09	TH4	15.69	16.69	1.77	24.51
6 N100 E35	1.19	2.19	0.97	45.24	TH4	16.69	17.69	0.97	13.20
6 N100 E35	2.19	3.19	1.26	31.18	TH4	17.69	19.00	0.39	6.39
6 N100 E35	3.19	4.19	1.45	14.18	5 N350 F50	0.00	0.96	1.21	34.98
6 N100 E35	4.19	5.19	1.08	8.19	5 N350 F50	0.96	1.96	0.91	42.95
6 N100 E35	5.19	6.19	1.12	11.71	5 N350 F50	1.96	2.96	1.39	16.57
6 N100 E35	6.19	7.19	1.38	15.76	5 N350 F50	2.96	3.96	1.27	16.38
6 N100 E35	7.19	8.19	1.19	12.02	5 N350 F50	3.96	4.96	0.85	8.23
6 N100 E35	8.19	9.19	1.07	9.59	5 N350 E50	4.96	5.96	0.70	7.14
6 N100 E35	9.19	10.19	0.94	11.80	5 N350 E50	5.96	6.96	0.59	9.43
6 N100 E35	10.19	11.19	0.40	17.81	5 N350 E50	6.96	8.00	0.36	6.62
6 N100 E35	11.19	12.19	0.37	19.07	5 N300 E51	0.00	1.18	0.74	45.76
6 N100 E35	12.19	13.19	0.31	16.47	5 N300 E51	1.18	2.18	0.83	46.24
5 N400 E15	0.00	0.63	0.98	42.99	5 N300 E51	2.18	3.18	1.18	34.37
5 N400 E15	0.63	1.63	0.96	44.84	5 N300 E51	3.18	4.18	1.27	26.60
5 N400 E15	1.63	2.63	0.84	43.76	5 N300 E51	4.18	5.18	1.41	18.41
5 N400 E15	2.63	3.63	1.05	45.50	5 N300 E51	5.18	6.18	1.40	20.32
5 N400 E15	3.63	4.63	1.76	21.27	5 N300 E51	6.18	7.18	1.35	12.71
5 N400 E15	4.63	5.63	1.77	14.51	5 N300 E51	7.18	8.18	1.34	11.23
5 N400 E15	5.63	6.63	1.61	19.54	5 N300 E51	8.18	9.18	1.52	11.68
5 N400 E15	6.63	7.63	1.66	15.45	5 N300 E51	9.18	10.18	1.54	13.47
5 N400 E15	7.63	8.63	1.88	21.36	5 N300 E51	10.18	11.18	1.31	15.43
5 N400 E15	8.63	9.63	1.82	18.69	5 N300 E51	11.18	12.18	1.27	14.56
5 N400 E15	9.63	10.63	1.75	22.75	5 N300 E51	12.18	13.18	0.95	8.47
5 N400 E15	10.63	11.63	1.26	41.83	5 N300 E51	13.18	14.18	0.95	9.49
5 N400 E15	11.63	12.63	1.93	20.21	5 N300 E51	14.18	15.18	0.99	12.45
5 N400 E15	12.63	13.63	1.35	42.96	5 N300 E51	15.18	16.18	0.92	13.39
5 N400 E15	13.63	14.63	1.79	22.78	5 N300 E51	16.18	17.18	0.92	11.64
5 N400 E15	14.63	16.00	0.47	7.28	5 N300 E51	17.18	18.18	0.84	9.98
5 N200 F40	0.00	0.73	1.16	35.94	5 N300 E51	18.18	19.00	0.40	6.32
5 N200 F40	0.73	1.73	1.27	22.40	5 N300 F20	0.00	1.32	0.82	45.76
5 N200 F40	1.73	2.73	1.07	15.86	5 N300 E20	1.32	2.32	1.05	47.93
5 N200 F40	2.73	3.73	0.62	8.36	5 N300 E20	2.32	3.32	0.73	17.71
5 N200 F40	3.73	4.73	0.33	6.75	5 N300 E20	3.32	4.32	1.28	42.00
5 N200 F40	4.73	5.73	0.27	6.05	5 N300 E20	4.32	5.32	1.46	42.28
5 N200 F40	5.73	6.73	0.25	5.84	5 N300 E20	5.32	6.32	1.26	12.83
5 N200 F40	6.73	7.73	0.29	6.41	5 N300 E20	6.32	7.32	1.53	23.78
5 N200 F40	7.73	8.73	0.26	5.94	5 N300 E20	7.32	8.32	1.57	18.90
5 N200 F40	8.73	10.00	0.29	6.17	5 N300 E20	8.32	9.32	1.16	12.40
6 N300 E10	0.00	1.06	0.52	45.19	5 N300 E20	9.32	10.32	1.26	14.15
6 N300 E10	1.06	2.06	0.69	34.43	5 N300 E20	10.32	11.32	0.60	7.60
6 N300 E10	2.06	3.06	0.34	7.98	5 N300 E20	11.32	12.00	0.45	6.57
6 N300 E10	3.06	4.06	0.46	8.29	5 N400 E40	0.00	0.63	0.63	45.19
6 N300 E10	4.06	5.06	0.29	6.47	5 N400 E40	0.63	1.63	0.63	48.03
6 N300 E10	5.06	6.06	0.32	6.92	5 N400 E40	1.63	2.63	0.76	49.57
6 N300 E10	6.06	7.06	0.35	7.35	5 N400 E40	2.63	3.63	0.87	48.09
6 N300 E10	7.06	8.00	0.27	6.11	5 N400 E40	3.63	4.63	1.23	31.35
6 N250 E25	0.00	0.72	0.77	48.76	5 N400 E40	4.63	5.63	1.43	24.75
6 N250 E25	0.72	1.72	0.88	49.57	5 N400 E40	5.63	6.63	1.53	23.92
6 N250 E25	1.72	2.72	0.92	50.88	5 N400 E40	6.63	7.63	1.37	28.49
6 N250 E25	2.72	3.72	0.84	51.07	5 N400 E40	7.63	8.63	1.25	21.57
6 N250 E25	3.72	4.72	0.87	51.36	5 N400 E40	8.63	9.63	1.07	15.80
6 N250 E25	4.72	5.72	0.96	50.85	5 N400 E40	9.63	10.63	1.21	17.45
6 N250 E25	5.72	6.72	0.93	50.48	5 N400 E40	10.63	11.63	1.17	15.31
6 N250 E25	6.72	7.72	1.08	50.12	5 N400 E40	11.63	12.63	1.09	17.28
6 N250 E25	7.72	8.72	1.05	44.40	5 N400 E40	12.63	13.63	0.87	8.31
6 N250 E25	8.72	9.72	1.16	42.55	5 N400 E40	13.63	14.63	0.92	10.72
6 N250 E25	9.72	10.72	1.06	35.18	5 N400 E40	14.63	15.63	0.70	8.85
6 N250 E25	10.72	11.72	1.10	44.75	5 N400 E40	15.63	16.63	0.55	8.43

6 N100 E35	0.00	0.57	0.71	45.02	05 ND F45C	10.32	11.32	0.73	12.98
6 N100 E35	0.57	1.57	0.90	49.88	05 ND E45C	11.32	12.32	0.65	10.20
6 N100 E35	1.57	2.57	1.05	49.76	05 ND E45C	12.32	13.32	0.40	7.47
6 N100 E35	2.57	3.57	1.12	48.87	05 ND E45C	13.32	14.00	0.33	6.92
6 N100 E35	3.57	4.57	1.25	47.22	6 N250 E45	0.00	1.15	0.88	46.31
6 N100 E35	4.57	5.57	1.26	49.02	6 N250 E45	1.15	2.15	1.26	41.10
6 N100 E35	5.57	6.57	1.48	41.54	6 N250 E45	2.15	3.15	1.29	15.37
6 N100 E35	6.57	7.57	1.83	32.50	6 N250 E45	3.15	4.15	0.40	7.64
6 N100 E35	7.57	8.57	1.85	30.81	6 N250 E45	4.15	5.15	1.21	18.57
6 N100 E35	8.57	9.57	1.79	27.53	6 N250 E45	5.15	6.15	0.91	9.67
6 N100 E35	9.57	10.57	1.97	22.60	6 N250 E45	6.15	7.15	0.73	9.91
6 N100 E35	10.57	11.57	1.82	31.41	6 N250 E45	7.15	8.15	0.68	10.94
6 N100 E35	11.57	12.57	1.85	21.15	6 N250 E45	8.15	9.15	0.35	7.07
6 N100 E35	12.57	13.57	1.85	27.77	5 N200 E45	0.00	0.80	0.79	46.19
6 N100 E35	13.57	14.57	1.68	35.90	5 N200 E45	0.80	1.80	0.82	46.55
6 N100 E35	14.57	15.57	1.55	32.26	5 N200 E45	1.80	2.80	1.07	44.96
6 N100 E35	15.57	16.57	1.38	15.12	5 N200 E45	2.80	3.80	1.04	23.10
6 N100 E35	16.57	17.57	1.10	11.93	5 N200 E45	3.80	4.80	0.62	10.13
6 N100 E35	17.57	18.57	0.85	9.87	5 N200 E45	4.80	5.80	0.34	7.34
6 N100 E35	18.57	19.57	0.95	9.61	5 N200 E45	5.80	6.80	0.33	7.06
6 N100 E35	19.57	20.57	1.02	10.86	5 N200 E45	6.80	7.80	0.42	10.42
6 N100 E35	20.57	21.57	0.74	10.25	5 N200 E45	7.80	8.80	0.35	7.39
6 N100 E35	21.57	23.00	0.49	8.74	5 N200 E45	8.80	10.00	0.33	6.50
6 N200 E45	0.00	0.78	0.74	47.80	6 N300 E35	0.00	1.50	0.31	7.59
6 N200 E45	0.78	1.78	0.86	47.38	6 N300 E35	1.50	2.50	0.24	5.78
6 N200 E45	1.78	2.78	0.94	46.71	6 N300 E35	2.50	3.50	0.28	6.39
6 N200 E45	2.78	3.78	1.48	35.13	6 N300 E35	3.50	4.50	0.26	5.88
6 N200 E45	3.78	4.78	1.60	19.98	6 N300 E35	4.50	5.50	0.80	6.20
6 N200 E45	4.78	5.78	1.43	18.65	6 N300 E35	5.50	6.50	0.71	20.04
6 N200 E45	5.78	6.78	0.80	11.72	6 N300 E35	6.50	8.00	0.79	46.02
6 N200 E45	6.78	7.78	0.91	12.02	6 N200 F51	0.00	0.73	0.59	44.80
6 N200 E45	7.78	8.78	0.76	11.11	6 N200 F51	0.73	1.73	0.74	48.82
6 N200 E45	8.78	9.78	0.80	10.18	6 N200 F51	1.73	2.73	0.86	49.82
6 N200 E45	9.78	10.78	0.75	9.71	6 N200 F51	2.73	3.73	0.88	48.21
6 N200 E45	10.78	11.78	0.72	9.41	6 N200 F51	3.73	4.73	0.90	48.90
6 N200 E45	11.78	12.78	0.69	9.73	6 N200 F51	4.73	5.73	1.00	48.71
6 N200 E45	12.78	13.78	0.63	9.45	6 N200 F51	5.73	6.73	0.98	48.98
6 N200 E45	13.78	14.78	0.60	8.42	6 N200 F51	6.73	8.00	0.66	18.31
6 N200 E45	14.78	16.00	0.42	7.26	5 N150 E35	0.00	0.81	1.14	43.61
6 N250 E30	0.00	1.10	0.79	45.58	5 N150 E35	0.81	1.81	1.43	28.40
6 N250 E30	1.10	2.10	0.80	46.71	5 N150 E35	1.81	2.81	1.25	15.37
6 N250 E30	2.10	3.10	0.84	47.80	5 N150 E35	2.81	3.81	0.80	10.59
6 N250 E30	3.10	4.10	0.92	48.76	5 N150 E35	3.81	4.81	0.57	9.60
6 N250 E30	4.10	5.10	0.92	48.05	5 N150 E35	4.81	6.00	0.28	6.24
6 N250 E30	5.10	6.10	1.01	49.65	6 N200 E4C	0.00	0.92	0.79	44.22
6 N250 E30	6.10	7.10	0.91	43.41	6 N200 E4C	0.92	1.92	0.67	45.76
6 N250 E30	7.10	8.10	1.31	48.95	6 N200 E4C	1.92	2.92	0.81	46.79
6 N250 E30	8.10	9.10	1.17	49.00	6 N200 E4C	2.92	3.92	0.94	45.93
6 N250 E30	9.10	10.10	1.61	41.56	6 N200 E4C	3.92	4.92	1.22	36.09
6 N250 E30	10.10	11.10	1.76	40.06	6 N200 E4C	4.92	5.92	1.37	15.83
6 N250 E30	11.10	12.10	1.83	39.51	6 N200 E4C	5.92	6.92	1.41	19.15
6 N250 E30	12.10	13.10	1.87	32.97	6 N200 E4C	6.92	8.00	0.69	7.80
6 N250 E30	13.10	14.10	2.26	17.03	5 N300 E45	0.00	1.19	0.84	45.95
6 N250 E30	14.10	15.10	1.20	10.69	5 N300 E45	1.19	2.19	1.01	45.46
6 N350 E30	0.00	1.03	0.72	40.63	5 N300 E45	2.19	3.19	1.21	43.51
6 N350 E30	1.03	2.03	0.86	45.47	5 N300 E45	3.19	4.19	1.44	17.25
6 N350 E30	2.03	3.03	1.00	37.39	5 N300 E45	4.19	5.19	0.78	7.48
6 N350 E30	3.03	4.03	0.97	13.47	5 N300 E45	5.19	6.19	1.24	20.35
6 N350 E30	4.03	5.03	1.00	11.39	5 N300 E45	6.19	7.19	0.44	6.77
6 N350 E30	5.03	6.03	0.96	13.20	5 N300 E45	7.19	8.00	0.39	7.04
6 N350 E30	6.03	7.03	0.86	14.61	6 N100 E25	0.00	1.22	0.72	48.49
6 N350 E30	7.03	8.00	0.37	7.85	6 N100 E25	1.22	2.22	0.75	47.98
6 N300 E45	0.00	0.84	0.94	48.63	6 N100 E25	2.22	3.22	1.03	21.82
6 N300 E45	0.84	1.84	1.19	45.87	6 N100 E25	3.22	4.22	1.39	38.20
6 N300 E45	1.84	2.84	1.66	25.02	6 N100 E25	4.22	5.22	1.47	41.39
6 N300 E45	2.84	3.84	1.76	27.53	6 N100 E25	5.22	6.22	1.58	36.52
6 N300 E45	3.84	4.84	1.48	19.53	6 N100 E25	6.22	7.22	1.35	15.63
6 N300 E45	4.84	5.84	1.03	11.98	6 N100 E25	7.22	8.22	0.85	11.70
6 N300 E45	5.84	6.84	1.05	11.83	6 N100 E25	8.22	9.00	0.46	7.44
6 N300 E45	6.84	8.00	0.45	7.25	5 N500 E25	0.00	0.88	0.95	47.37
05 ND F45C	0.00	1.32	0.64	44.93	5 N500 E25	0.88	1.88	1.06	48.39
05 ND F45C	1.32	2.32	0.81	45.37	5 N500 E25	1.88	2.88	1.03	49.63
05 ND F45C	2.32	3.32	0.81	13.75	5 N500 E25	2.88	3.88	1.17	50.32
05 ND F45C	3.32	4.32	0.53	8.81	5 N500 E25	3.88	4.88	1.09	49.48
05 ND F45C	4.32	5.32	0.76	8.97	5 N500 E25	4.88	5.88	1.10	43.54
05 ND F45C	5.32	6.32	1.01	17.50	5 N500 E25	5.88	6.88	1.10	48.02
05 ND F45C	6.32	7.32	0.79	8.90	5 N500 E25	6.88	7.88	1.27	47.32
05 ND F45C	7.32	8.32	0.81	11.16	5 N500 E25	7.88	8.88	1.47	48.29
05 ND F45C	8.32	9.32	0.78	11.20	5 N500 E25	8.88	9.88	1.87	38.62
05 ND F45C	9.32	10.32	0.73	11.51	5 N500 E25	9.88	10.88	1.50	43.70

5 N500 E25	10.88	11.88	1.92	46.58	5 N350 E20	5.55	6.55	1.21	21.86
5 N500 E25	11.88	12.88	1.26	26.88	5 N350 E20	6.55	7.55	1.15	11.59
5 N500 E25	12.88	14.00	0.88	11.64	5 N350 E20	7.55	8.55	0.99	9.18
5 N500 E20	0.00	1.01	0.62	47.67	5 N350 E20	8.55	9.55	1.14	23.25
5 N500 E20	1.01	2.01	0.87	48.12	5 N350 E20	9.55	10.55	1.02	14.64
5 N500 E20	2.01	3.01	0.92	49.25	5 N350 E20	10.55	11.55	1.07	17.29
5 N500 E20	3.01	4.01	0.92	50.18	5 N350 E20	11.55	12.55	0.94	12.09
5 N500 E20	4.01	5.01	1.07	37.30	5 N350 E20	12.55	13.55	0.90	14.51
5 N500 E20	5.01	6.01	1.12	9.57	5 N350 E20	13.55	14.00	0.46	8.20
5 N500 E20	6.01	7.01	1.52	18.52	6 N150 E35	0.00	1.20	0.84	47.41
5 N500 E20	7.01	8.01	1.33	13.10	6 N150 E35	1.20	2.20	0.97	49.07
5 N500 E20	8.01	9.01	1.16	16.21	6 N150 E35	2.20	3.20	0.90	47.44
5 N500 E20	9.01	10.01	1.13	15.18	6 N150 E35	3.20	4.20	1.02	47.06
5 N500 E20	10.01	11.01	1.51	26.86	6 N150 E35	4.20	5.20	1.05	48.59
5 N500 E20	11.01	12.01	0.74	8.93	6 N150 E35	5.20	6.20	1.75	31.07
5 N500 E20	12.01	13.01	1.50	19.51	6 N150 E35	6.20	7.20	1.68	32.04
5 N500 E20	13.01	14.01	1.09	11.51	6 N150 E35	7.20	8.20	1.63	31.63
5 N500 E20	14.01	15.01	0.59	7.77	6 N150 E35	8.20	9.20	1.46	16.26
6 N100 E10	0.00	1.12	0.72	48.21	6 N150 E35	9.20	10.20	0.90	10.01
6 N100 E10	1.12	2.12	0.74	42.83	6 N150 E35	10.20	11.20	1.16	10.87
6 N100 E10	2.12	3.12	0.72	17.24	6 N150 E35	11.20	12.20	1.09	10.92
6 N100 E10	3.12	4.12	0.41	7.82	6 N150 E35	12.20	13.20	0.98	11.56
6 N100 E10	4.12	5.12	0.28	6.42	6 N150 E35	13.20	14.20	1.10	13.85
6 N100 E10	5.12	6.12	0.27	6.22	6 N150 E35	14.20	15.00	0.65	9.37
6 N100 E10	6.12	7.12	0.43	9.00	5 N200 E30	0.00	1.34	0.51	45.55
6 N100 E10	7.12	8.12	0.38	8.16	5 N200 E30	1.34	2.34	0.85	48.05
6 N100 E10	8.12	9.12	0.51	10.48	5 N200 E30	2.34	3.34	0.89	46.91
6 N100 E10	9.12	10.12	0.47	9.79	5 N200 E30	3.34	4.34	1.11	44.95
6 N100 E10	10.12	11.12	0.47	9.24	5 N200 E30	4.34	5.34	1.01	47.32
6 N100 F10	11.12	12.12	0.63	13.85	5 N200 E30	5.34	6.34	1.96	19.15
6 N100 F10	12.12	13.12	0.73	16.95	5 N200 E30	6.34	7.34	2.38	12.30
6 N100 F10	13.12	14.12	0.60	12.69	5 N200 E30	7.34	8.34	1.90	13.78
6 N100 F10	14.12	15.12	0.32	6.90	5 N200 E30	8.34	9.34	1.64	11.08
5 N500 E45	0.00	0.79	0.75	45.36	5 N200 E30	9.34	10.34	1.11	6.99
5 N500 E45	0.79	1.79	1.03	47.12	5 N200 E30	10.34	11.34	1.47	9.47
5 N500 E45	1.79	2.79	1.16	40.57	5 N200 E30	11.34	12.34	0.61	7.81
5 N500 E45	2.79	3.79	1.31	33.26	5 N200 E30	12.34	13.34	0.48	7.95
5 N500 E45	3.79	4.79	1.49	38.56	5 N200 E30	13.34	14.34	0.46	7.21
5 N500 E45	4.79	5.79	1.79	30.96	5 N200 F30	14.34	15.00	0.33	6.24
5 N500 E45	5.79	6.79	1.92	19.52	5 N450 E45	0.00	0.56	0.68	44.68
5 N500 E45	6.79	7.79	1.77	15.41	5 N450 E45	0.56	1.56	0.82	43.76
5 N500 E45	7.79	8.79	2.00	19.13	5 N450 E45	1.56	2.56	1.15	31.98
5 N500 E45	8.79	9.79	1.78	13.60	5 N450 E45	2.56	3.56	1.32	13.43
5 N500 E45	9.79	10.79	1.40	11.33	5 N450 E45	3.56	4.56	0.48	6.79
5 N500 E45	10.79	11.79	1.10	10.25	5 N450 E45	4.56	5.56	0.53	6.72
5 N500 E45	11.79	12.79	0.74	8.04	5 N450 E45	5.56	6.56	1.15	15.25
5 N500 E45	12.79	13.79	1.13	10.46	5 N450 E45	6.56	7.56	0.98	16.90
5 N500 E45	13.79	14.79	0.77	8.61	5 N450 E45	7.56	8.56	0.89	11.11
5 N500 E45	14.79	16.00	0.56	8.32	5 N450 E45	8.56	10.00	0.55	7.08
6 N100 E20	0.00	1.00	0.72	44.31	TH3	0.00	0.85	0.76	47.52
6 N100 E20	1.00	2.00	0.95	45.89	TH3	0.85	1.85	0.90	49.38
6 N100 E20	2.00	3.00	0.84	48.07	TH3	1.85	2.85	1.08	48.01
6 N100 E20	3.00	4.00	0.87	46.45	TH3	2.85	3.85	1.01	47.19
6 N100 E20	4.00	5.00	1.13	46.13	TH3	3.85	4.85	1.15	49.26
6 N100 E20	5.00	6.00	1.21	24.85	TH3	4.85	5.85	1.21	47.15
6 N100 E20	6.00	7.00	0.35	7.18	TH3	5.85	6.85	2.14	25.89
6 N100 E20	7.00	8.00	0.29	6.41	TH3	6.85	7.85	1.70	15.12
16 N50 F40	0.00	1.30	0.84	45.29	TH3	7.85	8.85	1.20	8.54
16 N50 F40	1.30	2.30	0.84	45.42	TH3	8.85	9.85	1.88	18.19
16 N50 F40	2.30	3.30	1.09	22.88	TH3	9.85	10.85	0.98	9.92
16 N50 F40	3.30	4.30	0.92	11.80	TH3	10.85	11.85	1.08	11.27
16 N50 F40	4.30	5.30	0.29	6.42	TH3	11.85	12.85	1.00	10.41
16 N50 F40	5.30	6.30	0.29	6.72	TH3	12.85	13.85	0.94	12.11
16 N50 F40	6.30	7.30	0.25	5.90	TH3	13.85	14.85	1.05	13.04
16 N50 F40	7.30	8.30	0.24	5.77	TH3	14.85	15.85	0.78	10.83
D5 N0 E35C	0.00	0.89	0.72	47.11	TH3	15.85	16.85	1.05	10.03
D5 N0 E35C	0.89	1.89	0.81	48.31	TH3	16.85	17.85	1.07	10.63
D5 N0 E35C	1.89	2.89	0.90	46.77	TH3	17.85	18.85	0.73	8.33
D5 N0 E35C	2.89	3.89	1.19	40.25	TH3	18.85	19.85	0.36	7.18
D5 N0 E35C	3.89	4.89	1.24	35.80	TH3	19.85	20.85	0.34	7.22
D5 N0 E35C	4.89	5.89	1.32	21.21	TH3	20.85	22.00	0.34	6.31
D5 N0 E35C	5.89	6.89	0.65	10.97	5 N400 E35	0.00	1.39	0.76	44.39
D5 N0 E35C	6.89	7.89	0.45	7.72	5 N400 E35	1.39	2.39	0.90	46.38
D5 N0 E35C	7.89	8.00	0.38	8.99	5 N400 E35	2.39	3.39	1.04	48.14
5 N350 E20	0.00	0.55	0.50	44.14	5 N400 E35	3.39	4.39	1.09	39.19
5 N350 E20	0.55	1.55	0.47	41.83	5 N400 E35	4.39	5.39	1.11	27.64
5 N350 E20	1.55	2.55	0.38	40.22	5 N400 E35	5.39	6.39	1.13	6.41
5 N350 E20	2.55	3.55	0.60	45.59	5 N400 E35	6.39	7.39	0.52	8.32
5 N350 E20	3.55	4.55	0.60	48.60	5 N400 E35	7.39	8.39	0.78	10.80
5 N350 E20	4.55	5.55	0.74	39.95	5 N400 E35	8.39	9.39	1.17	12.90

5 N400 E35	9.39	10.39	1.20	15.46	6 N100 E5C	13.96	14.96	1.66	11.71
5 N400 E35	10.39	11.39	1.04	13.38	6 N100 E5C	14.96	15.96	1.30	11.00
5 N400 E35	11.39	12.39	1.21	15.39	6 N100 E5C	15.96	17.00	0.66	7.09
5 N400 E35	12.39	13.39	1.21	15.04	5 N400 E45	0.00	0.90	0.77	45.50
5 N400 E35	13.39	14.39	1.30	15.82	5 N400 E45	0.90	1.90	0.92	31.81
5 N400 E35	14.39	15.39	1.17	13.47	5 N400 E45	1.90	2.90	1.13	32.42
5 N400 E35	15.39	16.39	0.93	9.70	5 N400 E45	2.90	3.90	1.49	18.13
5 N400 E35	16.39	17.00	0.57	8.05	5 N400 E45	3.90	4.90	1.11	16.31
6 N200 E20	0.00	0.51	0.48	43.78	5 N400 E45	4.90	5.90	1.38	15.79
6 N200 E20	0.51	1.51	0.60	46.54	5 N400 E45	5.90	6.90	1.30	18.68
6 N200 E20	1.51	2.51	0.79	48.13	5 N400 E45	6.90	7.90	1.28	20.54
6 N200 E20	2.51	3.51	1.07	34.10	5 N400 E45	7.90	8.90	1.02	14.72
6 N200 E20	3.51	4.51	1.21	17.74	5 N400 E45	8.90	9.90	0.74	8.94
6 N200 E20	4.51	5.51	0.58	7.05	5 N400 E45	9.90	10.90	1.10	18.09
6 N200 E20	5.51	6.51	0.78	7.56	5 N400 E45	10.90	11.90	0.94	11.08
6 N200 E20	6.51	7.51	0.96	8.45	5 N400 E45	11.90	12.90	0.46	7.40
6 N200 E20	7.51	8.51	1.09	15.86	5 N400 E45	12.90	14.00	0.35	6.22
6 N200 E20	8.51	9.51	1.24	16.08	5 N300 E40	0.00	1.13	0.66	44.48
6 N200 E20	9.51	10.51	1.12	10.65	5 N300 E40	1.13	2.13	0.70	46.92
6 N200 E20	10.51	11.51	1.13	12.43	5 N300 E40	2.13	3.13	0.66	44.60
6 N200 E20	11.51	12.51	0.63	11.45	5 N300 E40	3.13	4.13	1.05	38.28
6 N200 E20	12.51	14.00	0.34	7.06	5 N300 E40	4.13	5.13	1.19	15.09
5 N300 E40	0.00	0.80	0.80	45.25	5 N300 E40	5.13	6.13	1.58	15.24
5 N300 E40	0.80	1.80	0.88	48.21	5 N300 E40	6.13	7.13	1.32	13.97
5 N300 E40	1.80	2.80	1.30	23.85	5 N300 E40	7.13	8.13	1.13	10.71
5 N300 E40	2.80	3.80	1.38	27.55	5 N300 E40	8.13	9.13	0.99	14.39
5 N300 E40	3.80	4.80	1.37	25.21	5 N300 E40	9.13	10.13	0.86	9.44
5 N300 E40	4.80	5.80	0.90	8.76	5 N300 E40	10.13	11.13	1.24	10.45
5 N300 E40	5.80	6.80	0.70	8.60	5 N300 E40	11.13	12.13	1.66	12.63
5 N300 E40	6.80	7.80	0.60	8.37	5 N300 E40	12.13	13.13	1.68	13.78
5 N300 E40	7.80	8.80	0.54	8.63	5 N300 E40	13.13	14.13	1.30	8.83
5 N300 E40	8.80	10.00	0.43	8.07	5 N300 E40	14.13	15.13	1.30	11.45
5 N200 E45	0.00	1.22	0.74	47.13	5 N300 E40	15.13	16.13	1.09	11.53
5 N200 E45	1.22	2.22	0.82	44.94	5 N300 E40	16.13	17.13	0.93	8.69
5 N200 E45	2.22	3.22	1.07	20.09	5 N300 E40	17.13	18.13	0.49	7.02
5 N200 E45	3.22	4.22	0.58	10.27	5 N300 E40	18.13	19.00	0.75	8.06
5 N200 E45	4.22	5.22	0.55	8.98	6 N350 E4C	0.00	0.67	0.71	41.14
5 N200 E45	5.22	6.22	0.41	7.72	6 N350 E4C	0.67	1.67	0.81	41.13
5 N200 E45	6.22	7.22	0.35	6.97	6 N350 E4C	1.67	2.67	0.85	18.86
5 N200 E45	7.22	8.00	0.31	6.61	6 N350 E4C	2.67	3.67	0.28	6.26
5 N200 E35	0.00	0.80	0.89	45.82	6 N350 E4C	3.67	4.67	0.37	9.00
5 N200 E35	0.80	1.80	0.99	40.68	6 N350 E4C	4.67	5.67	0.25	6.00
5 N200 E35	1.80	2.80	0.49	9.02	6 N350 E4C	5.67	6.67	0.24	5.76
5 N200 E35	2.80	3.80	0.32	6.84	6 N350 E4C	6.67	8.00	0.24	5.70
5 N200 E35	3.80	4.80	0.34	6.87	6 N50 F25C	0.00	1.05	0.78	48.02
5 N200 E35	4.80	5.80	0.33	6.75	6 N50 F25C	1.05	2.05	0.89	45.84
5 N200 E35	5.80	6.80	0.28	6.30	6 N50 F25C	2.05	3.05	0.91	47.11
5 N200 E35	6.80	7.80	0.35	9.24	6 N50 F25C	3.05	4.05	0.99	48.89
5 N200 E35	7.80	9.00	0.29	6.45	6 N50 F25C	4.05	5.05	0.97	46.39
5 N400 E10	0.00	1.34	0.67	42.62	6 N50 F25C	5.05	6.05	0.43	7.04
5 N400 E10	1.34	2.34	0.63	44.34	6 N50 F25C	6.05	7.05	0.57	14.44
5 N400 E10	2.34	3.34	0.72	42.49	6 N50 F25C	7.05	8.05	0.60	6.47
5 N400 E10	3.34	4.34	0.76	44.62	6 N50 F25C	8.05	9.00	0.31	6.29
5 N400 E10	4.34	5.34	0.85	44.06	5 N350 E10	0.00	0.56	0.70	44.63
5 N400 E10	5.34	6.34	0.84	45.66	5 N350 E10	0.56	1.56	0.62	41.28
5 N400 E10	6.34	7.34	0.86	40.33	5 N350 E10	1.56	2.56	0.53	27.00
5 N400 E10	7.34	8.34	1.37	17.07	5 N350 E10	2.56	3.56	0.69	31.19
5 N400 E10	8.34	9.34	1.33	15.79	5 N350 E10	3.56	4.56	0.70	32.43
5 N400 E10	9.34	10.34	1.02	12.09	5 N350 E10	4.56	5.56	0.45	15.92
5 N400 E10	10.34	11.34	1.09	20.58	5 N350 E10	5.56	6.56	0.83	20.47
5 N400 E10	11.34	12.34	0.92	15.12	5 N350 E10	6.56	7.56	0.74	19.81
5 N400 E10	12.34	13.34	0.59	9.88	5 N350 E10	7.56	8.56	0.61	11.49
5 N400 E10	13.34	14.34	0.66	10.66	5 N350 E10	8.56	9.56	0.59	12.32
5 N400 E10	14.34	15.34	0.68	13.45	5 N350 E10	9.56	10.56	1.07	18.39
5 N400 E10	15.34	16.34	0.30	9.71	5 N350 E10	10.56	12.00	0.39	7.46
5 N400 E10	16.34	17.34	0.34	8.66	5 N450 E20	0.00	1.40	0.80	44.92
6 N100 F5C	0.00	0.96	0.75	46.87	5 N450 E20	1.40	2.40	0.95	35.44
6 N100 F5C	0.96	1.96	0.98	49.48	5 N450 E20	2.40	3.40	1.09	30.74
6 N100 F5C	1.96	2.96	0.82	50.40	5 N450 E20	3.40	4.40	1.80	20.97
6 N100 F5C	2.96	3.96	0.95	49.76	5 N450 E20	4.40	5.40	1.69	30.20
6 N100 F5C	3.96	4.96	1.01	47.97	5 N450 E20	5.40	6.40	1.72	26.61
6 N100 F5C	4.96	5.96	1.52	30.23	5 N450 E20	6.40	7.40	1.61	12.47
6 N100 F5C	5.96	6.96	1.77	18.58	5 N450 E20	7.40	8.40	1.42	16.38
6 N100 F5C	6.96	7.96	1.88	21.81	5 N450 E20	8.40	9.40	1.52	21.20
6 N100 F5C	7.96	8.96	1.62	23.89	5 N450 E20	9.40	10.40	0.90	8.45
6 N100 F5C	8.96	9.96	1.60	23.89	5 N450 E20	10.40	11.40	1.10	11.91
6 N100 F5C	9.96	10.96	1.73	24.73	5 N450 E20	11.40	12.00	0.50	6.72
6 N100 F5C	10.96	11.96	1.56	21.03	6 N50 E15C	0.00	1.27	0.84	45.55
6 N100 F5C	11.96	12.96	1.70	15.02	6 N50 E15C	1.27	2.27	0.89	46.01
6 N100 F5C	12.96	13.96	1.69	14.30	6 N50 E15C	2.27	3.27	1.06	21.57

6 N50 E15c	3.27	4.27	0.68	10.18	5 N500 E5C	1.45	2.45	0.84	47.51
6 N50 E15c	4.27	5.27	0.72	9.22	5 N500 E5C	2.45	3.45	1.07	47.79
6 N50 E15c	5.27	6.27	0.65	9.48	5 N500 E5C	3.45	4.45	0.83	48.97
6 N50 E15c	6.27	7.27	0.27	5.84	5 N500 E5C	4.45	5.45	1.00	48.03
6 N50 E15c	7.27	8.27	0.51	7.95	5 N500 E5C	5.45	6.45	1.24	46.17
6 N50 E15c	8.27	9.00	0.31	6.59	5 N500 E5c	6.45	7.45	1.28	39.96
5 N300 E25	0.00	1.31	0.80	47.16	5 N500 E5c	7.45	8.45	1.53	19.17
5 N300 E25	1.31	2.31	0.89	45.14	5 N500 E5c	8.45	9.00	0.56	8.39
5 N300 E25	2.31	3.31	1.08	46.37	6 N100 E5c	0.00	1.34	0.57	45.83
5 N300 E25	3.31	4.31	1.33	37.24	6 N100 E5c	1.34	2.34	0.63	46.85
5 N300 E25	4.31	5.31	1.47	27.24	6 N100 E5c	2.34	3.34	1.25	22.56
5 N300 E25	5.31	6.31	1.57	30.05	6 N100 E5c	3.34	4.34	0.70	45.89
5 N300 E25	6.31	7.31	1.46	21.67	6 N100 E5c	4.34	5.34	0.52	9.99
5 N300 E25	7.31	8.31	1.53	29.81	6 N100 E5c	5.34	6.34	0.31	6.53
5 N300 E25	8.31	9.31	1.70	27.90	6 N100 E5c	6.34	7.34	0.33	6.71
5 N300 E25	9.31	10.31	1.64	20.05	6 N100 E5c	7.34	8.34	0.28	6.31
5 N300 E25	10.31	11.31	1.30	9.72	6 N100 E5c	8.34	9.00	0.27	6.16
5 N300 E25	11.31	12.00	0.64	6.88	6 N100 E45	0.00	1.48	0.98	29.37
5 N250 E35	0.00	1.29	0.63	47.41	6 N100 E45	1.48	2.48	1.22	18.72
5 N250 E35	1.29	2.29	0.64	47.62	6 N100 E45	2.48	3.48	1.31	16.72
5 N250 E35	2.29	3.29	0.87	47.73	6 N100 E45	3.48	4.48	0.97	15.34
5 N250 E35	3.29	4.29	1.15	21.85	6 N100 E45	4.48	5.48	0.84	9.84
5 N250 E35	4.29	5.29	1.10	21.49	6 N100 E45	5.48	6.48	0.73	9.82
5 N250 E35	5.29	6.29	1.07	15.09	6 N100 E45	6.48	7.48	0.78	11.04
5 N250 E35	6.29	7.29	1.09	13.17	6 N100 E45	7.48	8.00	0.50	7.58
5 N250 E35	7.29	8.29	0.82	9.82	6 N100 E45	8.00	8.48	0.97	9.30
5 N250 E35	8.29	9.29	0.85	10.49	6 N100 E45	8.48	9.48	1.71	23.48
5 N250 E35	9.29	10.29	0.82	9.71	6 N100 E45	9.48	10.48	1.61	22.44
5 N250 E35	10.29	11.29	0.60	7.91	6 N100 E45	10.48	11.48	1.44	18.29
5 N250 E35	11.29	12.00	0.45	6.25	6 N100 E45	11.48	12.48	0.95	12.31
6 N300 E4c	0.00	1.44	0.75	43.51	6 N100 E45	12.48	13.00	0.50	7.98
6 N300 E4c	1.44	2.44	0.70	47.96	6 N300 E45	0.00	0.75	1.11	40.69
6 N300 E4c	2.44	3.44	0.77	47.63	6 N300 E45	0.75	1.75	0.75	12.44
6 N300 E4c	3.44	4.44	0.96	46.62	6 N300 E45	1.75	2.75	1.45	17.23
6 N300 E4c	4.44	5.44	1.31	16.65	6 N300 E45	2.75	3.75	1.53	12.78
6 N300 E4c	5.44	6.44	0.50	11.74	6 N300 E45	3.75	4.75	1.45	15.77
6 N300 E4c	6.44	7.00	0.40	8.33	6 N300 E45	4.75	5.75	1.18	10.71
6 N100 E4C	0.00	1.27	0.80	47.10	6 N300 E45	5.75	6.75	1.02	10.03
6 N100 E4C	1.27	2.27	0.95	46.04	6 N300 E45	6.75	7.75	0.99	9.53
6 N100 E4C	2.27	3.27	1.10	45.22	6 N300 E45	7.75	9.00	0.58	7.30
6 N100 E4C	3.27	4.27	1.46	30.31	5 N450 E25	0.00	0.85	0.80	44.89
6 N100 E4C	4.27	5.27	1.26	12.99	5 N450 E25	0.85	1.85	0.61	41.94
6 N100 E4C	5.27	6.27	1.29	10.25	5 N450 E25	1.85	2.85	0.98	47.79
6 N100 E4C	6.27	7.27	0.72	8.06	5 N450 E25	2.85	3.85	0.99	48.70
6 N100 E4C	7.27	8.00	0.67	7.74	5 N450 E25	3.85	4.85	1.59	36.25
5 N250 E45	0.00	0.58	0.67	46.69	5 N450 E25	4.85	5.85	1.89	18.89
5 N250 E45	0.58	1.58	0.85	32.45	5 N450 E25	5.85	6.85	1.71	22.16
5 N250 E45	1.58	2.58	0.44	6.99	5 N450 E25	6.85	7.85	1.78	20.89
5 N250 E45	2.58	3.58	0.68	8.66	5 N450 E25	7.85	8.85	1.72	19.70
5 N250 E45	3.58	4.58	0.86	9.07	5 N450 E25	8.85	9.85	1.71	11.80
5 N250 E45	4.58	5.58	0.67	8.64	5 N450 E25	9.85	10.85	1.74	14.33
5 N250 E45	5.58	6.58	0.71	8.27	5 N450 E25	10.85	11.85	1.35	12.29
5 N250 E45	6.58	7.58	0.61	7.64	5 N450 E25	11.85	13.00	1.18	9.62
5 N250 E45	7.58	9.00	0.47	6.74	5 N250 E5C	0.00	0.71	0.87	46.19
5 N200 E5i	0.00	0.96	0.80	23.55	5 N250 E5C	0.71	1.71	0.94	32.58
5 N200 E5i	0.96	1.96	0.32	7.07	5 N250 E5C	1.71	2.71	0.54	7.94
5 N200 E5i	1.96	2.96	0.27	6.10	5 N250 E5C	2.71	3.71	0.39	7.26
5 N200 E5i	2.96	3.96	0.36	8.04	5 N250 E5C	3.71	4.71	0.38	7.65
5 N200 E5i	3.96	4.96	0.26	6.07	5 N250 E5C	4.71	5.71	0.57	11.93
5 N200 E5i	4.96	5.96	0.26	5.97	5 N250 E5C	5.71	6.71	0.60	13.19
5 N200 E5i	5.96	6.96	0.27	5.98	5 N250 E5C	6.71	7.71	0.60	11.28
5 N200 E5i	6.96	8.00	0.25	5.73	5 N250 E5C	7.71	8.71	0.58	11.76
6 N250 E4C	0.00	1.46	0.70	45.85	5 N250 E5C	8.71	9.71	0.35	8.00
6 N250 E4C	1.46	2.46	0.85	45.45	5 N250 E5C	9.71	10.90	0.39	8.69
6 N250 E4C	2.46	3.46	1.30	24.08	6 N200 E15	0.00	1.37	0.65	46.11
6 N250 E4C	3.46	4.46	0.40	6.76	6 N200 E15	1.37	2.37	0.83	47.12
6 N250 E4C	4.46	5.46	0.30	6.62	6 N200 E15	2.37	3.37	0.95	46.12
6 N250 E4C	5.46	6.46	0.37	7.73	6 N200 E15	3.37	4.37	1.06	43.87
6 N250 E4C	6.46	7.46	0.33	7.11	6 N200 E15	4.37	5.37	1.47	37.02
6 N250 E4C	7.46	8.00	0.30	6.78	6 N200 E15	5.37	6.37	1.77	17.62
6 N300 E25	0.00	0.80	0.64	44.98	6 N200 E15	6.37	7.37	1.36	15.73
6 N300 E25	0.80	1.80	0.78	48.89	6 N200 E15	7.37	8.37	1.43	13.95
6 N300 E25	1.80	2.80	0.77	49.08	6 N200 E15	8.37	9.37	1.03	11.97
6 N300 E25	2.80	3.80	0.87	48.31	6 N200 E15	9.37	10.37	1.04	12.96
6 N300 E25	3.80	4.80	0.97	46.39	6 N200 E15	10.37	12.00	0.65	8.51
6 N300 E25	4.80	5.80	1.28	38.00	6 N150 E45	0.00	0.88	0.69	45.75
6 N300 E25	5.80	6.80	1.03	17.18	6 N150 E45	0.88	1.88	1.06	48.27
6 N300 E25	6.80	7.80	1.49	13.61	6 N150 E45	1.88	2.88	1.09	48.06
6 N300 E25	7.80	9.00	0.94	7.80	6 N150 E45	2.88	3.88	1.02	44.43
5 N500 E5C	0.00	1.45	0.73	44.31	6 N150 E45	3.88	4.88	0.97	47.14

MBIF 76	0.00	0.55	0.86	43.87	MBIF 39	0.58	1.58	1.06	48.34
MBIF 78	0.55	1.55	0.96	43.88	MBIF 39	1.58	2.58	1.10	44.56
MBIF 78	1.55	2.55	1.53	34.58	MBIF 39	2.58	3.58	1.42	25.67
MBIF 78	2.55	3.55	1.47	19.45	MBIF 39	3.58	4.58	1.39	14.79
MBIF 78	3.55	4.55	1.69	22.79	MBIF 39	4.58	5.58	1.66	17.35
MBIF 78	4.55	5.55	1.31	11.39	MBIF 39	5.58	6.58	0.94	8.87
MBIF 78	5.55	6.55	1.75	12.25	MBIF 39	6.58	8.00	0.65	7.54
MBIF 78	6.55	7.55	1.25	12.11	MBIF 68	0.00	0.65	0.69	48.18
MBIF 78	7.55	8.55	1.36	13.22	MBIF 68	0.65	1.65	0.86	50.13
MBIF 78	8.55	9.55	1.50	16.53	MBIF 68	1.65	2.65	0.86	43.82
MBIF 78	9.55	10.55	1.29	13.22	MBIF 68	2.65	3.65	0.92	50.47
MBIF 78	10.55	11.55	1.44	13.29	MBIF 68	3.65	4.65	0.91	39.94
MBIF 78	11.55	12.55	1.48	18.37	MBIF 68	4.65	5.65	1.67	27.60
MBIF 78	12.55	13.55	0.76	10.45	MBIF 68	5.65	6.65	1.32	48.30
MBIF 78	13.55	14.55	0.65	11.14	MBIF 68	6.65	7.65	1.60	42.08
MBIF 78	14.55	15.55	0.67	10.19	MBIF 68	7.65	8.65	2.00	21.16
MBIF 78	15.55	17.00	0.56	8.04	MBIF 68	8.65	9.65	1.83	17.79
MBIF 82	0.00	1.05	0.79	47.56	MBIF 68	9.65	10.65	1.60	14.01
MBIF 82	1.05	2.05	0.76	48.22	MBIF 68	10.65	11.65	1.15	10.08
MBIF 82	2.05	3.05	0.98	47.37	MBIF 68	11.65	12.65	0.81	8.79
MBIF 82	3.05	4.05	0.99	43.89	MBIF 68	12.65	13.65	1.24	10.66
MBIF 82	4.05	5.05	0.69	12.22	MBIF 68	13.65	14.65	0.62	7.34
MBIF 82	5.05	6.05	1.08	27.26	MBIF 68	14.65	15.30	0.41	6.82
MBIF 82	6.05	7.05	1.50	13.55	MBIF 12	0.00	1.09	0.76	46.14
MBIF 82	7.05	8.05	1.60	11.55	MBIF 12	1.09	2.09	0.92	48.46
MBIF 82	8.05	9.05	1.37	12.01	MBIF 12	2.09	3.09	0.98	47.14
MBIF 82	9.05	10.05	1.25	11.48	MBIF 12	3.09	4.09	0.99	43.45
MBIF 82	10.05	11.05	1.72	15.92	MBIF 12	4.09	5.09	0.94	43.49
MBIF 82	11.05	12.05	1.34	12.62	MBIF 12	5.09	6.09	1.02	43.79
MBIF 82	12.05	13.05	1.25	9.71	MBIF 12	6.09	7.09	1.00	45.56
MBIF 82	13.05	14.05	1.32	14.97	MBIF 12	7.09	8.09	1.21	45.61
MBIF 82	14.05	15.05	1.38	13.69	MBIF 12	8.09	9.09	1.39	33.23
MBIF 82	15.05	16.05	1.04	9.21	MBIF 12	9.09	10.09	1.58	22.99
MBIF 82	16.05	17.00	0.79	7.11	MBIF 12	10.09	11.09	1.69	33.34
MBIF 107	0.00	0.95	1.04	40.26	MBIF 12	11.09	12.09	1.62	40.85
MBIF 107	0.95	1.95	1.19	39.95	MBIF 12	12.09	13.09	1.97	25.44
MBIF 107	1.95	2.95	1.68	13.80	MBIF 12	13.09	14.09	1.76	11.75
MBIF 107	2.95	3.95	1.14	8.75	MBIF 12	14.09	15.09	1.98	19.73
MBIF 107	3.95	4.95	1.34	10.44	MBIF 12	15.09	16.09	1.54	10.75
MBIF 107	4.95	5.95	1.60	19.39	MBIF 12	16.09	17.00	1.37	14.99
MBIF 107	5.95	6.95	1.11	8.35	MBIF 75	0.00	1.04	0.84	45.76
MBIF 107	6.95	8.00	0.94	7.18	MBIF 75	1.04	2.04	0.38	8.30
MBIF 76	0.00	1.19	0.80	49.43	MBIF 75	2.04	3.00	0.35	8.70
MBIF 76	1.19	2.19	0.79	47.26	MBIF 89	0.00	1.16	0.69	44.90
MBIF 76	2.19	3.19	1.24	41.86	MBIF 89	1.16	2.16	0.73	46.55
MBIF 76	3.19	4.19	1.36	32.03	MBIF 89	2.16	3.16	0.84	41.40
MBIF 76	4.19	5.19	1.27	13.70	MBIF 89	3.16	4.16	1.18	45.51
MBIF 76	5.19	6.19	1.27	12.30	MBIF 89	4.16	5.16	1.25	39.52
MBIF 76	6.19	7.19	1.05	9.22	MBIF 89	5.16	6.16	0.68	9.61
MBIF 76	7.19	8.00	0.63	7.27	MBIF 89	6.16	7.16	1.58	32.19
MBIF 17	0.00	0.66	0.77	47.40	MBIF 89	7.16	8.16	1.62	25.10
MBIF 17	0.66	1.66	0.87	46.47	MBIF 89	8.16	9.16	1.32	34.17
MBIF 17	1.66	2.66	0.84	49.85	MBIF 89	9.16	10.16	1.01	10.77
MBIF 17	2.66	3.66	1.07	43.30	MBIF 89	10.16	11.16	1.08	8.57
MBIF 17	3.66	4.66	1.71	18.34	MBIF 89	11.16	12.00	0.69	7.42
MBIF 17	4.66	5.66	1.71	14.32	MBIF 96	0.00	0.80	1.08	35.66
MBIF 17	5.66	6.66	1.53	10.20	MBIF 96	0.80	1.80	1.37	21.26
MBIF 17	6.66	8.00	0.72	7.76	MBIF 96	1.80	2.80	0.71	10.56
MBIF 65	0.00	0.92	1.01	30.44	MBIF 96	2.80	3.80	0.94	9.16
MBIF 65	0.92	1.92	1.38	12.70	MBIF 96	3.80	4.80	1.19	12.80
MBIF 65	1.92	2.92	1.40	15.54	MBIF 96	4.80	5.80	1.02	12.36
MBIF 65	2.92	3.92	1.15	14.12	MBIF 96	5.80	6.80	1.76	17.22
MBIF 65	3.92	4.92	1.33	11.70	MBIF 96	6.80	7.80	1.64	14.63
MBIF 65	4.92	5.92	1.34	11.97	MBIF 96	7.80	8.80	1.46	16.21
MBIF 65	5.92	6.92	0.95	9.46	MBIF 96	8.80	9.80	1.63	14.27
MBIF 65	6.92	7.92	0.77	7.75	MBIF 96	9.80	10.80	1.61	18.56
MBIF 65	7.92	8.50	0.44	6.88	MBIF 36	10.80	11.80	1.50	12.59
MBIF 110	0.00	1.00	1.03	35.13	MBIF 36	11.80	12.80	1.45	12.62
MBIF 110	1.00	2.00	1.38	38.14	MBIF 36	12.80	13.80	1.79	11.54
MBIF 110	2.00	3.00	1.60	18.59	MBIF 36	13.80	14.80	1.21	11.73
MBIF 110	3.00	4.00	1.98	11.53	MBIF 36	14.80	15.80	1.24	9.67
MBIF 110	4.00	5.00	1.80	13.78	MBIF 36	15.80	16.80	1.18	9.41
MBIF 110	5.00	6.00	1.44	9.92	MBIF 36	16.80	18.00	0.62	7.44
MBIF 110	6.00	7.00	1.82	24.76	MBIF 88	0.00	0.71	0.81	36.03
MBIF 110	7.00	8.00	1.91	25.09	MBIF 88	0.71	1.71	0.93	17.13
MBIF 110	8.00	9.00	1.55	8.64	MBIF 88	1.71	2.71	1.12	17.20
MBIF 110	9.00	10.00	1.27	9.40	MBIF 88	2.71	3.71	1.36	9.05
MBIF 110	10.00	11.00	1.11	12.32	MBIF 88	3.71	4.80	0.49	7.16
MBIF 110	11.00	12.00	0.86	7.26	MBIF 16	0.00	1.26	0.95	40.88
MBIF 39	0.00	0.58	0.96	45.72	MBIF 16	1.26	2.26	1.46	30.31

MBIF 16	2.26	3.26	1.52	18.85	MB 63	5.47	6.47	1.19	11.81
MBIF 16	3.26	4.26	1.60	26.11	MB 63	6.47	7.47	0.44	7.47
MBIF 16	4.26	5.26	1.50	17.08	MB 63	7.47	8.40	0.46	8.41
MBIF 16	5.26	6.26	1.15	11.43	MBIF 28	0.00	0.76	0.73	41.89
MBIF 16	6.26	7.26	0.66	8.96	MBIF 28	0.76	1.76	0.84	44.85
MBIF 16	7.26	8.26	0.70	8.97	MBIF 28	1.76	2.76	1.01	28.18
MBIF 16	8.26	9.26	0.66	10.14	MBIF 28	2.76	3.76	0.39	8.55
MBIF 16	9.26	10.26	0.43	9.10	MBIF 28	3.76	4.76	0.41	8.76
MBIF 16	10.26	11.26	0.42	8.78	MBIF 28	4.76	5.40	0.36	8.22
MBIF 16	11.26	12.26	0.34	7.91	MB 44	0.00	1.19	0.97	45.45
MBIF 16	12.26	13.26	0.35	7.91	MB 44	1.19	2.19	1.40	10.65
MBIF 16	13.26	14.26	0.31	7.32	MB 44	2.19	3.19	1.16	13.75
MBIF 16	14.26	15.26	0.43	8.46	MB 44	3.19	5.00	0.75	9.29
MBIF 16	15.26	16.26	0.35	8.08	MB 61	0.00	1.15	1.34	11.37
MBIF 16	16.26	17.30	0.38	7.20	MB 61	1.15	2.15	1.56	9.85
MBIF 85	0.00	1.05	0.75	45.75	MB 61	2.15	3.15	1.17	9.57
MBIF 85	1.05	2.05	0.83	44.84	MB 61	3.15	4.15	0.97	8.87
MBIF 85	2.05	3.05	1.25	40.76	MB 61	4.15	5.15	0.77	7.44
MBIF 85	3.05	4.05	1.76	24.22	MB 61	5.15	6.15	0.71	8.12
MBIF 85	4.05	5.05	1.65	12.76	MB 61	6.15	7.15	0.73	10.12
MBIF 85	5.05	6.05	1.45	19.21	MB 61	7.15	8.15	0.86	14.82
MBIF 85	6.05	7.05	1.17	7.57	MB 61	8.15	9.15	0.65	10.61
MBIF 85	7.05	8.00	0.33	6.62	MB 61	9.15	10.15	0.56	9.95
MBIF 90	0.00	1.42	0.71	43.42	MB 61	10.15	11.15	0.40	8.44
MBIF 90	1.42	2.42	0.93	46.98	MB 61	11.15	12.00	0.33	7.41
MBIF 90	2.42	3.42	1.02	48.24	MBIF 31	0.00	1.76	0.78	40.95
MBIF 90	3.42	4.42	1.19	45.59	MBIF 31	1.76	2.76	1.40	22.97
MBIF 90	4.42	5.42	1.58	33.22	MBIF 31	2.76	3.76	1.52	11.04
MBIF 90	5.42	6.42	1.95	25.47	MBIF 31	3.76	4.76	1.54	9.06
MBIF 90	6.42	7.42	1.90	13.94	MBIF 31	4.76	5.76	1.82	12.68
MBIF 90	7.42	8.42	1.79	13.12	MBIF 31	5.76	6.76	1.74	12.19
MBIF 90	8.42	9.42	1.96	17.88	MBIF 31	6.76	7.76	1.98	10.93
MBIF 90	9.42	10.42	1.87	14.61	MBIF 31	7.76	8.76	1.81	11.89
MBIF 90	10.42	11.42	1.89	14.26	MBIF 31	8.76	9.76	1.63	11.27
MBIF 90	11.42	12.42	1.64	11.20	MBIF 31	9.76	10.76	1.04	9.75
MBIF 90	12.42	13.42	1.58	10.92	MBIF 31	10.76	11.00	0.71	10.63
MBIF 90	13.42	14.42	1.57	13.11	MBIF 15	0.00	0.80	0.92	43.67
MBIF 90	14.42	15.42	1.47	14.71	MBIF 15	0.80	1.80	1.08	40.75
MBIF 90	15.42	16.42	1.23	11.28	MBIF 15	1.80	2.80	1.20	38.21
MBIF 90	16.42	17.42	0.86	8.36	MBIF 15	2.80	3.80	1.70	20.00
MBIF 90	17.42	18.00	0.50	7.43	MBIF 15	3.80	4.80	1.47	18.41
MBIF 84	0.00	1.30	0.89	48.38	MBIF 15	4.80	5.80	1.52	24.16
MBIF 84	1.30	2.30	0.88	48.52	MBIF 15	5.80	6.80	1.63	19.99
MBIF 84	2.30	3.30	0.84	47.96	MBIF 15	6.80	7.80	1.03	8.87
MBIF 84	3.30	4.30	0.87	48.70	MBIF 15	7.80	8.80	0.86	12.51
MBIF 84	4.30	5.30	0.89	47.71	MBIF 15	8.80	9.80	0.80	10.65
MBIF 84	5.30	6.30	0.91	45.05	MBIF 15	9.80	10.80	0.46	7.62
MBIF 84	6.30	7.30	0.87	46.12	MBIF 15	10.80	11.80	0.41	7.65
MBIF 84	7.30	8.30	0.92	45.67	MBIF 15	11.80	12.80	0.36	7.47
MBIF 84	8.30	9.30	1.17	33.96	MBIF 15	12.80	13.80	0.56	10.04
MBIF 84	9.30	10.30	1.45	33.98	MBIF 15	13.80	14.50	0.63	8.57
MBIF 84	10.30	11.30	1.75	24.45	MBIF 14	0.00	0.74	0.68	46.44
MBIF 84	11.30	12.00	1.46	24.09	MBIF 14	0.74	1.74	0.85	43.26
MBIF 70	0.00	0.84	0.83	47.50	MBIF 14	1.74	2.74	0.86	27.69
MBIF 70	0.84	1.84	1.47	31.08	MBIF 14	2.74	3.74	0.86	11.96
MBIF 70	1.84	2.84	1.25	17.11	MBIF 14	3.74	4.74	0.81	15.64
MBIF 70	2.84	3.84	1.58	26.80	MBIF 14	4.74	5.74	1.31	23.93
MBIF 70	3.84	4.84	1.72	20.55	MBIF 14	5.74	6.74	1.38	21.87
MBIF 70	4.84	5.84	1.23	9.74	MBIF 14	6.74	7.74	0.60	8.80
MBIF 70	5.84	6.84	1.43	12.04	MBIF 14	7.74	8.74	0.83	11.71
MBIF 70	6.84	7.84	1.29	12.02	MBIF 14	8.74	9.74	0.76	10.36
MBIF 70	7.84	8.84	0.88	10.74	MBIF 14	9.74	10.74	0.71	9.37
MBIF 70	8.84	9.84	1.42	20.28	MBIF 14	10.74	12.00	0.44	7.66
MBIF 70	9.84	10.84	0.92	11.76	MBIF 98	0.00	1.39	0.75	46.79
MBIF 70	10.84	11.90	0.35	6.92	MBIF 98	1.39	2.39	0.70	44.64
MB 62	0.00	1.16	0.73	47.01	MBIF 98	2.39	3.39	0.85	50.00
MB 62	1.16	2.16	1.02	35.92	MBIF 98	3.39	4.39	0.93	49.18
MB 62	2.16	3.16	1.27	31.35	MBIF 98	4.39	5.39	1.01	47.06
MB 62	3.16	4.16	1.44	22.43	MBIF 98	5.39	6.39	0.88	47.27
MB 62	4.16	5.16	1.25	19.77	MBIF 98	6.39	7.39	1.07	45.13
MB 62	5.16	6.16	1.38	20.28	MBIF 98	7.39	8.39	1.18	13.11
MB 62	6.16	7.16	1.50	17.56	MBIF 98	8.39	9.39	1.47	15.92
MB 62	7.16	8.16	1.47	16.18	MBIF 98	9.39	10.39	1.01	10.85
MB 62	8.16	9.16	0.54	8.30	MBIF 98	10.39	11.39	0.66	9.16
MB 62	9.16	10.00	0.34	7.02	MBIF 98	11.39	12.39	1.21	12.38
MB 63	0.00	1.47	0.83	44.53	MBIF 98	12.39	13.39	1.10	15.55
MB 63	1.47	2.47	1.15	35.23	MBIF 98	13.39	14.39	1.03	19.21
MB 63	2.47	3.47	0.51	7.47	MBIF 98	14.39	15.39	0.79	12.01
MB 63	3.47	4.47	1.42	13.20	MBIF 98	15.39	16.39	1.00	11.14
MB 63	4.47	5.47	1.36	17.57	MBIF 98	16.39	17.00	0.54	7.88

MB 64	0.00	0.97	0.75	45.71	MBIF 112	11.76	12.76	1.08	9.88
MD 64	0.97	1.97	0.47	13.46	MBIF 112	12.76	13.76	0.73	9.30
MD 64	1.97	2.97	0.68	10.23	MBIF 112	13.76	15.00	0.82	6.80
MD 64	2.97	3.97	0.89	15.73	MB 66	0.00	1.20	0.69	46.92
MD 64	3.97	4.97	0.79	38.25	MB 66	1.20	2.20	0.80	46.79
MD 64	4.97	6.20	0.77	48.84	MB 66	2.20	3.20	0.79	29.52
MBIF 106	0.00	1.30	1.24	33.90	MB 66	3.20	4.20	1.23	35.14
MBIF 106	1.30	2.30	1.39	16.74	MB 66	4.20	5.20	0.70	13.79
MBIF 106	2.30	3.30	0.38	7.67	MB 66	5.20	6.60	0.34	8.56
MBIF 106	3.30	4.30	0.57	8.63	MB 1	0.00	1.14	1.17	29.97
MBIF 106	4.30	5.00	0.32	7.00	MB 1	1.14	2.14	0.27	6.75
MBIF 34	0.00	1.35	0.94	43.57	MB 1	2.14	3.14	0.31	7.23
MBIF 34	1.35	2.35	1.17	38.43	MB 1	3.14	4.14	0.30	7.45
MBIF 34	2.35	3.35	1.45	31.93	MB 1	4.14	5.00	0.25	6.62
MBIF 34	3.35	4.35	1.21	16.16	MB 40	0.00	1.17	0.64	15.53
MBIF 34	4.35	5.35	1.18	16.40	MB 40	1.17	2.17	0.99	16.77
MBIF 34	5.35	6.35	1.11	15.61	MB 40	2.17	4.00	0.40	7.13
MBIF 34	6.35	7.35	0.96	10.90	MB 43	0.00	1.37	0.93	34.06
MBIF 34	7.35	8.35	1.35	14.68	MB 43	1.37	2.37	0.29	6.78
MBIF 34	8.35	9.35	1.52	23.72	MB 43	2.37	3.27	0.50	7.76
MBIF 34	9.35	10.35	1.43	17.55	MB 43	3.27	4.00	0.30	6.96
MBIF 34	10.35	11.35	1.38	16.08	MBIF 18	0.00	1.04	0.78	44.05
MBIF 34	11.35	12.30	0.57	7.81	MBIF 18	1.04	2.04	1.04	47.22
MBIF 102	0.00	0.58	0.95	48.83	MBIF 18	2.04	3.04	1.10	46.05
MBIF 102	0.58	1.58	1.00	40.60	MBIF 18	3.04	4.04	1.24	43.16
MBIF 102	1.58	2.58	0.99	41.10	MBIF 18	4.04	5.04	1.57	20.96
MBIF 102	2.58	3.58	1.53	27.48	MBIF 18	5.04	6.04	1.76	25.75
MBIF 102	3.58	4.58	1.92	11.38	MBIF 18	6.04	7.04	0.85	9.95
MBIF 102	4.58	5.58	1.77	10.36	MBIF 18	7.04	8.04	1.46	27.41
MBIF 102	5.58	6.58	1.61	12.76	MBIF 18	8.04	9.04	1.20	13.72
MBIF 102	6.58	7.58	1.41	8.73	MBIF 18	9.04	10.04	0.76	9.03
MBIF 102	7.58	8.58	1.52	8.51	MBIF 18	10.04	11.04	0.49	7.61
MBIF 102	8.58	9.58	1.44	9.72	MBIF 18	11.04	12.00	0.42	7.37
MBIF 102	9.58	10.50	0.54	6.61	MBIF 50	0.00	0.77	1.17	33.48
MBIF 92	0.00	1.08	0.80	17.35	MBIF 50	0.77	1.77	1.36	17.74
MBIF 92	1.08	2.08	0.77	11.57	MBIF 50	1.77	2.77	1.41	10.82
MBIF 92	2.08	3.08	0.69	8.34	MBIF 50	2.77	3.77	1.49	12.92
MBIF 92	3.08	4.08	0.28	6.29	MBIF 50	3.77	4.77	1.62	10.30
MBIF 92	4.08	5.00	0.29	6.54	MBIF 50	4.77	5.77	1.45	12.80
MBIF 20	0.00	1.15	0.63	46.86	MBIF 50	5.77	6.77	1.05	13.98
MBIF 20	1.15	2.15	0.74	45.38	MBIF 50	6.77	7.77	1.20	13.99
MBIF 20	2.15	3.15	0.84	45.32	MBIF 50	7.77	8.77	0.36	7.37
MBIF 20	3.15	4.15	1.04	28.73	MBIF 50	8.77	9.77	0.46	7.97
MBIF 20	4.15	5.15	0.64	8.48	MBIF 50	9.77	10.77	0.89	7.80
MBIF 20	5.15	6.15	1.34	12.45	MBIF 50	10.77	12.00	0.98	11.43
MBIF 20	6.15	7.15	1.17	10.06	MBIF 64	0.00	0.72	0.90	41.41
MBIF 20	7.15	8.15	1.18	13.50	MBIF 64	0.72	1.72	1.20	45.86
MBIF 20	8.15	9.15	1.12	11.47	MBIF 64	1.72	2.72	0.56	8.22
MBIF 20	9.15	10.15	0.91	9.99	MBIF 64	2.72	3.72	0.98	10.07
MBIF 20	10.15	11.15	0.58	7.81	MBIF 64	3.72	4.72	1.29	14.87
MBIF 20	11.15	12.00	0.32	6.85	MBIF 64	4.72	5.72	0.88	8.87
MBIF 30	0.00	0.50	1.68	17.98	MBIF 64	5.72	6.72	0.56	8.37
MBIF 30	0.50	1.50	1.20	12.32	MBIF 64	6.72	7.72	0.50	7.04
MBIF 30	1.50	2.50	1.30	12.46	MBIF 64	7.72	8.72	0.51	8.17
MBIF 30	2.50	3.50	1.33	10.50	MBIF 64	8.72	9.72	0.74	8.31
MBIF 30	3.50	4.50	0.97	9.69	MBIF 64	9.72	10.72	0.75	7.57
MBIF 30	4.50	5.50	0.68	8.00	MBIF 64	10.72	11.72	0.96	11.10
MBIF 30	5.50	7.00	0.67	7.44	MBIF 64	11.72	12.80	0.90	8.88
MBIF 5	0.00	1.21	0.79	40.41	MB 25	1.08	2.08	1.17	16.90
MBIF 5	1.21	2.21	1.25	13.23	MB 25	2.08	3.08	1.58	33.01
MBIF 5	2.21	3.21	1.47	12.23	MB 25	3.08	4.08	1.21	11.80
MBIF 5	3.21	4.21	1.33	17.90	MB 25	4.08	5.08	1.27	11.41
MBIF 5	4.21	5.21	2.08	20.03	MB 25	5.08	6.08	1.43	15.46
MBIF 5	5.21	6.21	0.89	0.89	MB 25	7.08	8.00	0.87	7.14
MBIF 5	6.21	7.21	1.43	1.43	MB 29	0.00	1.07	0.87	33.81
MBIF 5	7.21	8.21	1.30	1.30	MB 29	1.07	2.07	1.25	23.49
MBIF 5	8.21	9.21	0.73	0.73	MB 29	2.07	3.07	1.39	22.05
MBIF 5	9.21	10.40	0.62	0.62	MB 29	3.07	4.07	0.88	11.22
MBIF 112	0.00	0.76	1.33	34.93	MB 29	4.07	5.07	1.05	15.85
MBIF 112	0.76	1.76	1.60	12.00	MB 29	5.07	6.07	0.84	10.86
MBIF 112	1.76	2.76	1.74	17.62	MB 29	6.07	7.07	0.80	3.48
MBIF 112	2.76	3.76	1.60	12.62	MB 29	7.07	8.00	0.38	6.93
MBIF 112	3.76	4.76	1.85	11.74	MB 45	0.00	0.60	0.77	47.23
MBIF 112	4.76	5.76	1.80	16.14	MB 45	0.60	1.60	0.92	47.13
MBIF 112	5.76	6.76	1.26	8.38	MB 45	1.60	2.60	0.88	49.50
MBIF 112	6.76	7.76	0.96	7.74	MB 45	2.60	3.60	1.03	43.16
MBIF 112	7.76	8.76	1.36	10.43	MB 45	3.60	4.60	0.90	49.01
MBIF 112	8.76	9.76	1.01	7.60	MB 45	4.60	5.60	0.87	46.73
MBIF 112	9.76	10.76	1.62	16.71	MB 45	5.60	6.60	1.16	41.47
MBIF 112	10.76	11.76	1.43	14.31	MB 45	6.60	7.60	1.66	25.82

MB 45	7.60	8.60	1.44	16.79	MBIF 80	0.00	0.99	0.76	47.05
MB 45	8.60	10.00	0.77	13.28	MBIF 80	0.99	1.99	0.74	49.07
MBIF 104	0.00	0.89	0.66	43.69	MBIF 80	1.99	2.99	0.85	47.99
MBIF 104	0.89	1.89	0.62	45.29	MBIF 80	2.99	3.99	0.77	46.70
MBIF 104	1.89	2.89	0.75	45.35	MBIF 80	3.99	4.99	0.87	47.50
MBIF 104	2.89	3.89	0.89	44.73	MBIF 80	4.99	5.99	1.11	46.04
MBIF 104	3.89	4.89	0.97	44.59	MBIF 80	5.99	6.99	1.34	48.38
MBIF 104	4.89	5.89	0.86	45.51	MBIF 80	6.99	7.99	1.54	20.45
MBIF 104	5.89	6.89	1.09	42.21	MBIF 80	7.99	8.99	1.78	13.87
MBIF 104	6.89	7.89	0.98	42.13	MBIF 80	8.99	9.99	1.59	13.88
MBIF 104	7.89	8.89	1.27	30.79	MBIF 80	9.99	10.99	1.45	25.84
MBIF 104	8.89	9.89	1.08	44.51	MBIF 80	10.99	11.99	1.34	9.87
MBIF 104	9.89	10.89	1.06	43.43	MBIF 80	11.99	13.00	0.65	9.87
MBIF 104	10.89	11.89	1.09	44.72	MBIF 59	0.00	1.06	0.89	45.83
MBIF 104	11.89	12.89	1.14	36.79	MBIF 59	1.06	2.06	1.15	39.85
MBIF 104	12.89	13.89	0.97	38.36	MBIF 59	2.06	3.06	1.81	26.17
MBIF 104	13.89	14.89	1.91	21.41	MBIF 59	3.06	4.06	1.82	23.75
MBIF 104	14.89	15.89	2.01	17.52	MBIF 59	4.06	5.06	2.00	27.49
MBIF 104	15.89	16.89	2.27	16.28	MBIF 59	5.06	6.06	1.80	19.48
MBIF 104	16.89	17.89	2.13	16.85	MBIF 59	6.06	7.06	1.96	19.85
MBIF 104	17.89	18.89	1.67	15.19	MBIF 59	7.06	8.06	1.63	10.84
MBIF 104	18.89	20.00	0.75	8.16	MBIF 59	8.06	9.06	1.92	12.51
MB 53	0.00	1.26	0.72	47.79	MBIF 59	9.06	10.06	1.71	9.41
MB 53	1.26	2.26	0.79	47.25	MBIF 59	10.06	11.06	1.91	12.30
MB 53	2.26	3.26	1.24	40.81	MBIF 59	11.06	12.06	1.90	12.54
MB 53	3.26	4.26	1.40	22.41	MBIF 59	12.06	13.06	1.79	19.71
MB 53	4.26	5.26	0.89	46.90	MBIF 59	13.06	14.06	1.85	11.82
MB 53	5.26	6.26	0.95	47.61	MBIF 59	14.06	15.06	1.56	10.57
MB 53	6.26	7.26	1.21	10.21	MBIF 59	15.06	16.06	1.78	12.46
MB 53	7.26	8.26	1.56	13.79	MBIF 59	16.06	17.06	1.66	12.48
MB 53	8.26	9.26	1.60	16.84	MBIF 59	17.06	18.06	1.85	18.90
MB 53	9.26	10.26	1.77	17.06	MBIF 59	18.06	19.06	1.82	15.60
MB 53	10.26	11.26	1.24	9.52	MBIF 59	19.06	20.06	1.28	10.06
MB 53	11.26	12.26	1.51	9.51	MBIF 59	20.06	21.30	0.94	7.07
MB 53	12.26	13.26	1.54	12.66	MB 31	0.00	1.39	0.77	47.16
MB 53	13.26	14.26	1.48	10.52	MB 31	1.39	2.39	1.02	45.06
MB 53	14.26	15.26	0.98	8.44	MB 31	2.39	3.39	1.16	46.46
MB 53	15.26	16.26	1.51	19.41	MB 31	3.39	4.39	1.21	45.21
MB 53	16.26	17.26	1.23	15.04	MB 31	4.39	5.39	1.53	29.49
MB 53	17.26	18.26	1.09	10.53	MB 31	5.39	6.39	1.74	20.69
MB 53	18.26	19.26	1.00	9.65	MB 31	6.39	7.39	1.74	17.70
MB 53	19.26	20.00	0.40	7.25	MB 31	7.39	8.39	1.72	23.64
MBIF 7	0.00	0.61	0.65	45.04	MB 31	8.39	9.39	1.65	16.04
MBIF 7	0.61	1.61	0.66	46.87	MB 31	9.39	10.39	1.43	13.85
MBIF 7	1.61	2.61	0.72	46.17	MB 31	10.39	11.39	1.04	9.53
MBIF 7	2.61	3.61	0.81	45.34	MB 31	11.39	12.39	1.03	10.09
MBIF 7	3.61	4.61	0.75	32.93	MB 31	12.39	13.39	1.02	10.55
MBIF 7	4.61	5.61	0.61	21.51	MB 31	13.39	14.39	1.23	11.54
MBIF 7	5.61	6.61	0.73	31.23	MB 31	14.39	15.39	1.45	15.18
MBIF 7	6.61	7.61	0.94	38.90	MB 31	15.39	16.39	1.32	10.19
MBIF 7	7.61	8.61	0.96	37.25	MB 31	16.39	17.39	1.08	8.49
MBIF 7	8.61	9.61	1.19	15.87	MB 31	17.39	18.39	1.33	12.69
MBIF 7	9.61	10.61	1.61	19.31	MB 31	18.39	19.39	1.08	10.10
MBIF 7	10.61	11.61	1.10	9.08	MB 31	19.39	20.39	1.15	11.56
MBIF 7	11.61	12.61	1.60	20.97	MB 31	20.39	21.00	0.59	7.54
MBIF 7	12.61	13.61	1.30	14.84	MB 3	0.00	1.03	0.80	42.76
MBIF 7	13.61	14.61	0.91	10.01	MB 3	1.03	2.03	0.91	40.30
MBIF 7	14.61	15.61	0.67	8.62	MB 3	2.03	3.03	1.22	36.61
MBIF 7	15.61	16.61	0.62	8.50	MB 3	3.03	4.03	1.08	10.28
MBIF 7	16.61	17.20	0.33	6.88	MB 3	4.03	5.03	0.38	7.71
MBIF 69	0.00	0.74	0.66	47.80	MB 3	5.03	6.03	0.25	6.55
MBIF 69	0.74	1.74	0.81	48.90	MBIF 9	0.00	1.34	0.74	44.07
MBIF 69	1.74	2.74	0.81	49.75	MBIF 9	1.34	2.34	0.84	15.30
MBIF 69	2.74	3.74	1.01	50.51	MBIF 9	2.34	3.34	0.39	6.93
MBIF 69	3.74	4.74	1.03	49.34	MBIF 9	3.34	4.34	0.25	6.43
MBIF 69	4.74	5.74	1.08	45.78	MBIF 9	4.34	5.34	0.27	8.36
MBIF 69	5.74	6.74	1.74	28.10	MBIF 9	5.34	6.34	0.22	6.11
MBIF 69	6.74	7.74	1.92	15.98	MBIF 9	6.34	8.00	0.23	6.22
MBIF 69	7.74	8.74	1.81	12.32	MBIF 42	0.00	0.76	0.99	42.23
MBIF 69	8.74	9.74	1.94	15.16	MBIF 42	0.76	1.76	1.27	19.59
MBIF 69	9.74	10.74	1.86	21.31	MBIF 42	1.76	2.76	0.85	9.77
MBIF 69	10.74	11.74	1.00	8.21	MBIF 42	2.76	3.76	0.74	8.34
MBIF 69	11.74	12.74	1.60	15.40	MBIF 42	3.76	4.76	1.02	10.56
MBIF 69	12.74	13.74	1.31	11.59	MBIF 42	4.76	5.76	1.34	19.47
MBIF 69	13.74	14.74	1.32	19.88	MBIF 42	5.76	6.76	0.84	9.89
MBIF 69	14.74	15.74	1.14	14.02	MBIF 42	6.76	7.76	1.15	10.66
MBIF 69	15.74	16.74	1.01	15.22	MBIF 42	7.76	8.76	1.09	12.06
MBIF 69	16.74	17.74	0.59	9.71	MBIF 42	8.76	10.00	0.32	6.87
MBIF 69	17.74	18.74	0.65	9.21	MB 47	0.00	0.67	1.29	16.93
MBIF 69	18.74	20.00	0.59	7.28	MB 47	0.67	1.67	0.86	7.75

MB 47	1.67	2.67	0.96	9.73	MBIF 54	15.58	16.58	1.39	13.81
MB 47	2.67	3.67	1.20	12.97	MBIF 54	16.58	17.58	0.98	9.23
MB 47	3.67	4.67	0.92	8.10	MBIF 54	17.58	18.58	0.60	7.96
MB 47	4.67	5.40	0.36	7.02	MBIF 54	18.58	20.00	0.61	6.95
MBIF 44	0.00	1.40	1.39	27.65	MBIF 35	0.00	0.51	0.95	37.57
MBIF 44	1.40	2.40	1.46	24.94	MBIF 35	0.51	1.51	0.93	10.58
MBIF 44	2.40	3.40	0.91	8.98	MBIF 35	1.51	2.51	1.37	11.95
MBIF 44	3.40	4.40	0.60	8.93	MBIF 35	2.51	3.51	1.15	9.09
MBIF 44	4.40	5.40	0.44	7.36	MBIF 35	3.51	4.51	1.23	12.38
MBIF 44	5.40	6.20	0.35	7.21	MBIF 35	4.51	5.51	1.35	12.05
MB 60	0.00	1.21	0.71	40.67	MBIF 35	5.51	6.51	1.30	11.80
MB 60	1.21	2.21	0.74	44.96	MBIF 35	6.51	7.51	1.09	8.05
MB 60	2.21	3.21	0.95	47.88	MBIF 35	7.51	8.40	0.54	7.08
MB 60	3.21	4.21	0.96	44.77	MBIF 96	0.00	0.60	0.65	46.20
MB 60	4.21	5.21	1.09	44.06	MBIF 96	0.60	1.60	0.62	48.66
MB 60	5.21	6.21	1.18	42.76	MBIF 96	1.60	2.60	0.85	48.18
MB 60	6.21	7.21	0.68	46.40	MBIF 96	2.60	3.60	1.08	37.49
MB 60	7.21	8.21	1.39	32.19	MBIF 96	3.60	4.60	1.02	11.43
MB 60	8.21	9.21	1.70	24.23	MBIF 96	4.60	5.60	1.13	15.68
MB 60	9.21	10.21	1.02	11.68	MBIF 96	5.60	6.60	1.00	15.66
MB 60	10.21	11.21	0.87	11.76	MBIF 96	6.60	7.60	0.56	9.42
MB 60	11.21	12.21	1.10	13.32	MBIF 96	7.60	8.60	0.63	8.62
MB 60	12.21	13.21	0.91	9.60	MB 58	0.00	0.67	0.83	36.21
MB 60	13.21	14.21	1.24	19.74	MB 58	0.67	1.67	1.16	39.05
MB 60	14.21	15.21	1.33	28.80	MB 58	1.67	2.67	1.16	8.11
MB 60	15.21	16.21	0.55	7.99	MB 58	2.67	3.67	1.68	17.57
MB 60	16.21	17.21	0.36	7.02	MB 58	3.67	4.67	1.36	10.65
MBIF 45	0.00	1.25	1.20	24.00	MB 58	4.67	5.67	1.36	10.04
MBIF 45	1.25	2.25	1.48	8.52	MB 58	5.67	6.67	0.84	8.10
MBIF 45	2.25	3.25	1.72	25.20	MB 58	6.67	7.67	1.45	11.24
MBIF 45	3.25	4.25	1.11	10.09	MB 58	7.67	8.67	1.47	12.34
MBIF 45	4.25	5.25	0.59	7.60	MB 58	8.67	9.67	1.21	10.54
MBIF 45	5.25	6.25	0.68	8.14	MB 58	9.67	10.67	0.79	8.22
MBIF 45	6.25	7.25	0.48	6.71	MB 58	10.67	11.67	0.65	9.80
MBIF 45	7.25	8.00	0.48	6.53	MB 58	11.67	12.67	0.65	10.71
MBIF 58	0.00	0.50	0.75	44.72	MB 58	12.67	13.67	0.48	8.36
MBIF 58	0.50	1.50	0.77	35.98	MB 58	13.67	14.67	0.76	9.44
MBIF 58	1.50	2.50	0.65	12.04	MB 58	14.67	15.67	0.90	10.85
MBIF 58	2.50	3.50	0.60	10.46	MB 58	15.67	16.67	0.86	10.27
MBIF 58	3.50	4.50	0.28	6.97	MB 58	16.67	17.67	0.49	8.16
MBIF 58	4.50	6.00	0.32	6.88	MB 58	17.67	19.00	0.39	6.44
MB 22	0.00	0.89	0.76	40.11	MBIF 105	0.00	1.13	0.84	45.64
MB 22	0.89	1.89	0.87	41.94	MBIF 105	1.13	2.13	1.25	27.79
MB 22	1.89	2.89	0.63	8.77	MBIF 105	2.13	3.13	1.57	19.64
MB 22	2.89	3.89	0.30	6.72	MBIF 105	3.13	4.13	1.00	10.40
MB 22	3.89	5.00	0.24	6.28	MBIF 105	4.13	5.13	0.66	8.12
MB 39	0.00	1.13	1.01	43.02	MBIF 105	5.13	6.13	0.32	0.73
MB 39	1.13	2.13	1.10	46.82	MBIF 105	6.13	7.00	0.27	6.53
MB 39	2.13	3.13	0.99	45.21	MBIF 114	0.00	0.53	0.64	44.96
MB 39	3.13	4.13	1.30	23.46	MBIF 114	0.53	1.53	0.84	48.03
MB 39	4.13	5.13	1.46	17.62	MBIF 114	1.53	2.53	0.93	47.51
MB 39	5.13	6.13	1.32	18.36	MBIF 114	2.53	3.53	0.98	45.58
MB 39	6.13	8.00	0.49	7.51	MBIF 114	3.53	4.53	1.19	30.97
MB 26	0.00	1.09	1.37	34.52	MBIF 114	4.53	5.53	1.71	14.42
MB 26	1.09	2.09	1.91	27.14	MBIF 114	5.53	6.53	1.70	29.89
MB 26	2.09	3.09	1.67	40.49	MBIF 114	6.53	7.53	1.52	15.84
MB 26	3.09	4.09	1.55	41.43	MBIF 114	7.53	9.60	0.49	7.55
MB 26	4.09	5.09	1.91	27.77	MB 17	0.00	0.58	0.85	45.58
MB 26	5.09	6.09	1.90	18.39	MB 17	0.58	1.58	1.24	38.14
MB 26	6.09	7.09	1.32	8.35	MB 17	1.58	2.58	1.61	21.11
MB 26	7.09	8.09	1.30	10.09	MB 17	2.58	3.58	1.92	15.32
MB 26	8.09	9.09	0.80	7.68	MB 17	3.58	4.58	1.70	16.15
MB 26	9.09	10.09	0.93	8.61	MB 17	4.58	5.58	1.60	12.95
MB 26	10.09	11.09	0.46	7.44	MB 17	5.58	6.58	1.22	11.94
MBIF 54	0.00	0.58	0.84	46.82	MB 17	6.58	7.58	0.88	9.12
MBIF 54	0.58	1.58	0.82	47.64	MB 17	7.58	9.00	0.63	7.03
MBIF 54	1.58	2.58	0.89	50.19	MBIF 91	0.00	0.86	0.74	45.12
MBIF 54	2.58	3.58	0.93	48.36	MBIF 91	0.86	1.86	0.77	44.39
MBIF 54	3.58	4.58	0.80	49.55	MBIF 91	1.86	2.86	0.82	45.64
MBIF 54	4.58	5.58	0.80	49.62	MBIF 91	2.86	3.86	0.80	43.05
MBIF 54	5.58	6.58	0.97	48.24	MBIF 91	3.86	4.86	1.00	36.17
MBIF 54	6.58	7.58	1.00	47.83	MBIF 91	4.86	5.86	0.81	10.01
MBIF 54	7.58	8.58	1.53	27.02	MBIF 91	5.86	6.86	1.51	21.41
MBIF 54	8.58	9.58	1.51	17.10	MBIF 91	6.86	7.50	0.36	7.11
MBIF 54	9.58	10.58	1.65	28.91	MB 50	0.00	1.16	1.09	33.16
MBIF 54	10.58	11.58	1.43	14.37	MB 50	1.16	2.16	1.58	13.08
MBIF 54	11.58	12.58	1.50	15.15	MB 50	2.16	3.16	0.87	8.27
MBIF 54	12.58	13.58	1.18	10.32	MB 50	3.16	4.16	1.35	14.87
MBIF 54	13.58	14.58	0.71	8.11	MB 50	4.16	5.16	0.92	8.80
MBIF 54	14.58	15.58	0.91	9.20	MB 50	5.16	6.16	0.63	7.74

MB 50	6.16	7.00	0.39	6.62	MBIF 62	2.73	3.73	0.98	49.31
MBIF 86	0.00	0.75	0.75	43.17	MBIF 62	3.73	4.73	1.16	48.54
MBIF 86	0.75	1.75	0.87	45.47	MBIF 62	4.73	5.73	1.31	34.36
MBIF 86	1.75	2.75	0.83	24.79	MBIF 62	5.73	6.73	1.66	16.42
MBIF 86	2.75	3.75	0.69	11.73	MBIF 62	6.73	7.73	2.07	24.15
MBIF 86	3.75	4.75	1.29	27.39	MBIF 62	7.73	8.73	1.76	22.62
MBIF 86	4.75	5.75	1.22	17.99	MBIF 62	8.73	9.73	2.26	14.84
MBIF 86	5.75	6.75	1.10	14.24	MBIF 62	9.73	10.73	2.01	8.39
MBIF 86	6.75	7.75	0.76	12.40	MBIF 62	10.73	11.73	1.73	13.01
MBIF 86	7.75	8.75	0.51	8.75	MBIF 62	11.73	12.73	0.71	7.16
MBIF 86	8.75	9.75	0.46	8.70	MBIF 62	12.73	13.50	0.46	6.57
MBIF 86	9.75	10.75	0.91	23.23	MBIF 93	0.00	0.91	0.77	46.36
MBIF 86	10.75	11.75	0.75	16.84	MBIF 93	0.91	1.91	0.98	47.28
MBIF 86	11.75	12.60	0.29	6.55	MBIF 93	1.91	2.91	1.37	43.31
MBIF 113	0.00	0.68	1.46	23.69	MBIF 93	2.91	3.91	1.42	20.67
MBIF 113	0.68	1.68	1.22	8.69	MBIF 93	3.91	4.91	1.53	33.26
MBIF 113	1.68	2.68	1.55	9.07	MBIF 93	4.91	5.91	1.43	18.97
MBIF 113	2.68	3.68	1.03	9.09	MBIF 93	5.91	6.91	1.33	18.27
MBIF 113	3.68	4.68	0.34	7.19	MBIF 93	6.91	7.91	1.36	22.61
MBIF 113	4.68	6.00	0.29	7.05	MBIF 93	7.91	8.91	1.14	10.95
MB 32	0.00	1.16	1.36	23.72	MBIF 93	8.91	9.91	1.12	13.54
MB 32	1.16	2.16	1.44	10.23	MBIF 93	9.91	10.91	0.98	11.31
MB 32	2.16	3.16	1.47	8.80	MBIF 93	10.91	11.91	0.81	10.24
MB 32	3.16	4.16	1.24	7.90	MBIF 93	11.91	12.91	0.26	6.59
MB 32	4.16	5.16	1.54	8.70	MBIF 93	12.91	14.20	0.56	7.97
MB 32	5.16	6.16	1.38	8.05	MBIF 52	0.00	0.69	0.78	44.09
MB 32	6.16	7.16	1.06	8.42	MBIF 52	0.69	1.69	0.94	45.18
MB 32	7.16	8.16	1.12	9.98	MBIF 52	1.69	2.69	1.27	13.04
MB 32	8.16	9.30	0.99	9.66	MBIF 52	2.69	3.69	0.97	9.43
MB 59	0.00	1.13	0.82	45.59	MBIF 52	3.69	4.69	1.28	14.04
MB 59	1.13	2.13	1.13	47.17	MBIF 52	4.69	5.69	1.37	14.54
MB 59	2.13	3.13	1.34	27.74	MBIF 52	5.69	6.69	1.22	13.37
MB 59	3.13	4.13	1.53	13.52	MBIF 52	6.69	7.69	1.00	12.05
MB 59	4.13	5.13	1.09	11.51	MBIF 52	7.69	8.69	0.94	10.00
MB 59	5.13	6.13	0.53	7.20	MBIF 52	8.69	9.69	0.86	9.29
MB 59	6.13	7.13	1.33	16.16	MBIF 52	9.69	10.69	1.05	11.84
MB 59	7.13	8.13	1.04	11.43	MBIF 52	10.69	11.69	1.30	12.19
MB 59	8.13	9.13	0.60	8.47	MBIF 52	11.69	12.69	1.17	10.65
MB 59	9.13	10.13	0.65	9.33	MBIF 52	12.69	13.69	0.99	11.81
MB 59	10.13	11.40	0.40	7.20	MBIF 52	13.69	15.00	0.86	8.11
MB 36	0.00	1.05	0.81	44.02	MB 52	0.00	0.54	0.81	47.42
MB 36	1.05	2.05	0.95	31.50	MB 52	0.54	1.54	0.83	49.74
MB 36	2.05	3.05	1.15	28.03	MB 52	1.54	2.54	0.88	49.42
MB 36	3.05	4.05	1.25	12.51	MB 52	2.54	3.54	1.07	35.33
MB 36	4.05	5.05	1.50	17.59	MB 52	3.54	4.54	1.43	31.02
MB 36	5.05	6.05	1.54	17.38	MB 52	4.54	5.54	1.56	27.65
MB 36	6.05	7.05	1.41	17.41	MB 52	5.54	6.54	1.36	26.45
MB 36	7.05	8.05	1.11	10.32	MB 52	6.54	7.54	1.79	17.49
MB 36	8.05	9.05	1.27	18.73	MB 52	7.54	9.00	0.85	7.82
MB 36	9.05	10.05	0.66	8.77	MB 4	0.00	0.68	0.77	44.49
MB 36	10.05	11.00	0.28	6.55	MB 4	0.68	1.68	0.48	10.54
MBIF 23	0.00	1.41	0.92	42.59	MB 4	1.68	3.00	0.26	6.52
MBIF 23	1.41	2.41	1.23	20.20	MB 24	0.00	1.48	1.62	11.30
MBIF 23	2.41	3.41	0.83	8.94	MB 24	1.48	2.48	1.51	19.52
MBIF 23	3.41	4.41	1.45	22.25	MB 24	2.48	3.48	1.18	23.29
MBIF 23	4.41	5.41	0.96	11.12	MB 24	3.48	4.48	1.14	17.26
MBIF 23	5.41	6.41	1.31	17.19	MB 24	4.48	5.48	1.57	28.09
MBIF 23	6.41	7.41	1.02	19.50	MB 24	5.48	6.48	1.61	23.75
MBIF 23	7.41	8.60	0.36	7.02	MB 24	6.48	7.48	0.65	6.91
MBIF 8	0.00	0.66	0.85	46.72	MB 24	7.48	9.00	0.38	6.37
MBIF 8	0.66	1.66	0.82	47.14	MBIF 24	0.00	1.10	0.83	48.61
MBIF 8	1.66	2.66	0.08	46.08	MBIF 24	1.10	2.10	0.77	48.25
MBIF 8	2.66	3.66	0.71	47.18	MBIF 24	2.10	3.10	0.75	48.02
MBIF 8	3.66	4.66	0.85	48.11	MBIF 24	3.10	4.10	1.16	41.00
MBIF 8	4.66	5.66	1.12	39.65	MBIF 24	4.10	5.10	1.46	16.72
MBIF 8	5.66	6.66	1.03	12.89	MBIF 24	5.10	6.10	1.64	20.60
MBIF 8	6.66	7.66	0.54	8.13	MBIF 24	6.10	7.10	1.39	21.84
MBIF 8	7.66	8.66	0.32	7.24	MBIF 24	7.10	8.10	1.35	18.21
MBIF 8	8.66	9.30	0.25	6.57	MBIF 24	8.10	9.10	1.41	17.53
MBIF 48	0.00	0.59	1.16	36.27	MBIF 24	9.10	10.20	1.34	13.18
MBIF 48	0.59	1.59	1.09	9.68	MBIF 24	10.10	11.10	1.13	10.94
MBIF 48	1.59	2.59	0.72	8.52	MBIF 24	11.10	12.10	1.15	13.12
MBIF 48	2.59	3.59	0.75	10.55	MBIF 24	12.10	13.10	0.90	12.12
MBIF 48	3.59	4.59	0.91	8.89	MBIF 24	13.10	14.10	0.89	15.03
MBIF 48	4.59	5.59	1.15	12.11	MBIF 24	14.10	15.10	0.67	7.71
MBIF 48	5.59	6.59	0.64	8.51	MBIF 24	15.10	16.00	0.45	6.67
MBIF 48	6.59	8.00	0.36	6.85	MBIF 27	0.00	1.14	0.90	38.86
MBIF 62	0.00	0.73	0.60	46.71	MBIF 27	1.14	2.14	1.07	39.33
MBIF 62	0.73	1.73	0.93	48.47	MBIF 27	2.14	3.14	1.38	29.50
MBIF 62	1.73	2.73	1.02	48.00	MBIF 27	3.14	4.14	1.40	30.06

MBIF 27	4.14	5.14	1.24	23.83	MBIF 21	9.69	10.69	1.54	9.76
MBIF 27	5.14	6.14	1.09	13.95	MBIF 21	10.69	11.69	1.92	16.17
MBIF 27	6.14	7.14	0.83	11.74	MBIF 21	11.69	12.69	1.09	10.40
MBIF 27	7.14	8.14	0.95	12.37	MBIF 21	12.69	13.69	1.10	11.08
MBIF 27	8.14	9.14	0.91	11.62	MBIF 21	13.69	14.69	1.11	13.79
MBIF 27	9.14	10.14	0.96	10.84	MBIF 21	14.69	15.69	1.27	14.35
MBIF 27	10.14	11.14	0.72	9.71	MBIF 21	15.69	16.69	1.60	15.58
MBIF 27	11.14	12.14	0.66	9.45	MBIF 21	16.69	17.69	1.14	43.37
MBIF 27	12.14	13.00	0.37	7.08	MBIF 21	17.69	19.30	1.04	9.89
MBIF 32	0.00	1.25	1.23	45.09	MB 15	0.00	1.35	0.84	19.49
MBIF 32	1.26	2.26	1.32	42.00	MB 15	1.35	2.35	0.80	11.13
MBIF 32	2.26	3.26	1.47	33.20	MB 15	2.35	3.35	1.06	13.59
MBIF 32	3.26	4.26	1.46	35.81	MB 15	3.35	4.35	0.68	7.60
MBIF 32	4.26	5.26	1.45	34.24	MB 15	4.35	5.35	0.85	10.33
MBIF 32	5.26	6.26	1.42	28.18	MB 15	5.35	6.35	0.92	9.58
MBIF 32	6.26	7.26	1.45	14.80	MB 15	6.35	7.35	0.81	8.71
MBIF 32	7.26	8.26	1.33	27.30	MB 15	7.35	8.35	1.00	12.98
MBIF 32	8.26	9.26	1.44	32.76	MB 15	8.35	9.35	0.69	8.76
MBIF 32	9.26	10.26	1.45	23.73	MB 15	9.35	10.35	0.85	10.84
MBIF 32	10.26	11.26	1.35	22.10	MB 15	10.35	11.35	0.81	10.56
MBIF 32	11.26	12.26	1.31	19.54	MB 15	11.35	12.35	1.04	12.79
MBIF 32	12.26	13.26	1.25	16.77	MB 15	12.35	13.35	0.85	8.30
MBIF 32	13.26	14.26	1.01	9.65	MB 15	13.35	14.35	0.98	10.63
MBIF 32	14.26	15.40	0.67	7.16	MB 15	14.35	15.35	0.96	11.89
MBIF 79	0.00	1.24	0.66	44.24	MB 15	15.35	16.35	0.91	9.73
MBIF 79	1.24	2.24	0.88	48.92	MB 15	16.35	17.35	0.95	9.81
MBIF 79	2.24	3.24	0.91	47.75	MB 15	17.35	18.35	0.79	9.26
MBIF 79	3.24	4.24	0.96	46.44	MB 15	18.35	19.35	0.92	7.66
MBIF 79	4.24	5.24	1.29	43.74	MB 15	19.35	20.00	0.26	6.45
MBIF 79	5.24	6.24	0.92	20.59	MBIF 72	0.00	0.94	0.74	47.32
MBIF 79	6.24	7.24	1.34	16.19	MBIF 72	0.94	1.94	0.89	48.43
MBIF 79	7.24	8.24	1.39	13.42	MBIF 72	1.94	2.94	0.88	48.76
MBIF 79	8.24	9.24	1.37	18.56	MBIF 72	2.94	3.94	0.79	47.64
MBIF 79	9.24	10.24	1.36	24.96	MBIF 72	3.94	4.94	1.00	48.82
MBIF 79	10.24	11.24	1.09	13.86	MBIF 72	4.94	5.94	1.15	49.83
MBIF 79	11.24	12.24	1.32	22.49	MBIF 72	5.94	6.94	1.39	17.46
MBIF 79	12.24	13.24	0.75	8.98	MBIF 72	6.94	7.94	1.16	9.33
MBIF 79	13.24	14.24	1.06	12.81	MBIF 72	7.94	8.94	1.72	15.40
MBIF 79	14.24	15.24	0.77	9.11	MBIF 72	8.94	9.94	1.46	13.57
MBIF 79	15.24	16.00	0.41	6.82	MBIF 72	9.94	10.94	1.54	22.80
MBIF 67	0.00	0.52	1.49	31.78	MBIF 72	10.94	11.94	1.57	20.03
MBIF 67	0.52	1.52	1.78	12.38	MBIF 72	11.94	12.94	1.27	15.86
MBIF 67	1.52	2.52	1.81	16.73	MBIF 72	12.94	13.94	1.03	12.53
MBIF 67	2.52	3.52	1.90	18.06	MBIF 72	13.94	14.94	0.80	10.24
MBIF 67	3.52	4.52	1.07	7.15	MBIF 72	14.94	15.94	0.94	12.19
MBIF 67	4.52	5.52	1.33	11.98	MBIF 72	15.94	16.94	1.24	14.64
MBIF 67	5.52	6.52	1.46	18.04	MBIF 72	16.94	17.94	0.92	12.81
MBIF 67	6.52	7.52	1.30	13.91	MBIF 72	17.94	18.94	0.61	10.33
MBIF 67	7.52	8.52	1.22	10.41	MBIF 72	18.94	19.60	0.72	6.87
MBIF 67	8.52	9.52	1.06	10.35	MBIF 38	0.00	0.69	0.94	43.66
MBIF 67	9.52	10.52	0.89	10.00	MBIF 38	0.69	1.69	1.02	48.10
MBIF 67	10.52	12.00	0.59	7.20	MBIF 38	1.69	2.69	0.90	46.57
MBIF 37	0.00	0.60	0.87	46.30	MBIF 38	2.69	3.69	1.02	47.16
MBIF 37	0.60	1.60	1.83	17.99	MBIF 38	3.69	4.69	1.26	42.93
MBIF 37	1.60	2.60	2.01	28.71	MBIF 38	4.69	5.69	1.42	38.12
MBIF 37	2.60	3.60	2.51	21.24	MBIF 38	5.69	6.69	1.71	25.38
MBIF 37	3.60	4.60	1.57	15.03	MBIF 38	6.69	7.69	1.54	20.90
MBIF 37	4.60	5.60	1.19	9.51	MBIF 38	7.69	8.69	1.64	22.53
MBIF 37	5.60	6.60	1.04	12.50	MBIF 38	8.69	9.69	1.61	14.72
MBIF 37	6.60	7.60	1.24	11.84	MBIF 38	9.69	10.69	1.34	10.83
MBIF 37	7.60	8.60	1.02	9.23	MBIF 38	10.69	11.69	1.19	11.67
MBIF 37	8.60	9.60	0.85	8.86	MBIF 38	11.69	12.69	1.42	19.17
MBIF 37	9.60	10.60	0.81	7.70	MBIF 38	12.69	13.69	1.64	15.15
MBIF 37	10.60	11.60	0.82	7.93	MBIF 38	13.69	14.69	1.82	12.32
MB 18	0.00	1.24	0.78	45.51	MBIF 38	14.69	15.69	1.51	15.69
MB 18	1.24	2.24	0.99	38.87	MBIF 38	15.69	16.69	1.67	16.09
MB 18	2.24	3.24	0.60	8.65	MBIF 38	16.69	17.69	1.69	15.93
MB 18	3.24	4.24	0.47	7.61	MBIF 38	17.69	18.69	1.27	11.66
MB 18	4.24	5.24	0.47	7.73	MBIF 38	18.69	19.69	1.55	14.05
MB 18	5.24	6.60	0.31	7.02	MBIF 38	19.69	20.69	1.47	9.61
MBIF 21	0.00	0.69	0.64	46.08	MBIF 38	20.69	21.69	1.08	12.16
MBIF 21	0.69	1.69	0.82	48.24	MBIF 38	21.69	22.69	0.97	9.19
MBIF 21	1.69	2.69	0.98	49.56	MBIF 38	22.69	24.00	0.43	7.09
MBIF 21	2.69	3.69	0.90	48.79	MBIF 60	0.00	0.83	0.67	45.85
MBIF 21	3.69	4.69	1.06	46.64	MBIF 60	0.83	1.83	0.91	49.14
MBIF 21	4.69	5.69	1.18	13.44	MBIF 60	1.83	2.83	1.01	49.31
MBIF 21	5.69	6.69	1.41	39.70	MBIF 60	2.83	3.83	1.05	50.07
MBIF 21	6.69	7.69	1.71	26.40	MBIF 60	3.83	4.83	1.01	50.44
MBIF 21	7.69	8.69	1.94	19.85	MBIF 60	4.83	5.83	0.93	45.63
MBIF 21	8.69	9.69	1.90	17.65	MBIF 60	5.83	6.83	1.09	48.31

MBIF 60	6.83	7.83	1.40	41.06	MB 11	15.14	16.14	1.07	9.39
MBIF 60	7.83	8.83	2.05	26.85	MB 11	16.14	17.00	0.73	6.89
MBIF 60	8.83	9.83	2.11	16.92	MBIF 47	0.00	1.23	0.88	46.56
MBIF 60	9.83	10.83	1.36	8.76	MBIF 47	1.23	2.23	0.83	49.23
MBIF 60	10.83	11.83	1.22	9.10	MBIF 47	2.23	3.23	0.74	48.00
MBIF 60	11.83	12.83	1.20	9.71	MBIF 47	3.23	4.23	0.76	49.70
MBIF 60	12.83	13.83	1.25	9.93	MBIF 47	4.23	5.23	0.80	48.12
MBIF 60	13.83	14.83	1.18	9.53	MBIF 47	5.23	6.23	1.05	41.38
MBIF 60	14.83	15.83	1.81	19.33	MBIF 47	6.23	7.23	0.91	47.93
MBIF 60	15.83	16.83	1.59	14.69	MBIF 47	7.23	8.23	1.42	25.12
MBIF 60	16.83	17.83	1.07	8.45	MBIF 47	8.23	9.23	1.21	13.89
MBIF 60	17.83	18.90	0.78	6.40	MBIF 47	9.23	10.23	1.92	14.78
MB 30	0.00	0.69	0.76	46.91	MBIF 47	10.23	11.23	1.06	10.19
MB 30	0.69	1.69	0.90	49.12	MBIF 47	11.23	12.23	0.98	10.21
MB 30	1.69	2.69	0.99	48.72	MBIF 47	12.23	13.23	1.19	9.98
MB 30	2.69	3.69	0.98	47.67	MBIF 47	13.23	14.23	0.86	9.42
MB 30	3.69	4.69	1.30	31.12	MBIF 47	14.23	15.23	0.76	8.97
MB 30	4.69	5.69	1.66	21.98	MBIF 47	15.23	16.23	0.37	7.00
MB 30	5.69	6.69	1.97	13.42	MBIF 47	16.23	17.80	0.57	7.24
MB 30	6.69	7.69	2.24	12.73	MBIF 51	0.00	1.07	0.87	47.25
MB 30	7.69	8.69	1.15	8.33	MBIF 51	1.07	2.07	0.84	48.22
MB 30	8.69	9.69	1.66	12.16	MBIF 51	2.07	3.07	0.89	48.19
MB 30	9.69	10.69	1.59	13.47	MBIF 51	3.07	4.07	0.73	47.88
MB 30	10.69	11.69	1.39	12.13	MBIF 51	4.07	5.07	1.10	42.88
MB 30	11.69	12.69	1.41	13.32	MBIF 51	5.07	6.07	0.99	47.92
MB 30	12.69	13.69	1.28	8.92	MBIF 51	6.07	7.07	1.02	49.37
MB 30	13.69	14.69	0.89	9.81	MBIF 51	7.07	8.07	1.30	44.26
MB 30	14.69	15.69	1.03	8.75	MBIF 51	8.07	9.07	1.83	20.07
MB 30	15.69	16.69	1.04	10.19	MBIF 51	9.07	10.07	2.22	14.60
MB 30	16.69	17.69	0.97	11.98	MBIF 51	10.07	11.07	2.12	16.13
MB 30	17.69	19.00	0.62	7.90	MBIF 51	11.07	12.07	0.74	7.31
MBIF 6	0.00	0.64	0.79	46.87	MBIF 51	12.07	13.00	0.36	6.02
MBIF 6	0.64	1.64	0.95	48.57	MB 33	0.00	1.39	0.78	45.32
MBIF 6	1.64	2.64	0.75	47.86	MB 33	1.39	2.39	1.02	47.82
MBIF 6	2.64	3.64	0.98	27.26	MB 33	2.39	3.39	1.05	49.02
MBIF 6	3.64	4.64	0.58	8.70	MB 33	3.39	4.39	1.06	48.05
MBIF 6	4.64	6.00	0.33	7.33	MB 33	4.39	5.39	1.16	47.72
MB 54	0.00	1.16	0.69	48.43	MB 33	5.39	6.39	1.79	28.46
MB 54	1.16	2.16	0.81	48.50	MB 33	6.39	7.39	1.68	26.52
MB 54	2.16	3.16	1.17	24.03	MB 33	7.39	8.39	1.62	19.82
MB 54	3.16	4.16	0.77	8.04	MB 33	8.39	9.39	1.57	9.87
MB 54	4.16	5.16	1.52	18.96	MB 33	9.39	10.39	1.29	9.34
MB 54	5.16	6.16	0.99	8.88	MB 33	10.39	11.39	1.79	15.31
MB 54	6.16	7.16	1.03	17.11	MB 33	11.39	12.39	1.59	13.67
MB 54	7.16	8.16	1.10	10.69	MB 33	12.39	13.39	1.41	10.37
MB 54	8.16	9.16	0.91	11.22	MB 33	13.39	14.39	1.14	9.06
MB 54	9.16	10.16	0.92	13.71	MB 33	14.39	15.39	1.15	9.68
MB 54	10.16	11.16	0.86	12.13	MB 33	15.39	16.39	1.18	10.72
MB 54	11.16	12.16	0.57	9.59	MB 33	16.39	17.39	1.06	11.26
MB 54	12.16	13.00	0.36	7.19	MB 33	17.39	18.39	1.11	14.30
MB 25	0.00	1.04	0.81	48.20	MB 33	18.39	19.39	0.89	12.12
MB 25	1.04	2.04	1.01	47.86	MB 33	19.39	20.39	0.57	8.27
MB 25	2.04	3.04	0.76	47.70	MB 33	20.39	21.39	0.92	10.67
MB 25	3.04	4.04	0.85	49.55	MB 33	21.39	22.39	1.21	15.94
MB 25	4.04	5.04	1.57	34.18	MB 33	22.39	23.39	0.87	10.48
MB 25	5.04	6.04	1.79	30.72	MB 33	23.39	24.39	0.79	9.36
MB 25	6.04	7.04	1.74	22.59	MB 33	24.39	25.20	0.61	6.84
MB 25	7.04	8.04	0.84	9.00	MBIF 56	0.00	1.14	0.78	48.45
MB 25	8.04	9.04	0.68	7.75	MBIF 56	1.14	2.14	0.84	48.21
MB 25	9.04	10.04	1.01	11.15	MBIF 56	2.14	3.14	0.91	49.89
MB 25	10.04	11.04	0.88	12.52	MBIF 56	3.14	4.14	0.89	47.64
MB 25	11.04	12.04	0.71	10.18	MBIF 56	4.14	5.14	1.06	49.87
MB 25	12.04	13.04	0.59	9.69	MBIF 56	5.14	6.14	1.21	49.10
MB 25	13.04	14.04	0.62	9.73	MBIF 56	6.14	7.14	2.02	33.08
MB 25	14.04	15.04	0.29	7.24	MBIF 56	7.14	8.14	1.58	42.89
MB 11	0.00	1.14	0.76	47.48	MBIF 56	8.14	9.14	1.45	48.33
MB 11	1.14	2.14	0.83	48.25	MBIF 56	9.14	10.14	1.46	44.12
MB 11	2.14	3.14	0.81	49.23	MBIF 56	10.14	11.14	2.34	23.16
MB 11	3.14	4.14	0.75	47.49	MBIF 56	11.14	12.14	1.99	22.08
MB 11	4.14	5.14	0.98	45.35	MBIF 56	12.14	13.14	1.85	31.89
MB 11	5.14	6.14	1.08	37.13	MBIF 56	13.14	14.00	2.07	20.77
MB 11	6.14	7.14	1.98	20.18	MBIF 46	0.00	0.89	1.05	40.74
MB 11	7.14	8.14	2.20	21.49	MBIF 46	0.89	1.89	1.60	25.84
MB 11	8.14	9.14	2.03	28.60	MBIF 46	1.89	2.89	1.63	24.98
MB 11	9.14	10.14	1.87	26.49	MBIF 46	2.89	3.89	1.49	24.12
MB 11	10.14	11.14	1.75	22.80	MBIF 46	3.89	4.89	2.06	24.39
MB 11	11.14	12.14	1.69	24.22	MBIF 46	4.89	5.89	1.92	9.63
MB 11	12.14	13.14	1.38	12.90	MBIF 46	5.89	6.89	1.90	33.35
MB 11	13.14	14.14	1.74	12.05	MBIF 46	6.89	7.89	1.87	24.78
MB 11	14.14	15.14	1.52	14.37	MBIF 46	7.89	8.89	1.71	22.08

MBIF 46	8.89	9.89	1.02	8.98	MBIF 53	5.06	6.06	1.72	23.66
MBIF 46	9.89	10.89	1.03	8.44	MBIF 53	6.06	7.06	1.69	19.80
MBIF 46	10.89	11.89	1.68	8.91	MBIF 53	7.06	8.06	1.96	19.71
MBIF 46	11.89	12.89	1.73	9.65	MBIF 53	8.06	9.06	1.85	14.37
MBIF 46	12.89	13.89	1.34	9.14	MBIF 53	9.06	10.05	1.46	11.39
MBIF 46	13.89	15.00	0.90	6.61	MBIF 53	10.06	11.05	1.35	9.57
MB 8	0.00	0.52	0.76	46.87	MBIF 53	11.06	12.06	0.91	7.34
MB 8	0.52	1.52	0.95	44.78	MBIF 53	12.06	13.06	0.95	8.56
MB 8	1.52	2.52	1.33	32.89	MBIF 53	13.06	14.06	0.69	7.58
MB 8	2.52	3.52	1.14	14.60	MBIF 53	14.06	15.00	0.59	6.61
MB 8	3.52	4.52	1.25	13.27	MBIF 63	0.00	0.55	0.79	45.47
MB 8	4.52	5.52	0.75	9.24	MBIF 63	0.55	1.55	0.86	47.44
MB 8	5.52	6.52	0.27	6.20	MBIF 63	1.55	2.55	0.82	47.28
MB 8	6.52	7.52	0.36	6.77	MBIF 63	2.55	3.55	0.92	51.00
MB 8	7.52	8.52	0.44	6.61	MBIF 63	3.55	4.55	0.99	45.76
MB 8	8.52	9.52	0.44	6.53	MBIF 63	4.55	5.55	1.31	24.01
MB 8	9.52	10.52	0.55	7.18	MBIF 63	5.55	6.55	1.05	14.78
MB 8	10.52	11.52	0.56	6.97	MBIF 63	6.55	7.55	1.33	11.62
MB 8	11.52	12.52	0.46	6.58	MBIF 63	7.55	8.55	1.44	9.78
MB 8	12.52	14.00	0.42	6.47	MBIF 63	8.55	9.55	1.16	11.04
MB 9	0.00	0.66	0.67	44.38	MBIF 63	9.55	10.55	0.47	6.82
MB 9	0.66	1.66	0.99	48.14	MBIF 63	10.55	11.55	0.43	7.55
MB 9	1.66	2.66	1.07	49.34	MBIF 63	11.55	12.55	0.33	6.69
MB 9	2.66	3.66	1.23	48.83	MBIF 63	12.55	13.55	0.26	6.21
MB 9	3.66	4.66	1.12	22.24	MBIF 63	13.55	15.00	0.44	6.22
MB 9	4.66	5.66	1.68	23.56	MBIF 11	0.00	0.74	0.77	42.23
MB 9	5.66	6.66	1.48	14.90	MBIF 11	3.74	4.74	0.86	46.52
MB 9	6.66	7.66	1.31	12.23	MBIF 11	4.74	5.74	1.02	54.47
MB 9	7.66	8.66	0.67	7.82	MBIF 11	6.74	7.74	1.52	12.87
MB 9	8.66	9.66	0.64	7.38	MBIF 11	7.74	8.74	1.48	12.15
MB 9	9.66	10.66	0.90	8.66	MBIF 11	9.74	10.74	1.08	8.70
MB 9	10.66	11.66	0.94	8.20	MBIF 11	12.74	13.74	1.28	11.65
MB 9	11.66	12.66	0.46	6.54	MBIF 11	15.74	16.74	0.43	7.29
MB 9	12.66	13.66	0.29	6.24	MBIF 11	16.74	17.74	0.79	8.41
MB 9	13.66	15.00	0.28	6.04	MBIF 11	17.74	18.70	0.28	6.07
MBIF 101	0.00	1.15	0.73	48.00	MBIF 111	0.00	1.08	1.66	17.34
MBIF 101	1.15	2.15	0.78	47.32	MBIF 111	1.08	2.08	1.43	9.51
MBIF 101	2.15	4.15	0.79	49.08	MBIF 111	2.08	3.08	1.71	12.41
MBIF 101	4.15	5.15	0.75	40.99	MBIF 111	3.08	4.08	1.63	17.93
MBIF 101	5.15	6.15	0.86	39.10	MBIF 111	4.08	5.08	1.97	19.46
MBIF 101	6.15	7.15	0.85	37.79	MBIF 111	5.08	6.08	1.48	12.75
MBIF 101	7.15	8.15	1.42	29.10	MBIF 111	6.08	7.08	1.27	8.77
MBIF 101	8.15	9.15	0.99	38.31	MBIF 111	7.08	8.08	0.86	9.15
MBIF 101	9.15	10.15	0.70	8.70	MBIF 111	8.08	9.08	1.32	11.89
MBIF 101	10.15	11.50	0.33	6.47	MBIF 111	9.08	10.08	1.40	13.02
MB 46	0.00	0.70	0.66	46.06	MBIF 111	10.08	11.08	1.50	19.52
MB 46	0.70	1.70	0.73	48.68	MBIF 111	11.08	12.08	1.36	10.89
MB 46	1.70	2.70	0.87	50.57	MBIF 111	12.08	13.08	0.81	8.83
MB 46	2.70	3.70	0.92	49.01	MBIF 111	13.08	14.08	0.48	8.36
MB 46	3.70	4.70	0.96	48.64	MBIF 111	14.08	15.00	0.32	7.19
MB 46	4.70	5.70	1.05	49.93	MBIF 73	0.00	1.26	0.89	40.54
MB 46	5.70	6.70	1.16	47.03	MBIF 73	1.26	2.26	0.67	10.12
MB 46	6.70	7.70	1.12	47.21	MBIF 73	2.26	3.26	1.32	19.19
MB 46	7.70	8.70	1.48	37.02	MBIF 73	3.26	4.26	0.55	8.57
MB 46	8.70	9.70	1.10	14.82	MBIF 73	4.26	5.00	0.27	6.05
MB 46	9.70	10.70	2.25	21.90	MBIF 22	0.00	1.10	0.87	48.71
MB 46	10.70	11.70	1.51	32.47	MBIF 22	1.10	2.10	0.88	49.80
MB 46	11.70	12.70	1.12	16.35	MBIF 22	2.10	3.10	1.12	46.37
MB 46	12.70	13.70	1.48	16.05	MBIF 22	3.10	4.10	1.52	27.11
MB 46	13.70	14.60	0.03	6.06	MBIF 22	4.10	5.10	1.57	28.26
MB 23	0.00	1.08	0.75	47.83	MBIF 22	5.10	6.10	1.34	11.87
MB 23	1.08	2.08	0.83	47.22	MBIF 22	6.10	7.10	1.16	11.89
MB 23	2.08	3.08	0.93	46.35	MBIF 22	7.10	8.10	1.14	12.48
MB 23	3.08	4.08	1.23	47.15	MBIF 22	8.10	9.10	1.31	17.13
MB 23	4.08	5.08	1.61	31.51	MBIF 22	9.10	10.10	1.11	12.23
MB 23	5.08	6.08	2.00	15.25	MBIF 22	10.10	11.20	0.61	7.42
MB 23	6.08	7.08	1.82	11.66	MBIF 77	0.00	0.52	0.71	46.64
MB 23	7.08	8.08	1.73	15.76	MBIF 77	0.52	1.52	0.77	45.87
MB 23	8.08	9.08	1.64	18.03	MBIF 77	1.52	2.52	0.75	44.01
MB 23	9.08	10.08	1.70	16.34	MBIF 77	2.52	3.52	0.82	45.04
MB 23	10.08	11.08	1.27	9.65	MBIF 77	3.52	4.52	1.07	44.29
MB 23	11.08	12.08	1.33	13.52	MBIF 77	4.52	5.52	1.12	7.73
MB 23	12.08	13.08	1.67	15.10	MBIF 77	5.52	6.52	0.66	13.15
MB 23	13.08	14.08	1.41	11.32	MBIF 77	6.52	7.52	1.15	15.73
MB 23	14.08	14.90	0.29	6.02	MBIF 77	7.52	8.52	0.93	12.00
MBIF 53	0.00	1.06	0.64	47.57	MBIF 77	8.52	9.52	0.96	11.82
MBIF 53	1.06	2.06	0.82	48.39	MBIF 77	9.52	10.52	1.58	30.04
MBIF 53	2.06	3.06	1.08	46.63	MBIF 77	10.52	12.00	0.77	10.73
MBIF 53	3.06	4.06	1.03	44.44	MBIF 13	0.00	0.57	0.66	46.45
MBIF 53	4.06	5.06	1.40	26.40	MBIF 13	0.57	1.57	0.78	48.45

MBIF 13	1.57	2.57	0.90	50.09	MBIF 19	1.89	2.89	0.78	30.80
MBIF 13	2.57	3.57	0.79	48.41	MBIF 19	2.89	3.89	0.94	18.30
MBIF 13	3.57	4.57	1.12	41.39	MBIF 19	3.89	4.89	1.45	20.07
MBIF 13	4.57	5.57	1.45	25.99	MBIF 19	4.89	5.89	1.47	15.79
MBIF 13	5.57	6.57	1.15	21.67	MBIF 19	5.89	6.89	1.98	14.52
MBIF 13	6.57	7.57	1.64	11.26	MBIF 19	6.89	7.89	1.96	13.72
MBIF 13	7.57	8.57	1.40	16.05	MBIF 19	7.89	8.89	1.41	14.72
MBIF 13	8.57	9.57	1.83	15.71	MBIF 19	8.89	9.89	1.01	10.91
MBIF 13	9.57	10.57	1.57	16.74	MBIF 19	9.89	10.89	0.48	9.82
MBIF 13	10.57	12.00	0.58	7.98	MBIF 4	0.00	0.92	0.62	43.48
MBIF 3	0.00	1.02	0.95	31.62	MBIF 4	0.92	1.92	0.85	47.10
MBIF 3	1.02	2.02	1.13	13.11	MBIF 4	1.92	2.92	0.98	43.65
MBIF 3	2.02	3.02	0.96	9.70	MBIF 4	2.92	3.92	0.54	8.14
MBIF 3	3.02	4.02	1.12	8.84	MBIF 4	3.92	4.92	0.38	6.84
MBIF 3	4.02	5.02	0.89	9.37	MBIF 4	4.92	5.92	1.00	12.13
MBIF 3	5.02	6.30	0.60	6.97	MBIF 4	5.92	6.92	0.99	12.22
MBIF 26	0.00	0.96	0.90	44.43	MBIF 4	6.92	7.92	0.54	7.74
MBIF 26	0.96	1.96	1.00	41.71	MBIF 4	7.92	8.90	0.33	6.76
MBIF 26	1.96	2.96	1.61	28.85	MBIF 83	0.00	0.98	0.87	47.24
MBIF 26	2.96	3.96	1.21	14.91	MBIF 83	0.98	1.98	1.00	47.51
MBIF 26	3.96	4.96	1.66	13.37	MBIF 83	1.98	2.98	0.82	41.69
MBIF 26	4.96	5.96	1.99	13.37	MBIF 83	2.98	3.98	0.88	12.42
MBIF 26	5.96	6.96	1.41	11.91	MBIF 83	3.98	4.98	0.65	8.50
MBIF 26	6.96	7.96	0.91	8.44	MBIF 83	4.98	5.98	1.62	18.15
MBIF 26	7.96	8.96	1.22	8.95	MBIF 83	5.98	6.98	1.40	9.52
MBIF 26	8.96	9.96	1.26	8.35	MBIF 83	6.98	7.98	1.50	17.10
MBIF 26	9.96	10.96	1.11	8.56	MBIF 83	7.98	8.98	1.54	27.91
MBIF 26	10.96	12.00	0.31	6.80	MBIF 83	8.98	9.98	1.11	7.54
MBIF 103	0.00	0.87	0.79	45.78	MBIF 83	9.98	10.98	1.31	23.92
MBIF 103	0.87	1.87	0.88	40.24	MBIF 83	10.98	12.98	1.10	8.09
MBIF 103	1.87	2.87	1.18	31.48	MBIF 83	11.98	13.10	0.45	7.00
MBIF 103	2.87	3.87	1.45	35.06	MBIF 61	0.00	1.14	0.82	46.71
MBIF 103	3.87	4.87	1.53	21.29	MBIF 61	1.14	2.14	1.29	28.68
MBIF 103	4.87	5.87	0.97	9.34	MBIF 61	2.14	3.14	0.80	7.17
MBIF 103	5.87	6.87	0.76	9.52	MBIF 61	3.14	4.14	0.60	9.95
MBIF 103	6.87	8.00	0.50	7.54	MBIF 61	4.14	5.14	1.22	16.71
MBIF 25	0.00	0.57	0.78	45.23	MBIF 61	5.14	6.14	1.44	23.08
MBIF 25	0.57	1.57	1.08	33.59	MBIF 61	6.14	7.14	1.25	40.47
MBIF 25	1.57	2.57	1.60	17.64	MBIF 61	7.14	8.14	0.96	11.62
MBIF 25	2.57	3.57	1.33	16.78	MBIF 61	8.14	9.14	0.73	9.50
MBIF 25	3.57	4.57	1.96	8.95	MBIF 61	9.14	10.14	0.90	12.61
MBIF 25	4.57	5.57	0.89	9.47	MBIF 61	10.14	11.14	0.96	13.22
MBIF 25	5.57	6.57	0.69	9.66	MBIF 61	11.14	12.14	0.71	9.30
MBIF 25	6.57	7.57	0.36	7.89	MBIF 61	12.14	13.00	0.30	6.80
MBIF 25	7.57	8.00	0.26	6.59	MBIF 95	0.00	0.56	0.82	43.81
MBIF 10	0.00	1.00	1.21	28.64	MBIF 95	0.56	1.56	1.10	16.85
MBIF 10	1.00	2.00	1.47	31.73	MBIF 95	1.56	2.56	0.88	12.32
MBIF 10	2.00	3.00	1.51	27.83	MBIF 95	2.56	4.00	0.37	7.23
MBIF 10	3.00	4.00	1.71	23.52	MB 57	0.00	0.76	0.64	46.52
MBIF 10	4.00	5.00	1.13	11.99	MB 57	0.76	1.76	0.72	47.69
MBIF 10	5.00	6.00	1.17	18.10	MB 57	1.76	2.76	0.95	42.41
MBIF 10	6.00	7.00	0.74	11.38	MB 57	2.76	3.76	1.17	13.77
MBIF 10	7.00	8.00	1.08	12.37	MB 57	3.76	4.76	1.41	31.55
MBIF 10	8.00	9.00	0.69	8.26	MB 57	4.76	5.76	0.70	9.81
MBIF 10	9.00	10.00	0.83	9.53	MB 57	5.76	7.00	0.28	6.86
MBIF 10	10.00	11.00	0.92	9.94	MB 2	0.00	1.34	0.89	24.29
MBIF 10	11.00	12.00	1.06	11.81	MB 2	1.34	2.34	0.65	10.83
MBIF 10	12.00	13.60	0.40	7.05	MB 2	2.34	3.34	0.37	7.75
MBIF 33	0.00	1.00	0.78	47.26	MB 2	3.34	4.34	0.31	7.32
MBIF 33	1.00	2.00	0.92	46.83	MB 2	4.34	5.00	0.29	7.02
MBIF 33	2.00	3.00	1.07	34.45	MBIF 29	0.00	1.13	1.01	41.80
MBIF 33	3.00	4.00	0.85	10.33	MBIF 29	1.13	2.13	0.65	8.13
MBIF 33	4.00	5.00	0.84	8.53	MBIF 29	2.13	3.13	0.66	8.60
MBIF 33	5.00	6.00	0.89	12.05	MBIF 29	3.13	4.13	0.65	8.47
MBIF 33	6.00	7.00	0.83	9.98	MBIF 29	4.13	5.13	0.76	11.61
MBIF 33	7.00	8.00	0.95	9.24	MBIF 29	5.13	6.13	0.92	9.17
MBIF 33	8.00	9.00	0.47	8.42	MBIF 29	6.13	7.13	0.64	9.98
MBIF 33	9.00	10.00	0.68	8.30	MBIF 29	7.13	8.00	0.35	6.73
MBIF 43	0.00	0.53	0.85	47.26	MBIF 109	0.00	0.71	0.93	45.34
MBIF 43	0.53	1.53	0.86	44.05	MBIF 109	0.71	1.71	1.34	16.77
MBIF 43	1.53	2.53	1.01	49.58	MBIF 109	1.71	2.71	0.91	11.80
MBIF 43	2.53	3.53	1.42	30.25	MBIF 109	2.71	3.71	1.27	10.47
MBIF 43	3.53	4.53	1.27	18.76	MBIF 109	3.71	4.71	1.12	12.15
MBIF 43	4.53	5.53	1.16	23.73	MBIF 109	4.71	5.71	1.31	13.80
MBIF 43	5.53	6.53	0.94	16.50	MBIF 109	5.71	6.71	1.32	13.75
MBIF 43	6.53	7.53	0.82	9.10	MBIF 109	6.71	7.71	1.07	12.95
MBIF 43	7.53	8.53	0.88	10.00	MBIF 109	7.71	8.71	0.66	8.33
MBIF 43	8.53	9.80	0.62	7.45	MBIF 109	8.71	10.60	0.59	8.92
MBIF 19	0.00	0.89	0.81	44.45	MBIF 71	0.00	1.25	0.65	46.67
MBIF 19	0.89	1.89	0.84	44.52	MBIF 71	1.25	2.25	0.72	46.70

MBIF 71	2.25	3.25	0.92	45.61	MB 19	0.00	0.78	0.94	44.09
MBIF 71	3.25	4.25	0.96	43.90	MB 19	0.78	1.78	1.26	42.42
MBIF 71	4.25	5.25	1.30	39.40	MB 19	1.78	2.78	1.32	14.62
MBIF 71	5.25	6.25	0.70	8.98	MB 19	2.78	3.78	1.76	28.85
MBIF 71	6.25	7.25	0.37	7.61	MB 19	3.78	4.78	1.85	24.36
MBIF 71	7.25	8.25	0.31	6.66	MB 19	4.78	5.78	1.60	12.11
MBIF 71	8.25	9.25	1.05	14.79	MB 19	5.78	6.78	1.76	16.02
MBIF 71	9.25	10.25	0.38	8.71	MB 19	6.78	7.78	1.81	20.54
MBIF 71	10.25	11.20	0.37	10.04	MB 19	7.78	8.78	1.52	35.50
MB 65	0.00	0.92	1.01	30.44	MB 19	8.78	9.78	1.60	28.98
MB 65	0.92	1.92	1.38	12.70	MB 19	9.78	10.78	1.73	32.14
MB 65	1.92	2.92	1.40	15.54	MB 19	10.78	11.78	1.79	19.57
MB 65	2.92	3.92	1.15	14.12	MB 19	11.78	12.78	1.43	14.78
MB 65	3.92	4.92	1.33	11.70	MB 19	12.78	13.78	0.78	9.09
MB 65	4.92	5.92	1.34	11.97	MB 19	13.78	14.78	0.66	8.40
MB 65	5.92	6.92	0.95	9.46	MB 19	14.78	15.78	0.78	8.02
MB 65	6.92	7.92	0.77	7.76	MB 19	15.78	16.80	0.38	7.58
MB 65	7.92	8.50	0.44	6.88	MB 37	0.00	1.46	0.77	47.82
MBIF 55	0.00	1.43	1.55	26.74	MB 37	1.46	2.46	0.81	47.69
MBIF 55	1.43	2.43	1.87	19.20	MB 37	2.46	3.46	0.86	46.92
MBIF 55	2.43	3.43	1.67	16.85	MB 37	3.46	4.46	1.13	38.29
MBIF 55	3.43	4.43	1.64	15.58	MB 37	4.46	5.46	1.70	19.06
MBIF 55	4.43	5.43	1.99	23.10	MB 37	5.46	6.46	1.38	12.09
MBIF 55	5.43	6.43	1.92	27.70	MB 37	6.46	7.46	1.43	12.84
MBIF 55	6.43	7.43	1.95	13.56	MB 37	8.46	9.46	1.79	15.81
MBIF 55	7.43	8.43	1.60	10.38	MB 37	9.46	10.46	1.19	9.84
MBIF 55	8.43	9.43	1.59	13.92	MB 37	10.46	11.46	1.01	8.60
MBIF 55	9.43	10.43	1.47	11.30	MB 37	11.46	12.46	1.16	10.14
MBIF 55	10.43	12.00	0.74	7.68	MB 37	12.46	13.46	1.16	9.71
MBIF 108	0.00	1.03	0.92	43.31	MB 37	13.46	14.46	1.36	10.52
MBIF 108	1.03	2.03	1.20	38.00	MB 37	14.46	15.46	1.07	8.76
MBIF 108	2.03	3.03	2.08	12.83	MB 37	15.46	16.46	0.69	7.69
MBIF 108	3.03	4.03	2.42	22.98	MB 37	16.46	17.46	0.67	6.92
MBIF 108	4.03	5.03	1.85	35.26	MB 37	17.46	18.00	0.55	6.42
MBIF 108	5.03	6.03	2.15	20.67	MB 12	0.00	0.64	0.64	45.64
MBIF 108	6.03	7.03	1.62	40.70	MB 12	0.64	1.64	0.69	50.50
MBIF 108	7.03	8.03	2.24	19.70	MB 12	1.64	2.64	0.88	48.06
MBIF 108	8.03	9.03	2.11	15.19	MB 12	2.64	3.64	0.84	51.69
MBIF 108	9.03	10.03	1.89	14.98	MB 12	3.64	4.64	0.99	45.41
MBIF 108	10.03	11.03	1.70	11.01	MB 12	4.64	5.64	1.46	30.16
MBIF 108	11.03	12.03	1.54	9.52	MB 12	5.64	6.64	1.55	35.17
MBIF 108	12.03	13.03	1.58	11.32	MB 12	6.64	7.64	1.64	29.31
MBIF 108	13.03	14.03	1.79	13.29	MB 12	7.64	8.64	1.89	15.24
MBIF 108	14.03	15.03	1.66	11.74	MB 12	8.64	9.64	1.86	17.00
MBIF 108	15.03	16.03	1.56	10.95	MB 12	9.64	10.64	1.59	16.01
MBIF 108	16.03	17.03	1.32	8.71	MB 12	10.64	11.64	1.08	10.00
MBIF 108	17.03	18.03	1.49	11.58	MB 12	11.64	12.64	0.92	11.38
MBIF 108	18.03	19.03	1.41	13.34	MB 12	12.64	13.64	0.50	8.28
MBIF 108	19.03	20.03	1.10	10.35	MB 12	13.64	15.00	0.36	6.60
MBIF 108	20.03	21.03	1.09	9.78	MB 20	0.00	1.03	0.75	45.23
MBIF 108	21.03	22.03	1.10	9.72	MB 20	1.03	2.03	0.85	48.46
MBIF 108	22.03	23.08	0.72	7.68	MB 20	2.03	3.03	1.00	49.02
MBIF 100	0.00	1.37	1.25	17.50	MB 20	3.03	4.03	1.16	43.93
MBIF 100	1.37	2.37	1.68	18.98	MB 20	4.03	5.03	1.08	34.53
MBIF 100	2.37	3.37	1.53	25.76	MB 20	5.03	6.03	1.07	44.81
MBIF 100	3.37	4.37	1.19	13.79	MB 20	6.03	7.03	1.55	26.35
MBIF 100	4.37	5.37	1.09	11.32	MB 20	7.03	8.03	1.95	15.53
MBIF 100	5.37	6.37	1.17	10.66	MB 20	8.03	9.03	2.08	12.10
MBIF 100	6.37	7.37	1.13	11.76	MB 20	9.03	10.03	1.76	13.50
MBIF 100	7.37	8.37	1.23	11.99	MB 20	10.03	11.03	2.12	16.20
MBIF 100	8.37	9.37	0.86	11.86	MB 20	11.03	12.03	1.19	7.89
MBIF 100	9.37	10.37	0.64	20.53	MB 20	12.03	13.00	0.47	6.55
MBIF 100	10.37	11.37	0.77	6.75	MBIF 66	0.00	1.05	0.78	47.56
MBIF 100	11.37	12.00	0.37	6.62	MBIF 66	1.05	2.05	0.86	50.22
MB 38	0.00	0.70	0.74	46.51	MBIF 66	2.05	3.05	0.93	48.71
MB 38	0.70	1.70	0.90	45.69	MBIF 66	3.05	4.05	1.05	39.56
MB 38	1.70	2.70	0.80	48.46	MBIF 66	4.05	5.05	1.55	16.06
MB 38	2.70	3.70	1.21	18.21	MBIF 66	5.05	6.05	0.88	8.59
MB 38	3.70	4.70	1.49	15.87	MBIF 66	6.05	7.05	0.77	7.21
MB 38	4.70	5.70	1.60	19.61	MBIF 66	7.05	8.05	1.79	22.30
MB 38	5.70	6.70	1.33	37.80	MBIF 66	8.05	9.05	1.95	25.99
MB 38	6.70	7.70	1.28	19.06	MBIF 66	10.05	11.05	1.84	22.25
MB 38	7.70	8.70	1.35	34.30	MBIF 66	11.05	12.05	1.42	10.55
MB 38	8.70	9.70	1.63	28.32	MBIF 66	12.05	13.05	1.32	13.61
MB 38	9.70	10.70	1.42	13.98	MBIF 66	13.05	14.05	0.76	8.04
MB 38	10.70	11.70	1.36	10.05	MBIF 97	0.00	1.30	0.75	47.54
MB 38	11.70	12.70	1.29	9.15	MBIF 97	1.30	2.30	0.93	47.96
MB 38	12.70	13.70	1.06	13.31	MBIF 97	2.30	3.30	0.87	44.28
MB 38	13.70	14.70	0.76	11.50	MBIF 97	3.30	4.30	0.85	45.80
MB 38	14.70	16.00	0.49	7.61	MBIF 97	4.30	5.30	0.81	46.04

MBIF 97	5.30	6.30	0.97	45.90	5 N400 E5C	0.00	1.18	0.73	43.81
MBIF 97	6.30	7.30	1.41	31.37	5 N400 E5C	1.18	2.18	0.66	43.11
MBIF 97	7.30	8.30	1.17	47.91	5 N400 E5C	2.18	3.18	0.77	45.40
MBIF 97	8.30	9.30	1.09	46.96	5 N400 E5C	3.18	4.18	0.82	48.71
MBIF 97	9.30	10.30	0.73	9.29	5 N400 E5C	4.18	5.18	0.97	45.66
MBIF 97	10.30	11.30	1.52	23.14	5 N400 E5C	5.18	6.18	1.09	30.69
MBIF 97	11.30	12.30	0.36	7.77	5 N400 E5C	6.18	7.18	1.45	32.35
MBIF 97	12.30	13.00	0.27	6.54	5 N400 E5C	7.18	8.18	1.13	29.35
5 N350 E3S	0.00	0.83	0.81	45.76	5 N400 E5C	8.18	9.18	0.92	11.70
5 N350 E3S	0.83	1.83	1.17	43.13	5 N400 E5C	9.18	10.00	0.36	6.50
5 N350 E3S	1.83	2.83	1.11	10.32	5 N450 E4S	0.00	1.13	0.58	7.07
5 N350 E3S	2.83	3.83	0.82	8.33	5 N450 E4S	1.13	2.13	0.55	6.82
5 N350 E3S	3.83	4.83	1.19	13.29	5 N450 E4S	2.13	3.13	0.83	9.42
5 N350 E3S	4.83	5.83	0.80	8.63	5 N450 E4S	3.13	4.13	0.96	11.44
5 N350 E3S	5.83	6.83	0.61	8.09	5 N450 E4S	4.13	5.13	1.10	9.76
5 N350 E3S	6.83	7.83	0.37	6.73	5 N450 E4S	5.13	6.13	1.27	14.03
5 N350 E3S	7.83	8.83	0.76	5.91	5 N450 E4S	6.13	7.13	1.25	9.19
5 N350 E3S	8.83	9.83	0.76	5.91	5 N450 E4S	7.13	8.13	0.85	7.45
5 N350 E3S	9.83	10.83	0.25	5.89	5 N450 E4S	8.13	9.13	0.63	7.90
5 N350 E3S	10.83	12.00	0.26	5.96	5 N450 E4S	9.13	10.13	0.84	9.78
5 N500 E1S	0.00	0.85	0.67	46.11	5 N450 E4S	10.13	11.00	1.05	38.82
5 N500 E1S	0.85	1.85	0.77	47.16	6 N150 E5C	0.00	1.00	0.77	46.74
5 N500 E1S	1.85	2.85	1.44	21.33	6 N150 E5C	1.00	2.00	0.91	49.64
5 N500 E1S	2.85	3.85	1.08	10.76	6 N150 E5C	2.00	3.00	0.86	48.18
5 N500 E1S	3.85	4.85	0.97	37.80	6 N150 E5C	3.00	4.00	0.85	45.32
5 N500 E1S	4.85	5.85	1.42	15.93	6 N150 E5C	4.00	5.00	0.93	49.08
5 N500 E1S	5.85	6.85	1.62	22.97	6 N150 E5C	5.00	6.00	1.33	34.27
5 N500 E1S	6.85	7.85	0.89	9.73	6 N150 E5C	6.00	7.00	1.75	16.82
5 N500 E1S	7.85	8.85	0.68	6.32	6 N150 E5C	7.00	8.00	1.59	12.61
5 N500 E1S	8.85	9.00	0.35	7.01	6 N150 E5C	8.00	9.00	0.81	7.53
5 N450 E4C	0.00	1.01	0.99	42.97	6 N150 E5C	9.00	10.00	0.52	7.87
5 N450 E4C	1.01	2.01	1.05	13.14	6 N150 E5C	10.00	11.00	0.85	13.36
5 N450 E4C	2.01	3.01	0.77	8.54	6 N150 E5C	11.00	12.00	0.51	7.29
5 N450 E4C	3.01	4.01	0.58	7.51	6 N50 E10C	0.00	1.14	0.80	44.78
5 N450 E4C	4.01	5.01	0.54	8.48	6 N50 E10C	1.14	2.14	0.74	46.66
5 N450 E4C	5.01	6.01	0.59	8.74	6 N50 E10C	2.14	3.14	0.74	46.85
5 N450 E4C	6.01	7.01	0.62	9.39	6 N50 E10C	3.14	4.14	1.02	44.98
5 N450 E4C	7.01	8.01	0.58	8.72	6 N50 E10C	4.14	5.14	0.92	47.75
5 N450 E4C	8.01	9.00	0.52	6.53	6 N50 E10C	5.14	6.14	1.01	47.17
6 N250 E20	0.00	1.43	0.63	46.33	6 N50 E10C	6.14	7.14	1.20	47.09
6 N250 E20	1.43	2.43	0.84	48.96	6 N50 E10C	7.14	8.14	1.55	31.16
6 N250 E20	2.43	3.43	1.56	14.44	6 N50 E10C	8.14	9.14	1.52	16.74
6 N250 E20	3.43	4.43	1.28	36.47	6 N50 E10C	9.14	10.14	1.57	18.10
6 N250 E20	4.43	5.43	1.06	45.56	6 N50 E10C	10.14	11.14	1.31	13.27
6 N250 E20	5.43	6.43	0.88	7.16	6 N50 E10C	11.14	12.14	1.12	11.26
6 N250 E20	6.43	7.43	1.08	8.54	6 N50 E10C	12.14	13.00	0.89	7.50
6 N250 E20	7.43	8.43	1.38	10.23	5 N500 E10	0.00	1.15	0.67	46.28
6 N250 E20	8.43	9.43	1.53	13.60	5 N500 E10	1.15	2.15	0.81	47.71
6 N250 E20	9.43	10.43	1.20	11.62	5 N500 E10	2.15	3.15	0.92	40.60
6 N250 E20	10.43	11.43	1.20	14.42	5 N500 E10	3.15	4.15	0.77	9.45
6 N250 E20	11.43	12.43	1.14	14.45	5 N500 E10	4.15	5.15	0.95	7.33
6 N250 E20	12.43	13.43	1.25	16.36	5 N500 E10	5.15	6.15	0.57	9.54
6 N250 E20	13.43	14.43	1.25	18.64	5 N500 F10	6.15	7.15	0.73	11.31
6 N250 E20	14.43	15.43	1.21	13.78	5 N500 F10	7.15	8.15	0.51	7.15
6 N250 E20	15.43	16.43	1.36	17.47	5 N500 F10	8.15	9.15	0.32	6.21
6 N250 E20	16.43	17.43	1.02	8.58	5 N150 F4S	0.00	0.89	1.01	41.77
6 N250 E20	17.43	18.00	0.93	8.37	5 N150 F4S	0.89	1.89	0.90	16.83
5 N350 E4C	0.00	1.27	0.69	45.60	5 N150 F4S	1.89	2.89	0.36	8.04
5 N350 E4C	1.27	3.27	1.27	31.97	5 N150 F4S	2.89	3.89	0.36	7.86
5 N350 E4C	3.27	10.27	0.83	9.79	5 N150 F4S	3.89	4.89	0.30	6.44
5 N350 E4C	10.27	11.27	0.52	7.22	5 N150 F4S	4.89	5.89	0.31	7.01
5 N350 E4C	11.27	12.27	0.35	6.49	5 N150 F4S	5.89	6.89	0.28	6.10
5 N350 E4C	12.27	13.27	0.27	5.98	5 N150 F4S	6.89	8.00	0.28	6.06
5 N350 E4C	13.27	14.27	0.26	5.88	5 N400 E5I	0.00	1.03	0.65	44.42
6 N350 E40	0.00	1.33	0.75	45.89	5 N400 E5I	1.03	2.03	0.73	47.78
6 N350 E40	1.33	2.33	1.30	34.80	5 N400 E5I	2.03	3.03	1.03	48.15
6 N350 E40	2.33	3.33	0.92	45.86	5 N400 E5I	3.03	4.03	0.94	47.47
6 N350 E40	3.33	4.33	1.05	10.49	5 N400 E5I	4.03	5.03	0.86	46.57
6 N350 E40	4.33	5.33	1.00	11.26	5 N400 E5I	5.03	6.03	1.71	29.17
6 N350 E40	5.33	6.00	0.47	7.24	5 N400 E5I	6.03	7.03	1.62	29.24
6 N250 E5C	0.00	1.03	0.68	44.79	5 N400 E5I	7.03	8.03	1.56	25.22
6 N250 E5C	1.03	2.03	0.72	32.17	5 N400 E5I	8.03	9.03	1.65	17.85
6 N250 E5C	2.03	3.03	0.70	10.08	5 N400 E5I	9.03	10.03	1.29	8.79
6 N250 E5C	3.03	4.03	1.02	31.31	5 N400 E5I	10.03	11.03	0.58	9.96
6 N250 E5C	4.03	5.03	0.84	6.21	5 N400 E5I	11.03	12.03	0.78	14.07
6 N250 E5C	5.03	6.03	0.48	7.04	5 N400 E5I	12.03	13.03	0.73	10.65
6 N250 E5C	6.03	7.03	0.63	8.31	5 N400 E5I	13.03	14.03	0.28	6.99
6 N250 E5C	7.03	8.03	0.41	7.68	5 N400 E5I	14.03	15.03	0.82	47.40
6 N250 E5C	8.03	9.03	0.37	7.39	6 N150 E2S	0.00	0.82	0.76	48.07
6 N250 E5C	9.03	10.00	0.30	6.44	6 N150 E2S	0.82	1.82	0.89	48.07
					6 N150 E2S	1.82	2.82	0.84	47.74

6 N150 E25	3.82	4.82	1.18	13.76	6 N150 E10	5.12	6.12	0.85	18.91
6 N150 E25	4.82	5.82	1.18	16.44	6 N150 E10	6.12	7.12	0.46	8.64
6 N150 E25	5.82	8.00	0.50	7.44	6 N150 E10	7.12	8.12	0.33	7.26
TH1	0.00	0.90	0.67	47.99	6 N150 E10	8.12	9.12	0.37	7.86
TH1	0.90	1.90	0.79	49.23	6 N150 E10	9.12	10.00	0.27	6.09
TH1	1.90	2.90	0.73	49.68	MAB-01	0.00	1.00	0.89	23.92
TH1	2.90	3.90	0.89	48.24	MAB-01	1.00	2.00	0.42	8.90
TH1	9.90	10.90	0.34	8.70	MAB-01	2.00	3.00	0.28	7.24
TH1	10.90	11.90	0.27	6.90	MAB-01	3.00	4.00	0.23	5.26
TH1	11.90	12.90	0.34	8.20	MAB-01	4.00	5.00	0.25	5.63
TH1	14.90	15.90	0.29	7.03	MAB-02	0.00	1.00	0.54	11.76
5 N300 E30	0.00	0.65	0.47	39.03	MAB-02	1.00	2.00	0.30	9.15
5 N300 E30	0.65	1.65	0.70	49.12	MAB-02	2.00	3.00	0.31	7.30
5 N300 E30	1.65	2.65	0.80	40.84	MAB-02	3.00	4.00	0.23	7.02
5 N300 E30	2.65	3.65	0.92	46.61	MAB-02	4.00	5.00	0.25	7.06
5 N300 E30	3.65	4.65	0.80	47.50	MAB-02	5.00	6.00	0.26	7.13
5 N300 E30	4.65	5.65	1.04	48.85	MAB-02	6.00	7.00	0.24	6.01
5 N300 E30	5.65	6.65	1.59	38.99	MAB-02	7.00	8.00	0.25	5.81
5 N300 E30	6.65	7.65	1.32	24.97	MAB-03	0.00	1.00	0.52	51.01
5 N300 E30	7.65	8.65	1.58	21.15	MAB-03	1.00	2.00	0.75	48.16
5 N300 E30	8.65	9.65	1.58	16.20	MAB-03	2.00	3.00	1.26	27.00
5 N300 E30	9.65	10.65	1.58	19.41	MAB-03	3.00	4.00	1.12	13.17
5 N300 E30	10.65	11.65	0.59	8.52	MAB-03	4.00	5.00	0.75	9.72
5 N300 E30	11.65	13.00	0.90	14.75	MAB-04	0.00	1.00	0.52	44.08
:5 N500 E50	0.00	1.10	0.73	40.82	MAB-04	1.00	2.00	0.64	43.90
:5 N500 E50	1.10	2.10	0.80	49.25	MAB-04	2.00	3.00	0.75	43.82
:5 N500 E50	2.10	3.10	0.89	47.87	MAB-04	3.00	4.00	0.84	46.81
:5 N500 E50	3.10	4.10	1.38	30.15	MAB-04	4.00	5.00	0.82	46.98
:5 N500 E50	4.10	5.10	1.81	9.20	MAB-04	5.00	6.00	0.80	42.88
:5 N500 E50	5.10	6.10	1.85	16.08	MAB-04	6.00	7.00	0.82	37.30
:5 N500 E50	6.10	7.10	1.62	22.42	MAB-04	7.00	8.00	1.34	22.05
:5 N500 E50	7.10	8.10	1.55	31.11	MAB-04	8.00	9.00	1.27	11.56
:5 N500 E50	8.10	9.10	1.74	15.91	MAB-04	9.00	10.00	0.59	10.85
:5 N500 E50	9.10	10.10	1.53	16.39	MAB-04	10.00	11.00	0.33	9.09
:5 N500 E50	10.10	11.10	1.19	10.89	MAB-04	11.00	12.00	0.28	7.82
:5 N500 E50	11.10	12.10	0.97	11.75	MAB-05	0.00	1.00	0.78	46.38
:5 N500 E50	12.10	13.10	0.84	12.48	MAB-05	1.00	2.00	0.79	46.34
:5 N500 E50	13.10	14.10	0.58	8.57	MAB-05	2.00	3.00	0.85	41.13
:5 N500 E50	14.10	15.00	0.38	8.14	MAB-05	3.00	4.00	0.80	28.19
5 N200 E50	0.00	1.09	1.04	40.85	MAB-05	4.00	5.00	0.85	7.13
5 N200 E50	1.09	2.09	1.08	30.87	MAB-05	5.00	6.00	0.82	9.08
5 N200 E50	2.09	3.09	0.51	9.13	MAB-05	6.00	7.00	0.70	9.15
5 N200 E50	3.09	4.09	0.31	6.52	MAB-05	7.00	8.00	0.64	9.49
5 N200 E50	4.09	5.09	0.26	5.95	MAB-05	8.00	9.00	0.63	10.97
5 N200 E50	5.09	6.09	0.24	5.69	MAB-05	9.00	10.00	0.69	15.51
5 N200 E50	6.09	7.09	0.24	5.70	MAB-05	10.00	11.00	0.74	8.86
5 N200 E50	7.09	8.00	0.25	5.77	MAB-05	11.00	12.00	1.02	11.83
6 N150 E20	0.00	1.18	0.76	40.70	MAB-05	12.00	13.00	0.89	12.32
6 N150 E20	1.18	2.18	0.99	40.70	MAB-05	13.00	14.00	0.82	16.92
6 N150 E20	2.18	3.18	1.13	33.91	MAB-05	14.00	15.00	0.45	9.03
6 N150 E20	3.18	4.18	1.31	11.91	MAB-05	15.00	16.00	0.31	7.81
6 N150 E20	4.18	5.18	1.51	11.74	MAB-05	16.00	17.00	1.03	45.94
6 N150 E20	5.18	6.18	1.58	13.88	MAB-05	17.00	18.00	0.32	10.11
6 N150 E20	6.18	7.18	1.49	18.54	MAB-05	18.00	19.00	0.34	10.25
6 N150 E20	7.18	8.18	0.53	6.51	MAB-06	0.00	1.00	1.40	26.77
6 N150 E20	8.18	9.18	1.09	12.77	MAB-06	1.00	2.00	1.35	9.50
6 N150 E20	9.18	10.18	0.79	8.95	MAB-06	2.00	3.00	0.99	7.34
6 N150 E20	10.18	11.18	0.57	9.18	MAB-06	3.00	4.00	0.51	7.40
6 N150 E20	11.18	12.18	0.50	9.98	MAB-06	4.00	5.00	0.23	5.99
6 N150 E20	12.18	13.18	0.67	10.27	MAB-06	5.00	6.00	0.24	5.84
6 N150 E20	13.18	14.18	1.09	17.38	MAB-06	6.00	7.00	0.26	6.41
6 N150 E20	14.18	15.18	1.14	13.73	MAB-06	7.00	8.00	0.34	6.98
6 N150 E20	15.18	16.18	0.71	10.94	MAB-06	8.00	9.00	0.24	5.78
6 N150 E20	16.18	17.00	0.33	6.35	MAB-06	9.00	10.00	0.30	7.14
5 N400 E20	0.00	1.45	0.97	47.46	MAB-07	0.00	1.00	0.61	48.51
5 N400 E20	1.45	2.45	1.05	47.86	MAB-07	1.00	2.00	0.64	45.10
5 N400 E20	2.45	3.45	1.06	47.27	MAB-07	2.00	3.00	0.92	49.84
5 N400 E20	3.45	4.45	1.78	14.17	MAB-07	3.00	4.00	0.81	47.36
5 N400 E20	4.45	5.45	1.21	10.58	MAB-07	4.00	5.00	1.24	47.10
5 N400 E20	5.45	6.45	1.15	9.90	MAB-07	5.00	6.00	1.09	48.61
5 N400 E20	6.45	7.45	1.19	16.21	MAB-07	6.00	7.00	0.96	49.99
5 N400 E20	7.45	8.45	1.06	11.17	MAB-07	7.00	8.00	0.92	48.34
5 N400 E20	8.45	9.45	1.06	14.17	MAB-07	8.00	9.00	1.31	47.34
5 N400 E20	9.45	10.45	0.38	6.86	MAB-07	9.00	10.00	1.10	49.14
5 N400 E20	10.45	11.00	0.33	6.42	MAB-07	10.00	11.00	1.24	48.02
6 N150 E10	0.00	1.12	0.47	39.98	MAB-07	11.00	12.00	1.79	33.20
6 N150 E10	1.12	2.12	0.57	42.52	MAB-07	12.00	13.00	1.80	9.79
6 N150 E10	2.12	3.12	0.81	49.96	MAB-07	13.00	14.00	1.85	8.82
6 N150 E10	3.12	4.12	0.76	47.98	MAB-07	14.00	15.00	1.80	17.99
6 N150 E10	4.12	5.12	0.85	46.40	MAB-07	15.00	16.00	1.57	10.93

MAB-07	16.00	17.00	1.49	18.71	MAB-10	8.00	9.00	1.10	16.64
MAB-07	17.00	18.00	1.30	29.06	MAB-10	9.00	10.00	1.06	18.84
MAB-07	18.00	19.00	1.70	34.24	MAB-10	10.00	11.00	1.15	20.70
MAB-07	19.00	20.00	1.08	28.47	MAB-10	11.00	12.00	1.13	28.13
MAB-07	20.00	21.00	1.43	27.08	MAB-10	12.00	13.00	1.28	19.04
MAB-07	21.00	22.00	1.49	23.08	MAB-10	13.00	14.00	0.81	14.25
MAB-07	22.00	23.00	1.34	25.86	MAB-10	14.00	15.00	0.75	17.06
MAB-07	23.00	24.00	1.06	16.26	MAB-10	15.00	16.00	0.30	8.21
MAB-07	24.00	25.00	1.21	18.52	MAB-10	16.00	17.00	0.38	11.30
MAB-07	25.00	26.00	1.14	13.88	MAB-10	17.00	18.00	0.39	8.61
MAB-07	26.00	27.00	1.29	13.68	MAB-10	18.00	19.00	0.57	13.22
MAB-07	27.00	28.00	1.05	12.46	MAB-10	19.00	20.00	0.39	11.22
MAB-07	28.00	29.00	1.04	14.85	MAB-10	20.00	21.00	0.92	11.63
MAB-07	29.00	30.00	1.12	14.63	MAB-10	21.00	22.00	0.91	10.13
MAB-07	30.00	31.00	0.81	11.74	MAB-195-3I	0.00	1.00	0.37	47.61
MAB-07	31.00	32.00	0.73	10.11	MAB-195-3I	1.00	2.00	0.77	50.19
MAB-75-17I	0.00	1.00	0.62	49.50	MAB-195-3I	2.00	3.00	0.74	46.49
MAB-75-17I	1.00	2.00	0.76	48.20	MAB-195-3I	3.00	4.00	0.73	50.89
MAB-75-17I	2.00	3.00	0.66	50.08	MAB-195-3I	4.00	5.00	0.68	49.48
MAB-75-17I	3.00	4.00	0.80	49.61	MAB-195-3I	5.00	6.00	0.83	48.96
MAB-75-17I	4.00	5.00	0.78	41.39	MAB-195-3I	6.00	7.00	0.81	46.06
MAB-75-17I	5.00	6.00	0.36	11.59	MAB-195-3I	7.00	8.00	1.02	44.23
MAB-08	0.00	1.00	0.66	49.11	MAB-195-3I	8.00	9.00	1.35	37.99
MAB-08	1.00	2.00	0.76	48.73	MAB-195-3I	9.00	10.00	1.36	17.26
MAB-08	2.00	3.00	0.92	25.19	MAB-195-3I	10.00	11.00	1.28	15.53
MAB-08	3.00	4.00	0.89	18.70	MAB-195-3I	11.00	12.00	1.35	10.34
MAB-08	4.00	5.00	0.80	10.06	MAB-195-3I	12.00	13.00	0.99	9.76
MAB-08	5.00	6.00	1.24	13.86	MAB-195-3I	13.00	14.00	1.17	9.91
MAB-08	6.00	7.00	0.89	9.34	MAB-195-3I	14.00	15.00	0.81	12.69
MAB-08	7.00	8.00	0.71	10.20	MAB-195-3I	15.00	16.00	0.68	13.77
MAB-08	8.00	9.00	0.85	9.02	MAB-195-3I	16.00	17.00	0.71	9.22
MAB-08	9.00	10.00	0.55	7.83	MAB-195-3I	17.00	18.00	0.88	10.75
MAB-08	10.00	11.00	0.82	11.10	MAB-195-3I	18.00	19.00	0.74	11.36
MAB-08	11.00	12.00	0.69	10.08	MAB-195-3I	19.00	20.00	0.52	7.96
MAB-08	12.00	13.00	0.66	10.15	MAB-11	0.00	1.00	0.68	48.75
MAB-08	13.00	14.00	0.74	9.77	MAB-11	1.00	2.00	0.93	49.06
MAB-08	14.00	15.00	0.67	7.38	MAB-11	2.00	3.00	0.86	49.26
MAB-08	15.00	16.00	1.12	20.35	MAB-11	3.00	4.00	0.74	47.60
MAB-08	16.00	17.00	1.09	23.60	MAB-11	4.00	5.00	1.54	48.37
MAB-08	17.00	18.00	0.66	11.76	MAB-11	5.00	6.00	1.24	47.01
MAB-08	18.00	19.00	0.70	13.26	MAB-11	6.00	7.00	0.97	46.78
MAB-08	19.00	20.00	0.77	12.79	MAB-11	7.00	8.00	0.89	45.44
MAB-08	20.00	21.00	0.61	10.08	MAB-11	8.00	9.00	1.67	20.81
MAB-08	21.00	22.00	0.47	7.28	MAB-11	9.00	10.00	1.90	16.54
MAB-08	22.00	23.00	0.46	9.47	MAB-11	10.00	11.00	1.73	10.28
MAB-08	23.00	24.00	0.39	10.03	MAB-11	11.00	12.00	1.66	9.88
MAB-08	24.00	25.00	0.37	8.41	MAB-11	12.00	13.00	1.56	17.41
MAB-09	0.00	1.00	0.69	11.90	MAB-11	13.00	14.00	1.58	20.87
MAB-09	1.00	2.00	0.57	8.11	MAB-11	14.00	15.00	0.87	9.87
MAB-09	2.00	3.00	0.56	7.71	MAB-11	15.00	16.00	1.34	8.18
MAB-09	3.00	4.00	0.40	8.22	MAB-11	16.00	17.00	1.46	14.20
MAB-09	4.00	5.00	0.27	6.77	MAB-11	17.00	18.00	1.43	12.05
MAB-09	5.00	6.00	0.16	5.08	MAB-11	18.00	19.00	1.36	17.50
MAB-09	6.00	7.00	0.23	5.59	MAB-11	19.00	20.00	1.58	21.82
MAB-09	7.00	8.00	0.18	4.90	MAB-11	20.00	21.00	1.44	9.56
MAB-95-17I	0.00	1.00	0.80	50.16	MAB-11	21.00	22.00	1.04	7.11
MAB-95-17I	1.00	2.00	0.91	49.62	MAB-12	0.00	1.00	1.05	8.41
MAB-95-17I	2.00	3.00	1.23	50.15	MAB-12	1.00	2.00	1.98	14.33
MAB-95-17I	3.00	4.00	1.10	20.34	MAB-12	2.00	3.00	1.77	21.92
MAB-95-17I	4.00	5.00	1.71	15.88	MAB-12	3.00	4.00	1.74	21.74
MAB-95-17I	5.00	6.00	1.71	30.96	MAB-12	4.00	5.00	2.07	31.20
MAB-95-17I	6.00	7.00	1.70	23.01	MAB-12	5.00	6.00	1.95	28.57
MAB-95-17I	7.00	8.00	0.72	8.12	MAB-12	6.00	7.00	1.26	42.49
MAB-95-17I	8.00	9.00	1.12	7.98	MAB-12	7.00	8.00	0.78	48.90
MAB-95-17I	9.00	10.00	1.04	18.54	MAB-12	8.00	9.00	0.76	50.22
MAB-95-17I	10.00	11.00	1.65	19.75	MAB-12	9.00	10.00	0.78	48.27
MAB-95-17I	11.00	12.00	1.43	8.53	MAB-12	10.00	11.00	0.96	48.62
MAB-95-17I	12.00	13.00	1.27	9.94	MAB-12	11.00	12.00	1.20	13.52
MAB-95-17I	13.00	14.00	0.52	6.99	MAB-12	12.00	13.00	1.17	11.80
MAB-95-19I	0.00	1.00	0.90	46.04	MAB-12	13.00	14.00	1.03	13.38
MAB-95-19I	1.00	2.00	0.44	8.45	MAB-12	14.00	15.00	0.41	7.44
MAB-95-19I	2.00	3.00	0.75	11.19	MAB-12	15.00	16.00	0.75	11.38
MAB-10	0.00	1.00	0.65	50.45	MAB-12	16.00	17.00	0.59	8.18
MAB-10	1.00	2.00	0.94	50.94	MAB-12	17.00	18.00	0.26	6.48
MAB-10	2.00	3.00	0.97	50.34	MAB-13	0.00	1.00	0.68	48.04
MAB-10	3.00	4.00	1.04	49.37	MAB-13	1.00	2.00	0.68	48.09
MAB-10	4.00	5.00	1.12	49.86	MAB-13	2.00	3.00	0.50	49.61
MAB-10	5.00	6.00	1.17	50.33	MAB-13	3.00	4.00	0.64	49.40
MAB-10	6.00	7.00	1.55	30.08	MAB-13	4.00	5.00	1.20	26.95
MAB-10	7.00	8.00	1.57	24.07	MAB-13	5.00	6.00	0.82	43.91

MAB-13	6.00	7.00	0.94	27.81	MAB-15	0.00	1.00	0.60	35.32
MAB-13	7.00	8.00	1.30	25.65	MAB-15	1.00	2.00	0.94	14.11
MAB-13	8.00	9.00	1.28	16.39	MAB-15	2.00	3.00	0.74	10.36
MAB-13	9.00	10.00	1.60	22.21	MAB-15	3.00	4.00	0.76	7.43
MAB-13	10.00	11.00	1.30	17.47	MAB-15	4.00	5.00	0.25	6.50
MAB-13	11.00	12.00	1.04	18.67	MAB-15	5.00	6.00	0.38	8.19
MAB-13	12.00	13.00	0.72	11.19	MAB-15	6.00	7.00	0.65	8.71
MAB-13	13.00	14.00	0.85	13.30	MAB-15	7.00	8.00	0.64	7.77
MAB-13	14.00	15.00	0.60	11.61	MAB-16	0.00	1.00	1.00	52.85
MAB-13	15.00	16.00	0.36	5.74	MAB-16	1.00	2.00	0.97	50.92
MAB-13	16.00	17.00	0.25	7.63	MAB-16	2.00	3.00	0.99	50.74
MAB-13	17.00	18.00	0.28	9.07	MAB-16	3.00	4.00	0.88	54.06
MAB-235-9I	0.00	1.00	0.76	48.14	MAB-16	4.00	5.00	1.25	47.28
MAB-235-9I	1.00	2.00	0.93	47.93	MAB-16	5.00	6.00	1.13	51.64
MAB-235-9I	2.00	3.00	1.01	48.46	MAB-16	6.00	7.00	1.13	49.69
MAB-235-9I	3.00	4.00	0.93	42.75	MAB-16	7.00	8.00	1.03	50.63
MAB-235-9I	4.00	5.00	0.86	39.62	MAB-16	8.00	9.00	1.06	9.92
MAB-235-9I	5.00	6.00	1.07	37.00	MAB-16	9.00	10.00	0.81	15.66
MAB-235-9I	6.00	7.00	1.51	22.14	MAB-16	10.00	11.00	1.57	40.19
MAB-235-9I	7.00	8.00	1.43	32.75	MAB-16	11.00	12.00	1.61	29.86
MAB-235-9I	8.00	9.00	1.92	23.21	MAB-16	12.00	13.00	0.34	6.96
MAB-235-9I	9.00	10.00	2.03	32.81	MAB-16	13.00	14.00	1.24	9.29
MAB-235-9I	10.00	11.00	1.36	43.17	MAB-16	14.00	15.00	1.69	14.80
MAB-235-9I	11.00	12.00	1.53	45.18	MAB-16	15.00	16.00	1.80	16.98
MAB-235-9I	12.00	13.00	1.92	31.90	MAB-16	16.00	17.00	0.67	5.73
MAB-235-9I	13.00	14.00	1.96	27.74	MAB-16	17.00	18.00	0.26	6.80
MAB-235-9I	14.00	15.00	1.88	20.79	MAB-16	18.00	19.00	0.34	9.93
MAB-235-9I	15.00	16.00	1.80	16.73	MAB-16	19.00	20.00	0.32	8.07
MAB-235-9I	16.00	17.00	1.58	24.71	MAB-17	0.00	1.00	0.68	50.86
MAB-235-9I	17.00	18.00	1.69	20.34	MAB-17	1.00	2.00	0.87	51.36
MAB-235-9I	18.00	19.00	1.33	12.68	MAB-17	2.00	3.00	1.12	18.11
MAB-235-9I	19.00	20.00	1.26	10.73	MAB-17	3.00	4.00	0.73	15.77
MAB-235-9I	20.00	21.00	1.34	18.78	MAB-17	4.00	5.00	1.11	17.80
MAB-235-9I	21.00	22.00	0.91	12.28	MAB-17	5.00	6.00	1.02	12.09
MAB-235-9I	22.00	23.00	0.65	8.35	MAB-17	6.00	7.00	0.65	10.29
MAB-135-17	0.00	1.00	0.44	49.85	MAB-17	7.00	8.00	0.74	18.59
MAB-135-17	1.00	2.00	0.61	51.77	MAB-17	8.00	9.00	0.76	14.72
MAB-135-17	2.00	3.00	0.68	50.71	MAB-17	9.00	10.00	0.59	8.99
MAB-135-17	3.00	4.00	0.76	48.08	MAB-17	10.00	11.00	0.25	6.80
MAB-135-17	4.00	5.00	0.88	47.36	MAB-17	11.00	12.00	0.24	6.46
MAB-135-17	5.00	6.00	1.32	29.19	MAB-17	12.00	13.00	0.26	7.20
MAB-135-17	6.00	7.00	1.22	29.04	MAB-17	13.00	14.00	0.20	6.20
MAB-135-17	7.00	8.00	1.36	31.61	MAB-17	14.00	15.00	0.22	6.18
MAB-135-17	8.00	9.00	0.70	10.85	MAB-17S-7I	0.00	1.00	0.61	44.44
MAB-135-17	9.00	10.00	0.67	10.47	MAB-17S-7I	1.00	2.00	0.61	47.50
MAB-135-17	10.00	11.00	0.77	13.29	MAB-17S-7I	2.00	3.00	0.84	47.77
MAB-135-17	11.00	12.00	1.29	15.02	MAB-17S-7I	3.00	4.00	0.88	49.11
MAB-135-17	12.00	13.00	0.64	8.96	MAB-17S-7I	4.00	5.00	0.92	32.43
MAB-135-17	13.00	14.00	0.47	8.13	MAB-17S-7I	5.00	6.00	1.48	27.63
MAB-135-17	14.00	15.00	0.50	8.73	MAB-17S-7I	6.00	7.00	0.81	10.55
MAB-135-17	15.00	16.00	0.37	7.75	MAB-17S-7I	7.00	8.00	0.86	10.23
MAB-135-19	0.00	1.00	0.99	42.08	MAB-17S-7I	8.00	9.00	0.53	10.25
MAB-135-19	1.00	2.00	0.55	11.39	MAB-17S-7I	9.00	10.00	0.73	7.94
MAB-135-19	2.00	3.00	0.34	7.94	MAB-17S-7I	10.00	11.00	0.50	9.45
MAB-135-19	3.00	4.00	0.82	13.48	MAB-17S-7I	11.00	12.00	0.97	14.56
MAB-135-19	4.00	5.00	1.27	18.32	MAB-17S-7I	12.00	13.00	1.51	21.33
MAB-135-19	5.00	6.00	0.41	7.45	MAB-17S-7I	13.00	14.00	0.57	11.44
MAB-135-19	6.00	7.00	0.42	7.30	MAB-17S-7I	14.00	15.00	0.55	7.51
MAB-14	0.00	1.00	0.76	43.96	MAB-17S-7I	15.00	16.00	0.65	9.81
MAB-14	1.00	2.00	0.78	15.95	MAB-17S-7I	16.00	17.00	0.37	9.88
MAB-14	2.00	3.00	0.61	12.30	MAB-17S-7I	17.00	18.00	0.28	7.14
MAB-14	3.00	4.00	0.34	7.83	MAB-17S-2I	0.00	1.00	0.68	48.00
MAB-14	4.00	5.00	0.27	7.60	MAB-17S-2I	1.00	2.00	0.79	48.81
MAB-14	5.00	6.00	0.27	6.92	MAB-17S-2I	2.00	3.00	0.90	48.48
MAB-14	6.00	7.00	0.35	6.83	MAB-17S-2I	3.00	4.00	1.31	32.45
MAB-14	7.00	8.00	0.34	6.25	MAB-17S-2I	4.00	5.00	1.26	13.55
MAB-14	8.00	9.00	0.32	7.02	MAB-17S-2I	5.00	6.00	1.02	12.55
MAB-14	9.00	10.00	0.31	7.82	MAB-17S-2I	6.00	7.00	0.61	10.76
MAB-14	10.00	11.00	0.27	7.64	MAB-17S-2I	7.00	8.00	0.31	8.98
MAB-14	11.00	12.00	0.28	7.97	MAB-17S-2I	8.00	9.00	0.28	8.67
MAB-14	12.00	13.00	0.16	6.07	MAB-17S-2I	9.00	10.00	0.26	8.31
MAB-14	13.00	14.00	0.22	6.43	MAB-17S-3I	0.00	1.00	0.51	43.98
MAB-14	14.00	15.00	0.23	7.10	MAB-17S-3I	1.00	2.00	0.76	23.24
MAB-14	15.00	16.00	0.24	7.67	MAB-17S-3I	2.00	3.00	0.70	12.18
MAB-14	16.00	17.00	0.21	7.17	MAB-17S-3I	3.00	4.00	0.75	11.00
MAB-14	17.00	18.00	0.18	5.87	MAB-17S-3I	4.00	5.00	0.36	10.15
MAB-14	18.00	19.00	0.18	7.24	MAB-17S-3I	5.00	6.00	0.29	7.36
MAB-14	19.00	20.00	0.17	6.45	MAB-18	0.00	1.00	0.71	51.87
MAB-14	20.00	21.00	0.20	5.74	MAB-18	1.00	2.00	1.00	15.99
MAB-14	21.00	22.00	0.20	5.76	MAB-18	2.00	3.00	0.80	51.18

MAB-18	3.00	4.00	0.91	45.95	MAB-195-01	2.00	3.00	0.94	49.50
MAB-18	4.00	5.00	0.79	12.78	MAB-195-01	3.00	4.00	1.56	19.35
MAB-18	5.00	6.00	0.63	12.40	MAB-195-01	4.00	5.00	1.07	9.74
MAB-18	6.00	7.00	0.51	9.84	MAB-195-01	5.00	6.00	1.50	17.06
MAB-185-71	0.00	1.00	0.70	47.68	MAB-195-01	6.00	7.00	1.18	12.52
MAB-185-71	1.00	2.00	0.83	47.05	MAB-195-01	7.00	8.00	0.46	8.92
MAB-185-71	2.00	3.00	0.76	50.81	MAB-195-01	8.00	9.00	0.44	9.87
MAB-185-71	3.00	4.00	1.06	45.53	MAB-195-01	9.00	10.00	0.50	10.77
MAB-185-71	4.00	5.00	1.21	10.68	MAB-195-01	10.00	11.00	0.35	9.69
MAB-185-71	5.00	6.00	1.40	10.99	MAB-195-01	11.00	12.00	0.29	8.57
MAB-185-71	6.00	7.00	1.43	9.19	MAB-195-11	0.00	1.00	0.75	48.57
MAB-185-71	7.00	8.00	1.73	23.95	MAB-195-11	1.00	2.00	1.08	49.90
MAB-185-71	8.00	9.00	1.21	9.11	MAB-195-11	2.00	3.00	1.31	45.18
MAB-185-71	9.00	10.00	1.05	8.78	MAB-195-11	3.00	4.00	1.57	12.46
MAB-185-71	10.00	11.00	0.83	7.84	MAB-195-11	4.00	5.00	1.50	11.73
MAB-185-71	11.00	12.00	1.06	11.53	MAB-195-11	5.00	6.00	1.19	12.25
MAB-185-71	12.00	13.00	1.24	10.52	MAB-195-11	6.00	7.00	0.90	10.04
MAB-185-71	13.00	14.00	1.47	13.92	MAB-195-11	7.00	8.00	0.70	10.76
MAB-185-71	14.00	15.00	1.28	11.68	MAB-195-11	8.00	9.00	0.56	9.19
MAB-185-71	15.00	16.00	1.10	9.78	MAB-185-11	9.00	10.00	0.61	9.54
MAB-185-71	16.00	17.00	0.56	8.93	MAB-185-11	10.00	11.00	0.73	9.71
MAB-185-71	17.00	18.00	0.37	8.68	MAB-185-11	11.00	12.00	0.55	7.77
MAB-185-71	18.00	19.00	0.48	9.61	MAB-185-21	0.00	1.00	0.52	45.34
MAB-185-71	19.00	20.00	0.78	11.01	MAB-185-21	1.00	2.00	0.81	48.83
MAB-185-71	20.00	21.00	1.15	11.75	MAB-185-21	2.00	3.00	0.84	48.78
MAB-185-71	21.00	22.00	0.70	9.74	MAB-185-21	3.00	4.00	0.99	46.06
MAB-185-71	22.00	23.00	0.70	6.44	MAB-185-21	4.00	5.00	1.01	46.57
MAB-185-21	0.00	1.00	0.33	44.55	MAB-185-21	5.00	6.00	1.19	41.12
MAB-185-21	1.00	2.00	0.54	49.39	MAB-185-21	6.00	7.00	1.39	23.99
MAB-185-21	2.00	3.00	0.89	46.88	MAB-185-21	7.00	8.00	1.72	19.69
MAB-185-21	3.00	4.00	0.80	49.82	MAB-185-21	8.00	9.00	2.14	15.39
MAB-185-21	4.00	5.00	1.69	15.22	MAB-185-21	9.00	10.00	1.92	23.97
MAB-185-21	5.00	6.00	1.83	16.67	MAB-185-21	10.00	11.00	1.86	30.99
MAB-185-21	6.00	7.00	1.58	35.78	MAB-185-21	11.00	12.00	1.35	38.93
MAB-185-21	7.00	8.00	0.97	49.41	MAB-185-21	12.00	13.00	1.64	20.62
MAB-185-21	8.00	9.00	1.40	11.36	MAB-185-21	13.00	14.00	1.84	23.15
MAB-185-21	9.00	10.00	1.31	10.07	MAB-185-21	14.00	15.00	1.59	26.55
MAB-185-21	10.00	11.00	1.07	8.44	MAB-185-21	15.00	16.00	1.79	19.81
MAB-185-21	11.00	12.00	1.87	10.73	MAB-185-21	16.00	17.00	1.97	9.70
MAB-185-21	12.00	13.00	1.51	12.97	MAB-185-21	17.00	18.00	1.92	15.51
MAB-185-21	13.00	14.00	1.15	17.45	MAB-185-21	18.00	19.00	1.79	10.24
MAB-185-21	14.00	15.00	1.06	10.85	MAB-185-21	19.00	20.00	1.88	17.51
MAB-185-31	0.00	1.00	0.64	45.13	MAB-185-21	20.00	21.00	2.74	13.67
MAB-185-31	1.00	2.00	0.65	48.20	MAB-185-21	21.00	22.00	1.47	24.25
MAB-185-31	2.00	3.00	0.68	47.89	MAB-185-21	22.00	23.00	1.54	33.00
MAB-185-31	3.00	4.00	0.93	45.93	MAB-185-21	23.00	24.00	1.86	12.87
MAB-185-31	4.00	5.00	0.92	28.04	MAB-185-21	24.00	25.00	1.24	10.21
MAB-185-31	5.00	6.00	1.64	15.77	MAB-185-21	25.00	26.00	0.97	10.49
MAB-185-31	6.00	7.00	1.46	16.20	MAB-185-41	0.00	1.00	0.62	48.72
MAB-185-31	7.00	8.00	1.23	12.59	MAB-185-41	1.00	2.00	0.76	46.37
MAB-185-31	8.00	9.00	0.57	8.46	MAB-185-41	2.00	3.00	0.84	47.91
MAB-185-31	9.00	10.00	0.79	11.11	MAB-185-41	3.00	4.00	1.00	48.23
MAB-185-31	10.00	10.50	0.61	10.19	MAB-185-41	4.00	5.00	1.15	49.83
MAB-185-81	0.00	1.00	1.41	14.41	MAB-185-41	5.00	6.00	1.90	18.08
MAB-185-81	1.00	2.00	1.66	8.35	MAB-185-41	6.00	7.00	1.95	19.67
MAB-185-81	2.00	3.00	1.86	8.65	MAB-185-41	7.00	8.00	1.95	19.96
MAB-185-81	3.00	4.00	2.01	10.78	MAB-185-41	8.00	9.00	1.87	12.78
MAB-185-81	4.00	5.00	1.89	12.08	MAB-185-41	9.00	10.00	1.27	10.40
MAB-185-81	5.00	6.00	1.66	8.37	MAB-185-41	10.00	11.00	1.35	15.89
MAB-185-81	6.00	7.00	1.61	10.64	MAB-185-41	11.00	12.00	1.38	10.22
MAB-185-81	7.00	8.00	0.93	6.51	MAB-185-41	12.00	13.00	1.32	6.66
MAB-185-81	8.00	9.00	1.24	8.14	MAB-185-61	0.00	1.00	0.60	45.13
MAB-185-81	9.00	10.00	1.77	8.85	MAB-185-61	1.00	2.00	0.84	45.83
MAB-185-81	10.00	11.00	1.06	8.35	MAB-185-61	2.00	3.00	1.27	44.31
MAB-185-81	11.00	12.00	0.79	8.01	MAB-185-61	3.00	4.00	1.61	38.73
MAB-185-81	12.00	13.00	0.75	8.82	MAB-185-61	4.00	5.00	2.28	14.40
MAB-185-81	13.00	14.00	0.74	9.33	MAB-185-61	5.00	6.00	1.69	11.51
MAB-185-81	14.00	15.00	0.92	11.05	MAB-185-61	6.00	7.00	1.78	13.34
MAB-185-81	15.00	16.00	0.46	6.65	MAB-185-61	7.00	8.00	1.25	8.70
MAB-19	0.00	1.00	0.40	49.28	MAB-185-61	8.00	9.00	0.89	8.08
MAB-19	1.00	2.00	0.60	39.96	MAB-185-61	9.00	10.00	1.40	15.87
MAB-19	2.00	3.00	0.56	14.14	MAB-185-61	10.00	11.00	1.63	11.44
MAB-19	3.00	4.00	0.51	13.36	MAB-185-61	11.00	12.00	1.20	9.45
MAB-19	4.00	5.00	0.57	13.00	MAB-185-61	12.00	13.00	1.89	11.37
MAB-19	5.00	6.00	0.37	10.84	MAB-185-61	13.00	14.00	1.99	9.50
MAB-19	6.00	7.00	0.42	10.33	MAB-185-61	14.00	15.00	1.41	13.61
MAB-19	7.00	8.00	0.39	8.62	MAB-185-61	15.00	16.00	1.34	15.37
MAB-19	8.00	9.00	0.42	7.67	MAB-185-61	16.00	17.00	1.09	9.33
MAB-195-01	0.00	1.00	0.70	47.83	MAB-185-61	17.00	18.00	1.56	26.16
MAB-195-01	1.00	2.00	0.88	48.40	MAB-185-71	0.00	1.00	0.43	45.39

VAB-195-71	1.00	2.00	0.68	47.53	MAB-21	11.00	12.00	1.23	13.69
VAB-195-71	2.00	3.00	0.85	48.08	MAB-21	12.00	13.00	1.62	9.28
VAB-195-71	3.00	4.00	0.74	47.51	MAB-21	13.00	14.00	1.39	9.74
VAB-195-71	4.00	5.00	0.94	47.07	VAB-215-31	0.00	1.00	0.46	45.90
VAB-195-71	5.00	6.00	0.87	46.64	VAB-215-31	1.00	2.00	0.80	52.13
VAB-195-71	6.00	7.00	1.48	39.09	VAB-215-31	2.00	3.00	0.73	51.91
VAB-195-71	7.00	8.00	1.85	18.26	VAB-215-31	3.00	4.00	0.70	50.80
VAB-195-71	8.00	9.00	1.59	16.85	VAB-215-31	4.00	5.00	0.88	49.96
VAB-195-71	9.00	10.00	1.52	21.45	VAB-215-31	5.00	6.00	1.01	49.59
VAB-195-71	10.00	11.00	1.60	19.13	VAB-215-31	6.00	7.00	1.12	45.43
VAB-195-71	11.00	12.00	0.92	7.95	VAB-215-31	7.00	8.00	1.65	30.29
VAB-195-71	12.00	13.00	1.44	17.75	VAB-215-31	8.00	9.00	1.70	24.61
VAB-195-71	13.00	14.00	0.91	8.57	VAB-215-31	9.00	10.00	1.84	13.94
VAB-195-71	14.00	15.00	0.70	7.57	VAB-215-31	10.00	11.00	1.78	21.98
VAB-195-71	15.00	16.00	0.43	7.93	VAB-215-31	11.00	12.00	1.64	17.57
VAB-195-81	0.00	1.00	0.87	48.04	VAB-215-31	12.00	13.00	2.04	28.68
VAB-195-81	1.00	2.00	1.36	47.93	VAB-215-31	13.00	14.00	1.33	27.35
VAB-195-81	2.00	3.00	1.30	48.88	VAB-215-31	14.00	15.00	1.58	16.69
VAB-195-81	3.00	4.00	1.22	47.38	VAB-215-31	15.00	16.00	1.74	21.70
VAB-195-81	4.00	5.00	1.22	44.39	VAB-215-31	16.00	17.00	1.95	13.22
VAB-195-81	5.00	6.00	1.28	47.73	VAB-215-31	17.00	18.00	1.58	15.18
VAB-195-81	6.00	7.00	1.26	49.64	VAB-215-31	18.00	19.00	2.09	18.14
VAB-195-81	7.00	8.00	1.89	32.69	VAB-215-31	19.00	20.00	1.56	13.60
VAB-195-81	8.00	9.00	2.02	24.72	VAB-215-31	20.00	21.00	1.65	14.92
VAB-195-81	9.00	10.00	2.07	21.23	VAB-215-31	21.00	22.00	1.37	10.00
VAB-195-81	10.00	11.00	2.07	22.36	VAB-215-31	22.00	23.00	0.95	7.93
VAB-195-81	11.00	12.00	2.15	24.61	VAB-215-41	0.00	1.00	0.52	45.49
VAB-195-81	12.00	13.00	2.12	19.06	VAB-215-41	1.00	2.00	0.79	48.81
VAB-195-81	13.00	14.00	2.02	26.39	VAB-215-41	2.00	3.00	0.95	49.04
VAB-195-81	14.00	15.00	2.21	27.16	VAB-215-41	3.00	4.00	1.22	46.17
VAB-195-81	15.00	16.00	2.09	32.18	VAB-215-41	4.00	5.00	1.80	41.07
VAB-195-81	16.00	17.00	2.16	27.46	VAB-215-41	5.00	6.00	1.81	21.17
VAB-195-81	17.00	18.00	2.15	22.34	VAB-215-41	6.00	7.00	1.32	25.33
VAB-195-81	18.00	19.00	1.96	24.59	VAB-215-41	7.00	8.00	1.29	35.34
VAB-195-81	19.00	20.00	1.90	24.28	VAB-215-41	8.00	9.00	1.82	18.38
VAB-195-81	20.00	21.00	2.03	14.22	VAB-215-41	9.00	10.00	1.53	15.58
VAB-195-81	21.00	22.00	1.94	11.70	VAB-215-41	10.00	11.00	1.50	16.78
VAB-195-81	22.00	23.00	1.89	12.16	VAB-215-41	11.00	12.00	1.39	16.17
VAB-195-81	23.00	24.00	2.00	13.16	VAB-215-41	12.00	13.00	1.16	11.77
VAB-195-81	24.00	25.00	1.97	12.01	VAB-215-41	13.00	14.00	1.15	11.80
VAB-195-81	25.00	26.00	1.62	10.77	VAB-215-41	14.00	15.00	1.05	10.69
VAB-195-81	26.00	27.00	0.76	6.61	VAB-215-41	15.00	16.00	0.82	10.09
VAB-195-91	0.00	1.00	0.36	46.69	VAB-215-41	16.00	17.00	0.77	11.58
VAB-195-91	1.00	2.00	0.60	48.74	VAB-215-41	17.00	18.00	0.57	11.05
VAB-195-91	2.00	3.00	0.48	46.38	MAB-22	0.00	1.00	0.49	51.87
VAB-195-91	3.00	4.00	1.20	27.21	MAB-22	1.00	2.00	0.54	51.96
VAB-195-91	4.00	5.00	1.19	35.36	MAB-22	2.00	3.00	0.74	47.08
VAB-195-91	5.00	6.00	1.44	23.01	MAB-22	3.00	4.00	1.25	8.64
VAB-195-91	6.00	7.00	1.47	15.84	MAB-22	4.00	5.00	0.78	20.21
VAB-195-91	7.00	8.00	1.52	15.54	MAB-22	5.00	6.00	1.71	19.39
VAB-195-91	8.00	9.00	1.35	13.03	MAB-22	6.00	7.00	1.49	14.75
VAB-195-91	9.00	10.00	1.33	14.94	MAB-22	7.00	8.00	0.96	15.43
VAB-195-91	10.00	11.00	1.19	14.14	MAB-22	8.00	9.00	0.91	7.16
VAB-195-91	11.00	12.00	1.04	11.06	MAB-22	9.00	10.00	1.18	12.38
VAB-195-91	12.00	13.00	1.10	14.22	MAB-22	10.00	11.00	0.96	9.66
VAB-195-91	13.00	14.00	1.07	9.16	VAB-225-21	0.00	1.00	0.70	47.31
VAB-195-91	14.00	15.00	0.96	11.89	VAB-225-21	1.00	2.00	0.97	50.03
VAB-195-91	15.00	16.00	0.89	10.29	VAB-225-21	2.00	3.00	0.94	49.38
VAB-195-91	16.00	17.00	0.64	8.79	VAB-225-21	3.00	4.00	0.61	50.54
VAB-195-91	17.00	18.00	0.50	7.24	VAB-225-21	4.00	5.00	0.67	50.01
MAB-20	0.00	1.00	0.27	37.12	VAB-225-21	5.00	6.00	0.70	51.98
MAB-20	1.00	2.00	0.45	14.08	VAB-225-21	6.00	7.00	0.87	51.23
MAB-20	2.00	3.00	0.21	20.82	VAB-225-21	7.00	8.00	0.71	51.52
MAB-20	3.00	4.00	0.19	19.03	VAB-225-21	8.00	9.00	0.86	51.07
MAB-20	4.00	5.00	0.37	23.18	VAB-225-21	9.00	10.00	0.97	49.79
MAB-20	5.00	6.00	0.33	8.88	VAB-225-21	10.00	11.00	0.74	48.42
MAB-20	6.00	7.00	1.01	17.65	VAB-225-21	11.00	12.00	1.12	50.36
MAB-20	7.00	8.00	1.03	10.77	VAB-225-21	12.00	13.00	1.81	27.44
MAB-20	8.00	9.00	0.82	6.81	VAB-225-21	13.00	14.00	1.97	38.61
MAB-21	0.00	1.00	0.84	45.30	VAB-225-21	14.00	15.00	2.06	20.64
MAB-21	1.00	2.00	1.34	18.22	VAB-225-21	15.00	16.00	1.21	9.09
MAB-21	2.00	3.00	1.47	14.24	VAB-225-31	0.00	1.00	0.58	46.75
MAB-21	3.00	4.00	1.25	8.64	VAB-225-31	1.00	2.00	0.78	46.03
MAB-21	4.00	5.00	1.06	9.83	VAB-225-31	2.00	3.00	0.54	47.97
MAB-21	5.00	6.00	1.59	16.60	VAB-225-31	3.00	4.00	0.67	44.18
MAB-21	6.00	7.00	1.38	15.20	VAB-225-31	4.00	5.00	0.59	46.15
MAB-21	7.00	8.00	1.41	10.85	VAB-225-31	5.00	6.00	0.65	44.19
MAB-21	8.00	9.00	1.93	13.28	VAB-225-31	6.00	7.00	0.82	47.52
MAB-21	9.00	10.00	1.77	13.05	VAB-225-31	7.00	8.00	0.90	44.04
MAB-21	10.00	11.00	1.70	18.36	VAB-225-31	8.00	9.00	0.43	41.08

MAB-245-3i	5.00	6.00	1.18	31.07
MAB-245-3i	6.00	7.00	1.26	19.79
MAB-245-3i	7.00	8.00	1.05	13.71
MAB-245-3i	8.00	9.00	1.09	12.59
MAB-245-3i	9.00	10.00	1.11	16.07
MAB-245-3i	10.00	11.00	1.14	13.10
MAB-245-3i	11.00	12.00	1.01	8.44
MAB-245-3i	12.00	13.00	0.98	9.99
MAB-245-3i	13.00	14.00	1.03	9.51
MAB-245-3i	14.00	15.00	0.92	11.32
MAB-245-3i	15.00	16.00	0.60	10.03
MAB-245-3i	16.00	17.00	0.60	9.28
MAB-245-7i	0.00	1.00	0.69	46.56
MAB-245-7i	1.00	2.00	1.04	47.16
MAB-245-7i	2.00	3.00	1.20	41.23
MAB-245-7i	3.00	4.00	1.15	46.69
MAB-245-7i	4.00	5.00	0.84	17.36
MAB-245-7i	5.00	6.00	0.72	15.90
MAB-245-7i	6.00	7.00	0.82	15.61
MAB-245-7i	7.00	8.00	0.91	14.19
MAB-245-7i	8.00	9.00	1.05	12.05
MAB-245-7i	9.00	10.00	1.01	9.75
MAB-245-7i	10.00	11.00	0.98	9.27
MAB-245-7i	11.00	12.00	1.03	9.27
MAB-245-7i	12.00	13.00	0.97	7.90
MAB-175-4i	0.00	1.00	0.65	43.04
MAB-175-4i	1.00	2.00	0.38	17.32
MAB-175-4i	2.00	3.00	0.56	9.99
MAB-175-4i	3.00	4.00	1.17	9.68
MAB-175-4i	4.00	5.00	1.02	9.12
MAB-175-4i	5.00	6.00	1.27	13.50
MAB-175-4i	6.00	7.00	0.72	8.04
MAB-215-2i	0.00	1.00	0.80	45.79
MAB-215-2i	1.00	2.00	0.84	46.45
MAB-215-2i	2.00	3.00	0.77	47.72
MAB-215-2i	3.00	4.00	0.79	47.93
MAB-215-2i	4.00	5.00	0.86	45.55
MAB-215-2i	5.00	6.00	1.59	27.80
MAB-215-2i	6.00	7.00	1.99	20.16
MAB-215-2i	7.00	8.00	1.42	10.77
MAB-215-2i	8.00	9.00	1.41	24.03
MAB-215-2i	9.00	10.00	1.41	26.61
MAB-215-2i	10.00	11.00	1.37	24.18
MAB-215-2i	11.00	12.00	1.47	20.43

**Technical Report on the
Updated Mineral Resource Estimates of
Marcventures Mining and Development Corporation
MPSA No. 016-93-XI
Nickel Laterite Mining Project
Located in the Municipalities of Carrascal and Cantilan,
Province of Surigao del Sur**



Prepared for: **MARCVENTURES MINING AND DEVELOPMENT CORPORATION**
4th Floor Citibank Center
8741 Paseo de Roxas, Makati City
Philippines

Signed: March 29, 2019


JAYVHEL TRIA GUZMAN
PRC Reg. Geologist No. 1653
PMRC CP Reg. No. 18-11-01
PTR No. 7379123
Issued on Jan. 25, 2019 at Makati City

CERTIFICATION AND CONSENT OF CP FOR THIS TECHNICAL REPORT

I, Jayvhel Tria Guzman, of legal, with postal address at Block 19 Lot 32 Sugartowne Subdivision, Batasan Hills, Quezon City, do hereby certify that:

1. I am currently employed as the Resource Development and Exploration Head of Marcventures Mining and Development Corporation (MMDC).
2. I am a graduate of the University of the Philippines with a Bachelor of Science degree in Geology in 2006.
3. I am a registered Professional Geologist (Reg. No. 1653) under the Philippine Professional Regulation Commission (PRC) and a member in good standing of the Geological Society of the Philippines (GSP).
4. I am an accredited Competent Person under the definition of the Philippine Mineral Reporting Code (PMRC Reg. No. 18-11-01).
5. I have worked as a Geologist in the mining industry for over 12 years and have sufficient relevant experience working on nickel laterite deposits in the Philippines specifically in Surigao and Dinagat Islands.
6. I have read the definition of "Competent Person" set out in the PMRC Code 2007 and that by reason of my education and relevant work experience, I fulfill the requirements to be a "Competent Person" for the purposes of PMRC Technical Reporting.
7. I am the primary author responsible for the compilation and preparation of this technical report – ***“Technical Report on the Updated Mineral Resource Estimates of Marcventures Mining and Development Corporation MPSA No. 016-93-XI Nickel Laterite Mining Project Located in the Municipalities of Carrascal and Cantilan, Province of Surigao del Sur”***. I also supervised Geologists Glynn Q. Fernandez, Arlene A. Morales, Cherry Ann R. Carlom and Gisella E. Dida on their collective works in implementing the exploration work program, data validation and interpretation, resource estimation and report preparation for MMDC.
8. This report is based on available data and information as of February 28, 2019 and adheres as close as possible to geological procedures and standards prescribed by the Philippine Mineral Reporting Code (PMRC). The professional opinions, interpretation and conclusions made in this Report were done in accordance with industry standards and practice.
9. I consent to the use of this Technical Report in full by Marcventures Mining and Development Corporation in compliance with the rules and regulations of the Philippine Stock Exchange (PSE) and for any legal purpose it may serve.
10. I do not hold any shares of the publicly-listed Marcventures Holdings, Inc. (MHI) which wholly owns MMDC and I have no vested interest in any properties or concessions held by MMDC or MHI.
11. Contents of this report is valid from the date of signing of the CP. In the event that any new geological information, exploration results and ore deposit models will arise that may have direct or indirect implication on the mineral resource estimates as declared in this Report, the said mineral resource estimates may be rendered inaccurate and should therefore be treated with caution.

Signed: March 29, 2019


JAYVHEL TRIA GUZMAN
PRC Reg. Geologist No. 1653
PMRC CP Reg. No. 18-11-01
PTR No. 7379123
Issued on Jan. 25, 2019 at Makati City

EXECUTIVE SUMMARY

The management of Marcventures Mining and Development Corporation has authorized the undersigned, Jayvhel Tria Guzman, Competent Person in Geology, to prepare a Technical Report compliant with the Philippine Mineral Reporting Code (PMRC) on its Nickel Laterite Mining Project located in the Municipalities of Carrascal and Cantilan, Province of Surigao del Sur. The project is covered by a Mineral Production Sharing Agreement denominated as MPSA No. 016-93-XI covering an area of 4,799 hectares.

Having been granted on July 1, 1993, MMDC's MPSA would have expired on July 1, 2018. However, the term of the MPSA was extended for nine years starting from the expiration of its first 25-year term due to *force majeure*. The MPSA is now valid until July 1, 2027 and renewable for another 25 years.

There are three mine areas within the MMDC MPSA, namely: 1) Cabangahan, 2) Sipangpang, and 3) Pili. Cabangahan mine area was the first to be developed in 2010. This is where the first saprolite shipments of the company were sourced from. In 2012, development and production of high iron limonite ore started in Pili mine area. Extraction from Pili mine area was terminated in 2017 when ore prices went down and the remaining ore in Pili became uneconomical. Simultaneous to extraction of limonite from Pili mine area, the Sipangpang mine area was developed in 2016 upon approval of the Tree Cutting Permit (TCP) for the area. Production in Sipangpang continued until the mid-2018 when it was temporarily deferred due to depressed ore prices.

In 2018, in-fill drilling program was conducted to upgrade the Indicated resources to Measured resources for Sipangpang and Cabangahan areas. In detail, drill holes in Sipangpang at 100 m grid interval were surveyed and drilled to 50 m grid interval. Whereas, drill holes in Cabangahan at 50 m grid interval were surveyed and drilled to 25 m grid interval. A total of 257 drill holes were drilled in Sipangpang area whereas 255 drill holes were drilled in Cabangahan.

Based on the observed implementation of the exploration program as well as review of the process and database, it is found that there is no significant bias in the sample and assay results of MMDC. Thus, it is deemed that the quality of sampling, preparation and analysis, and in effect the resulting database, are sufficient and acceptable for the purpose of block modelling and resource estimation.

The resource estimation was done by Resource Geologist Arlene A. Morales with the supervision of the undersigned CP. She is a license geologist who is a member of the Geological Society of the Philippines and has sufficient experience in mineral resource estimation. Resource estimation was thoroughly evaluated and correlated with previous resource reports.

The database used to update the resource estimates includes old drill holes generated by MMDC as well as new (2018) drill holes from Sipangpang and Cabangahan. All 3,188 drill holes and 34,182 assays from Cabangahan, Sipangpang and Pili were regularly sanitized: portions of DH which were "mined-out" were tagged and remove from the database. Sanitized database is updated and the collars snapped to the topo survey file as of December 12, 2018 for Cabangahan and January 2019 for Sipangpang.

The method employed for recent MMDC resource run is Nearest Neighbor (NN). NN which is also known as the proximal interpolation is a simple multivariate interpolation and is the computerized version of polygon method in Surpac. This method selects

and assign value of the nearest assay from the centroid of the block with unknown value thus the term nearest neighbor. As of December 31, 2018, a total of 75.6 Million WMT Measured and Indicated saprolite and limonite mineral resource was estimated for MMDC. Table below presents the details of the estimated resource.

Area	Material	WMT	DMT	Ni	Fe	Ni Tonnes
Measured and Indicated Resource						
CABANGAHAN	Saprolite High Nickel	2,087,000	1,293,940	1.79	13.59	23,000
	Saprolite Low Nickel	9,807,000	6,080,340	1.25	12.45	76,000
	Sub-total/Ave.	11,894,000	7,374,280	1.34	12.65	99,000
	Limonite High Iron	16,095,000	9,978,900	0.83	48.99	83,000
	Limonite Low Iron	11,487,000	7,121,940	1.19	31.70	85,000
	Sub-total/Ave.	27,582,000	17,100,840	0.98	41.79	168,000
	TOTAL/AVE.	39,476,000	24,475,120	1.09	33.01	267,000
SIPANGPANG	Saprolite High Nickel					
	Saprolite Low Nickel					
	Sub-total/Ave.					
	Limonite High Iron	27,837,000	17,258,940	0.75	49.48	129,000
	Limonite Low Iron	7,224,000	4,478,880	0.98	33.46	44,000
Sub-total/Ave.	35,061,000	21,737,820	0.80	46.18	173,000	
TOTAL/AVE.	35,061,000	21,737,820	0.80	46.18	173,000	
PILI	Saprolite High Nickel					
	Saprolite Low Nickel					
	Sub-total/Ave.					
	Limonite High Iron	636,000	394,320	0.74	50.10	3,000
	Limonite Low Iron	378,000	234,360	0.94	31.80	2,000
Sub-total/Ave.	1,014,000	628,680	0.82	43.28	5,000	
TOTAL/AVE.	1,014,000	628,680	0.82	43.28	5,000	
TOTAL	Saprolite High Nickel	2,087,000	1,293,940	1.79	13.59	23,000
	Saprolite Low Nickel	9,807,000	6,080,340	1.25	12.45	76,000
	Sub-total/Ave.	11,894,000	7,374,280	1.34	12.65	99,000
	Limonite High Iron	44,568,000	27,632,160	0.78	49.31	215,000
	Limonite Low Iron	19,089,000	11,835,180	1.11	32.37	131,000
	Sub-total/Ave.	63,657,000	39,467,340	0.88	44.23	346,000
	TOTAL/AVE.	75,551,000	46,841,620	0.95	39.26	445,000
Inferred Resource						
	Saprolite High Nickel	605,000	375,100	1.76	13.58	7,000
	Saprolite Low Nickel	4,068,000	2,522,160	1.23	12.80	31,000
	Sub-total/Ave.	4,673,000	2,897,260	1.30	12.90	38,000
	Limonite High Iron					
	Limonite Low Iron					
	Sub-total/Ave.					
	TOTAL/AVE.	4,673,000	2,897,260	1.30	12.90	38,000

Notes:

- MMDC Mineral Resource statement has been generated under the supervision of Ms. Jayvhel T. Guzman, licensed geologist and accredited Competent Person under the definition of the Philippine Mineral Reporting Code. She has sufficient experience relevant to the style of mineralization and type of deposit under consideration and to the activity that has been undertaken to qualify as a Competent Person as defined in the PMRC Code.
- Mineral Resources are reported in accordance with the PMRC 2007.
- The Mineral Resources reported in the table above represent estimates as of December 31, 2018. Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape, continuity of the mineralization and the availability of sampling results. Tonnages in the table have been rounded to the nearest thousands to reflect the relative uncertainty of the estimate.

From the mineral resource estimates of 63.54 Million WMT Measured and Indicated saprolite and limonite resource as of Dec. 31, 2017, the mineral resource as of Dec. 31, 2018 is estimated to be at 75.55 Million WMT Measured and Indicated saprolite and limonite resource. Increase in the mineral resource tonnage is attributed to the following:

1. Additional mineral resources were blocked resulting from development drilling conducted in Cabangahan
2. Inferred mineral resource were upgraded to Indicated mineral resource resulting from in-fill drilling conducted within Cabangahan and Sipangpang
3. Transfer from Manual Polygon method to software-aided Nearest Neighbor interpolation using Surpac 6.7

To increase the mineral resource estimates of MMDC and further improve its Exploration Protocol, the following are recommended:

1. Continue implementation of in-fill drilling in areas with Inferred and Indicated resource to increase level of confidence in the database and upgrade these mineral resources into Indicated and Measured, respectively.
2. Continue implementation of development drilling in areas adjacent to previously drilled areas with significant intercept.
3. Implement reconciliation of resource (block model) vs actual mine production.
4. Improve QA-QC program by inserting field duplicates and blanks as well as implementation of third-party check analysis.
5. Continue implementation of density and moisture determination of core samples.
6. Improve the Drilling Procedure by including the density and moisture determination in the SOP document.
7. Continue compliance to the standard Drilling Procedure.

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1.0 INTRODUCTION

1.1 Report Commission

The management of Marcventures Mining and Development Corporation has authorized the undersigned, Jayvhel Tria Guzman, Competent Person in Geology, to prepare a Technical Report compliant with the Philippine Mineral Reporting Code (PMRC) on its Nickel Laterite Mining Project located in the Municipalities of Carrascal and Cantilan, Province of Surigao del Sur. This report shall be submitted to MMDC, and subsequently to the Philippine Stock Exchange.

1.2 Purpose of Report

The purpose of this technical report is to disclose the results of the 2018 drilling campaign and present the updated mineral resource estimates of the MMDC Nickel Laterite Mining Project. The disclosure of the updated mineral resources of the MMDC Nickel Laterite Mining Project requires the preparation and filing of this Technical Report with the PSE.

1.3 Scope of Work

The scope of work undertaken includes compilation of exploration results, resource modeling and resource estimation based on available information up to February 28, 2019 covering the MMDC Nickel Laterite Mining Project. This technical report includes assessment and comments with regards to compliance to the PMRC Standard for Mineral Resource and Ore Reserve Reporting Check List.

The CP, being a full-time employee of MMDC since the last quarter of 2012, has been acquainted with the geologic setting of the project as well as the company's exploration and mining activities which is pertinent in the preparation of this technical report.

1.4 Duration of the preparation

Resource modeling and estimation started from the end of 2018 mining season which was on December 16, 2018. Data used included historical drilling data as well as 2018 drilling results. Similarly, data collation and report writing commenced upon end of the year 2018 or as of January 2, 2019.

1.5 Members of the Technical Report preparation team

Members of the Technical Report preparation team included technical personnel from the Resource Development and Exploration Division of MMDC. This includes Senior Geologist Glynn Q. Fernandez, Resource Geologist Arlene A. Morales, Geologist Cherry Ann R. Carlom and Geologist Gisella E. Dida.

Other portions of the Technical Report such as production history, sample preparation, analytical methodology and quality assurance/quality control were provided by Senior Mining Engineer Arlene P. Sangoyo-Reomalez and Assay Laboratory Head Jericho A. Gamelo. Material classification charts were provided by Senior Geologist and Grade Control Head Rodel L. Concepcion. Revenue and taxes summary in Section 3.6 were provided by Budget and Cost Control Manager Elmer O. Purisima.

1.6 Host company representative

As the undersigned is a full-time employee of Marcventures Mining and Development Corporation, there is no need for a representative from the host company.

1.7 Compliance of report with PMRC

This Technical Report complies with the requirements, guidelines and the implementing rules and regulations of the Philippine Mineral Reporting Code (PMRC). The Code was formulated with the intent of setting minimum standards for public reporting that are compatible with global standards. The PMRC is modelled substantially on the wording of the JORC Code (2004) of Australasia and is also compatible with the international codes from Australia, South Africa, European Union and Canada. It is consistent with the International Reporting Template (2006) established by the Committee for Mineral Reserves International Reporting Standard (CRIRSCO).

The PMRC is recognized as the standard for public reporting of mineral resources and ore reserves adopted by the Philippine mining industry and the associated local Accredited Professional Organizations (APOs).

1.8 Declaration and Qualification

Ms. Jayvhel Tria Guzman is a full-time employee of MMDC and is currently its Resource Development and Exploration Head. Ms. Guzman has extensive knowledge of the MMDC Nickel Laterite Mining Project having been involved in the project since the later part of 2012. Ms. Guzman has over 12 years of work experience on implementation of exploration activities and mineral resource estimation and have sufficient relevant experience working on nickel laterite deposits in the Philippines specifically in Surigao and Dinagat Islands. She is a Professional Geologist under the Philippine Professional Regulation Commission (PRC) and a member in good standing of the Geological Society of the Philippines. She is qualified as Competent Person under the requirements of the PMRC (CP Reg. No. 18-11-01).

Whilst currently employed by MMDC, the undersigned CP does not hold any shares of the publicly-listed Marcventures Holdings, Inc. (MHI) which wholly owns MMDC. She has no vested interest in any properties or concessions held by MMDC or MHI and her sole interest is to provide professional services in terms of public reporting of exploration results and mineral resource estimates.

2.0 RELIANCE ON OTHER EXPERTS OR CPs

The undersigned CP relied mainly on the works of MMDC's Resource Development and Exploration technical personnel whose experiences over the years working in the company's nickel laterite project, were able to gain invaluable technical knowledge in the nickel laterite style of mineralization. Also used as references are previous technical reports of PMRC Competent Persons Carlo A. Arcilla, Radegundo S. de Luna and Tomas D. Malihan. The reports are listed as references in Section 14.

3.0 TENEMENT AND MINERAL RIGHTS

3.1 Description

The MMDC Nickel Laterite Mining Project is located in Barangay Panikian in the Municipality of Carrascal, Barangay Cabangahan in the Municipality of Cantilan, and Barangay Bayogo in the Municipality of Madrid, all within the Province of Surigao del Sur.

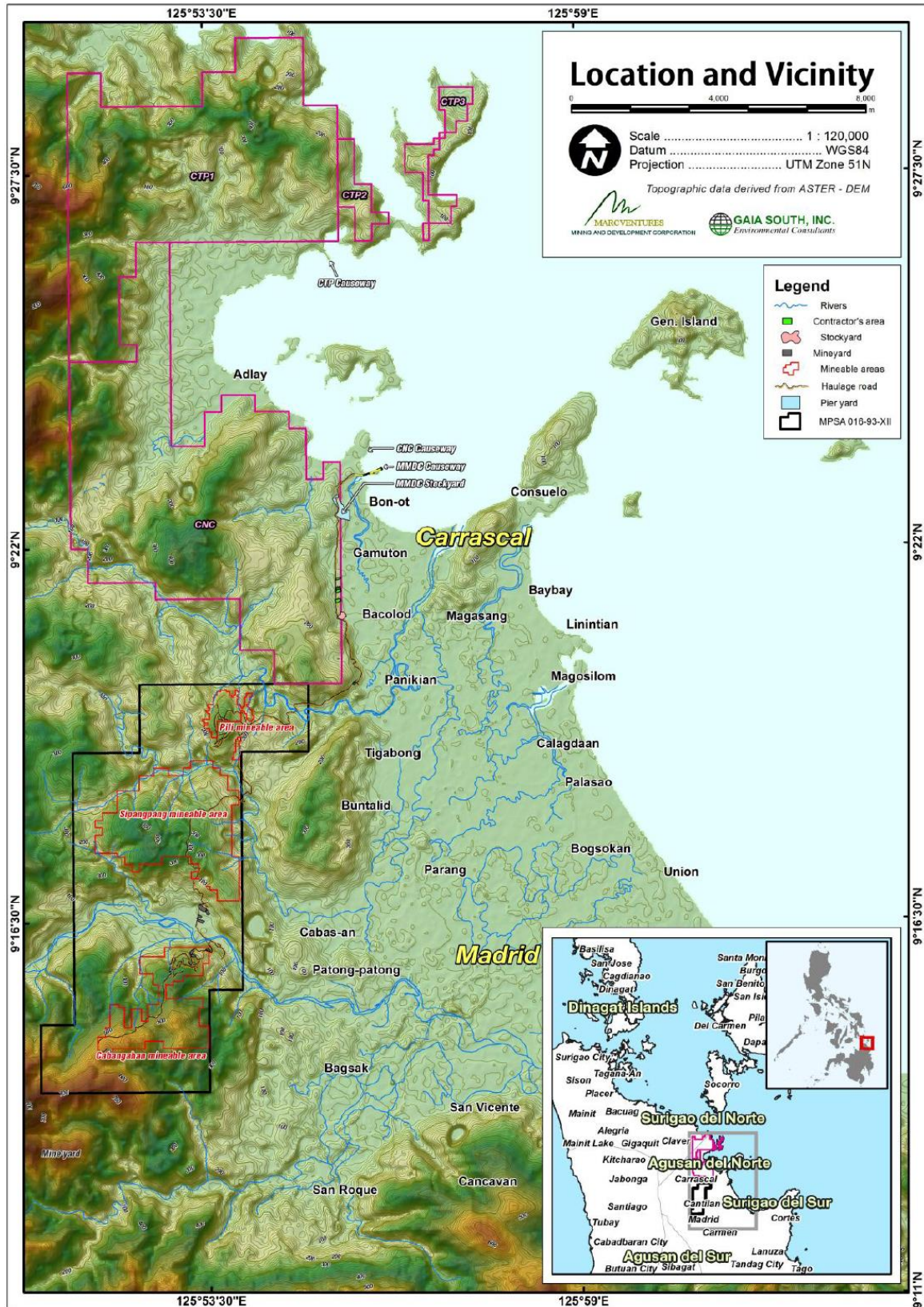
The project is covered by a Mineral Production Sharing Agreement denominated as MPSA No. 016-93-XI covering an area of 4,799 hectares. Technical description of the tenement corners is presented in Table 3-1. Location map of the MPSA is shown in Figure 3-1.

Table 3-1. Technical description of MPSA 016-93-XI.

Corner	Longitude	Latitude
1	125° 52' 30"	9° 20' 00"
2	125° 55' 00"	9° 20' 00"
3	125° 55' 00"	9° 19' 00"
4	125° 54' 00"	9° 19' 00"
5	125° 54' 00"	9° 15' 30"
6	125° 53' 30"	9° 15' 30"
7	125° 53' 30"	9° 14' 00"
8	125° 51' 00"	9° 14' 00"
9	125° 51' 00"	9° 15' 00"
10	125° 51' 30"	9° 15' 00"
11	125° 51' 30"	9° 19' 00"
12	125° 52' 30"	9° 19' 00"

There are three mine areas within the MMDC MPSA, namely: 1) Cabangahan, 2) Sipangpang, and 3) Pili. Cabangahan mine area was the first to be developed in 2010. This is where the first saprolite shipments of the company were sourced from. In 2012, development and production of high iron limonite ore started in Pili mine area. Extraction from Pili mine area was terminated in 2017 when ore prices went down and the remaining ore in Pili became uneconomical. Simultaneous to extraction of limonite from Pili mine area, the Sipangpang mine area was developed in 2016 upon approval of the Tree Cutting Permit (TCP) for the area. Production in Sipangpang continued until the mid-2018 when it was temporarily deferred due to depressed ore prices.

Cabangahan mine area is located south of Carac-an River, Sipangpang mine area between the Carac-an River and Alamio River, and Pili mine area is located north of Alamio River.



3.2 History of mineral rights

On June 19, 1992, the Philippine Government, thru the Department of Environment and Natural Resources (DENR), and Ventura Timber Corporation (VTC) executed Mineral Production Sharing Agreement (MPSA) No. 016-93-XI. The MPSA granted VTC the exclusive right to explore, develop and commercially utilize nickel and other associated mineral deposits that may be discovered in the contract area for a term of 25 years, renewable for another 25 years. The President of the Republic of the Philippines approved the MPSA on July 1, 1993.

On January 19, 1995, a Deed of Assignment (DOA) was executed between VTC and Marcventures Mining and Development Corporation (MMDC) wherein the former assigned to the latter all its rights and interests in MPSA No. 016-93-XI.

From 1995 to 2004, various peace and order problems and civil disturbances were experienced by VTC/MMDC in the pursuit of its exploration and operations in the contract area.

On March 11, 2008, after a lapse of 13 years, the DOA was finally approved by the DENR Secretary. First renewal of exploration period was granted to MMDC on January 24, 2008 and the second renewal on July 14, 2011.

On December 22, 2008, MMDC was granted an Environmental Compliance Certificate (Ref. Code 0807-022-1093) which covers an initial mine area of 120 hectares in Cabangahan. Another ECC (ECC-R13-1101-0006) which covers the causeway, pier yard and haul road was issued by EMB CARAGA on February 11, 2011. On August 2011, MMDC was able to make its first laterite ore shipment abroad under an approved Partial Declaration of Mining Project Feasibility (Partial DMPF).

MMDC applied for amendment of its ECC to cover the whole 4,799 hectares of the MPSA area. The amendment was approved on April 23, 2013 which allowed the company to mine outside the initial 120 hectares and to increase its annual tonnage from 1,500,000 WMT to 3,000,000 WMT. The amendment also superseded MMDC's ECC-R13-1101-0006 for its causeway, pier yard and haul road.

The Declaration for Mining Project Feasibility (DMPF) covering the whole tenement area was approved by the Mines and Geosciences Bureau (MGB) on October 16, 2014.

On September 17, 2015, MMDC filed for another amendment of its ECC which was subsequently approved by the MGB. This allows the company to further increase its annual production capacity to up to 5,000,000 WMT.

MMDC, thru letters dated May 30, 2016 and June 21, 2016, requested for a nine-year extension of the term of MPSA No. 016-93-XI to restore equivalent period of time lost due to *force majeure* in view of the various problems that it has encountered in the contract area, which have prevented it from fully pursuing its operations therein. On June 24, 2016, the term of MMDC's MPSA was extended for a period of nine years starting from the expiration of its first 25-year term or until July 1, 2027. This is renewable for another 25 years.

3.3 Current owners of mineral rights

MMDC currently holds the mineral rights over MPSA NO. 016-93-XI through a Deed of Assignment (DOA) executed between the company and Ventura Timber Corporation on January 19, 1995. The DOA was approved by the DENR Secretary on March 11, 2008.

3.4 Validity of current mineral rights

An MPSA is valid for 25 years from its approval and renewable for another 25 years upon expiration. Having been granted on July 1, 1993, MMDC's MPSA would have expired on July 1, 2018. However, the term of the MPSA was extended for nine years starting from the expiration of its first 25-year term due to *force majeure*. The MPSA is now valid until July 1, 2027 and renewable for another 25 years.

3.5 Agreements with respect to mineral rights

MMDC has no agreements with other companies or entities with regards to its mineral rights.

3.6 Net revenue derived from the project

Table 3-2 summarizes the taxes and royalties paid by MMDC from 2013 to 2018 which demonstrates the profitability of the project. Since 2013 to 2018, MMDC has paid a total of 1.24 Billion Pesos for national and local taxes and 124.9 Million Pesos for IP royalties.

Table 3-2. Summary of taxes and royalties paid from 2013 to 2018.

Taxes/Fees Paid by MMDC	2013	2014	2015	2016	2017	2018	Total
National Taxes							
Income Tax	0.00	0.00	19,199,421.00	7,502,437.42	62,363,612.01	46,396,294.02	135,461,764.45
Annual Registration	500.00	500.00	1,000.00	1,000.00	1,000.00	1,000.00	5,000.00
Excise Tax	51,032,185.00	48,305,264.00	43,974,323.46	44,076,554.00	36,403,809.00	43,058,814.00	266,850,949.46
Input Value Added Tax	98,646,535.00	18,669,204.00	29,720,277.00	17,810,442.31	18,191,435.72	7,571,060.68	190,608,954.71
Capital Gains Tax					0.00		0.00
Documentary Stamp Tax	1,512,563.00	1,639,527.00	1,111,500.83	638,977.89	580,450.66	2,250,700.42	7,733,719.80
W/T on Payroll	8,347,615.00	16,302,731.00	21,404,262.40	23,491,920.88	24,344,739.33	14,819,332.52	108,710,601.13
W/T Expanded	19,951,975.00	46,162,619.00	47,583,838.48	28,887,223.02	44,893,944.65	37,394,512.43	224,874,112.58
Fringe Benefits	5,804,983.00	14,247,935.00	11,803,479.27	7,722,004.32	9,768,358.76	10,446,634.99	59,793,395.34
National Taxes	185,296,356.00	145,327,780.00	174,798,102.44	130,130,559.84	196,547,350.13	161,938,349.06	994,038,497.47
Local Taxes							
Local Business Tax	603,125.00	2,046,905.00	4,037,724.70	27,124,074.50	41,793,328.12	47,239,011.13	122,844,168.45
Real Property Tax	14,665.00	662,835.00	412,972.58	381,929.33	546,168.02	493,304.33	2,511,874.26
Occupational Tax	359,925.00	359,925.00	359,925.00	359,925.00	359,925.00	359,925.00	2,159,550.00
Community Tax	46,491.00	21,000.00	21,000.00	21,000.00	21,500.00	21,500.00	152,491.00
Loading Fees	16,654,531.00	12,619,434.00	20,034,408.00	14,681,117.82	14,729,133.77	16,438,770.40	95,157,394.99
Other Local Taxes	2,400,884.00	1,886,110.00	9,726,292.48	3,401,005.94	2,962,116.18	142,400.00	20,518,808.60
Local Taxes	20,079,621.00	17,596,209.00	34,592,322.76	45,969,052.59	60,412,171.09	64,694,910.86	243,344,287.30
Grand Total	205,375,977.00	162,923,989.00	209,390,425.20	176,099,612.43	256,959,521.22	226,633,259.92	1,237,382,784.77
IP Royalties	26,791,897.00	25,360,264.00	23,086,520.00	19,107,355.00	20,188,858.00	10,366,177.71	124,901,071.71

4.0 GEOGRAPHIC FEATURES

4.1 Location and accessibility

The MPSA of MMDC is located within Barangay Panikian in the Municipality of Carrascal, Barangay Cabangahan in the Municipality of Cantilan and Barangay Bayogo in the Municipality of Madrid. It takes about 2.5-hour land travel along the National Highway from Surigao City or about 3.5-hour land travel from Butuan City to the Municipality of Carrascal and another 20 minutes to reach the Municipality of Cantilan.

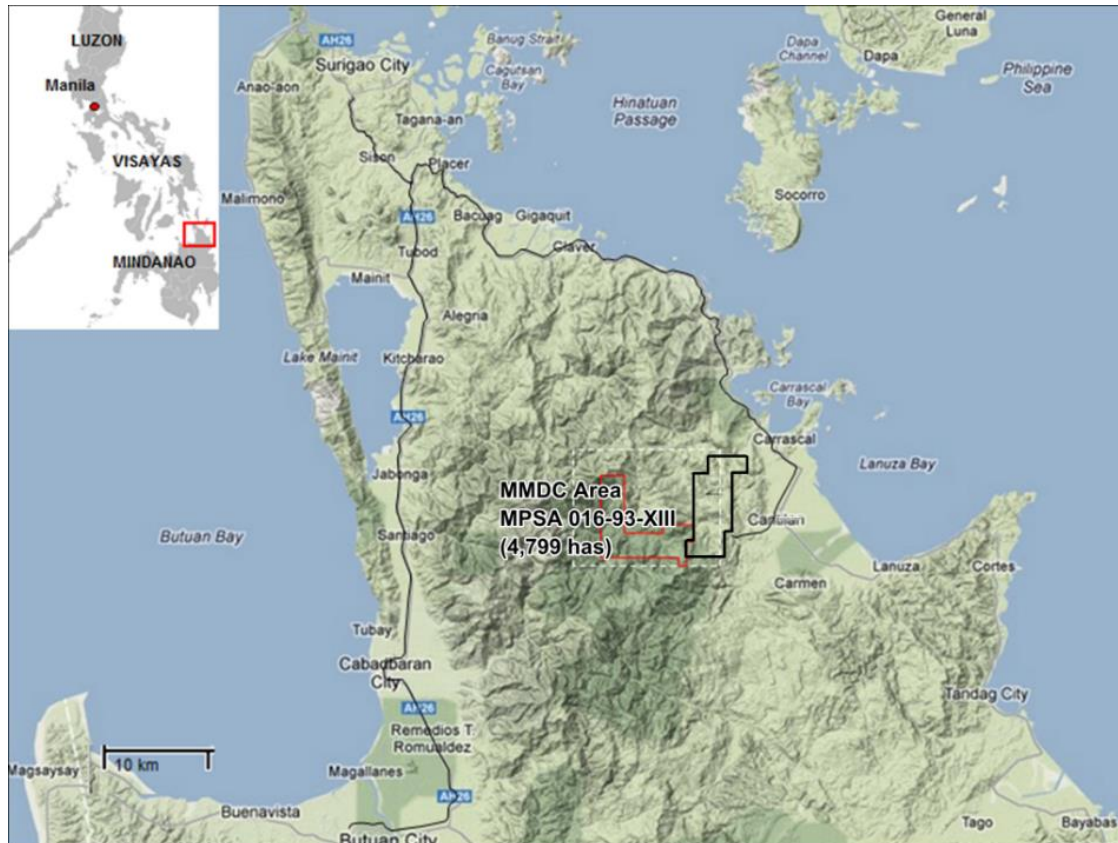


Figure 4-1. Project accessibility map.

Three routes from the National Highway can be used to access the mine site. Two ways are via the Municipality of Carrascal through MMDC's haulage road in Barangay Bon-ot and the provincial road in Barangay Bacolod. Another route passes through the provincial road in Barangay Parang located in the Municipality of Cantilan.

4.2 Topography, physiography and drainage

The tenement area is located at the northeastern fringe of the Diwata Mountain Range (also called the Pacific Cordillera of Mindanao), a 300-km stretch of rugged mountains that extends all the way to the Davao-ComVal provinces. To the west of the Diwata Mountain Range are found the topographic low areas exemplified by the Tubay Valley and Lake Mainit. These areas are bordered to the west by a 70-km long elevated terrain called Malimono Ridge, that runs parallel to the west coast of Surigao del Norte.

Within the tenement area, the terrain is generally gently to moderately sloping and undulating except for some portions in the Cabangahan area which exhibit more rugged features and steeper slopes. The Cabangahan mine area is on a ridge with elevation ranging from 230 to 500 masl. Sipangpang is lower at 180 to 400 masl while Pili is at 180 to 320 masl.

The MMDC MPSA area lies within the catchments of three drainage systems namely: the Carac-an, Alamio and Panikian river systems (Figure 4-2). Carac-an River is the largest drainage system in the area with headwater originating at the eastern slope of Mount Mabaho in the central portion of northern Mindanao Island. The tributaries flow in a general eastward direction and converge in the Cantilan-Madrid Alluvial Plain, then going northeast passing by Barangay Union in Madrid before emptying into Lanuza Bay in the Pacific Ocean.

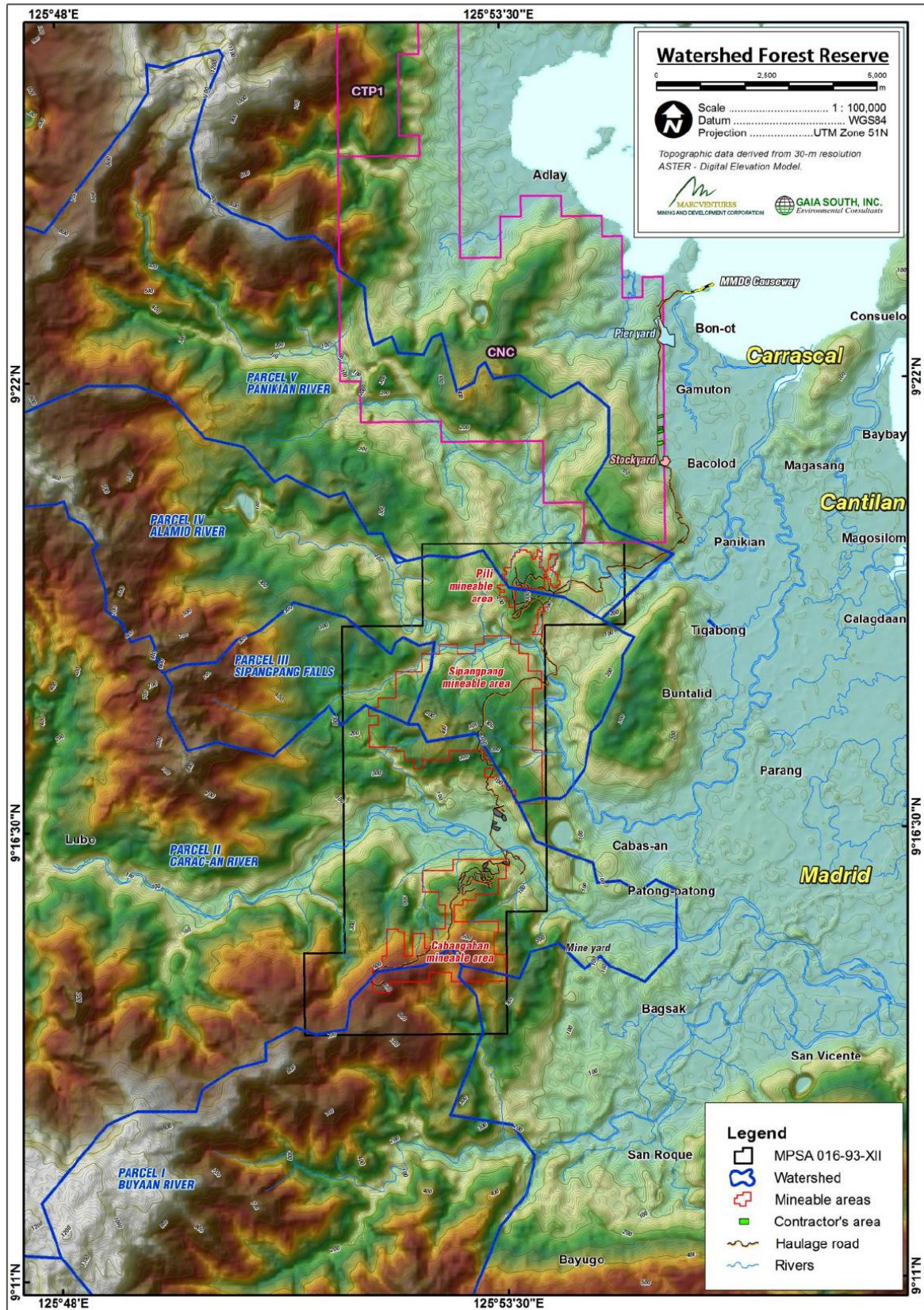


Figure 4-2. Watershed map.

Alamio River originates at the rugged mountains northwest of the MPSA area and flows southeastward through its northern section before reaching the Cantilan-Madrid Alluvial Plain where it shifts north-northeastward and meanders along the western edge of the alluvial plain. It merges with the Binoni River before crossing the highway near Carrascal town proper where it is referred to as the Carrascal River. The Carrascal River drains to Carrascal Bay.

The Panikian River is the smallest river system originating at the southern slope of Mount Legaspi located northwest of the MPSA area. The river assumes a southeast direction and upon reaching the Cantilan-Madrid Alluvial Plain, it becomes known as the Binoni River. The Binoni River then merges with the Alamio River.

4.3 Climate

In the absence of a weather station within the project site, climatological data were gathered from the PAGASA synoptic weather station located in Hinatuan, Surigao del Sur (8°21'59.53"N, 126°20'16.43"E). Figure 4-3 shows that the climate of Surigao del Sur can be characterized as a Type II based on the Modified Corona's Classification Scheme. Type II can be attributed by the absence of dry season or no single dry month. Maximum rainfall can be experienced from November to January while minimum rainfall is from March to May.

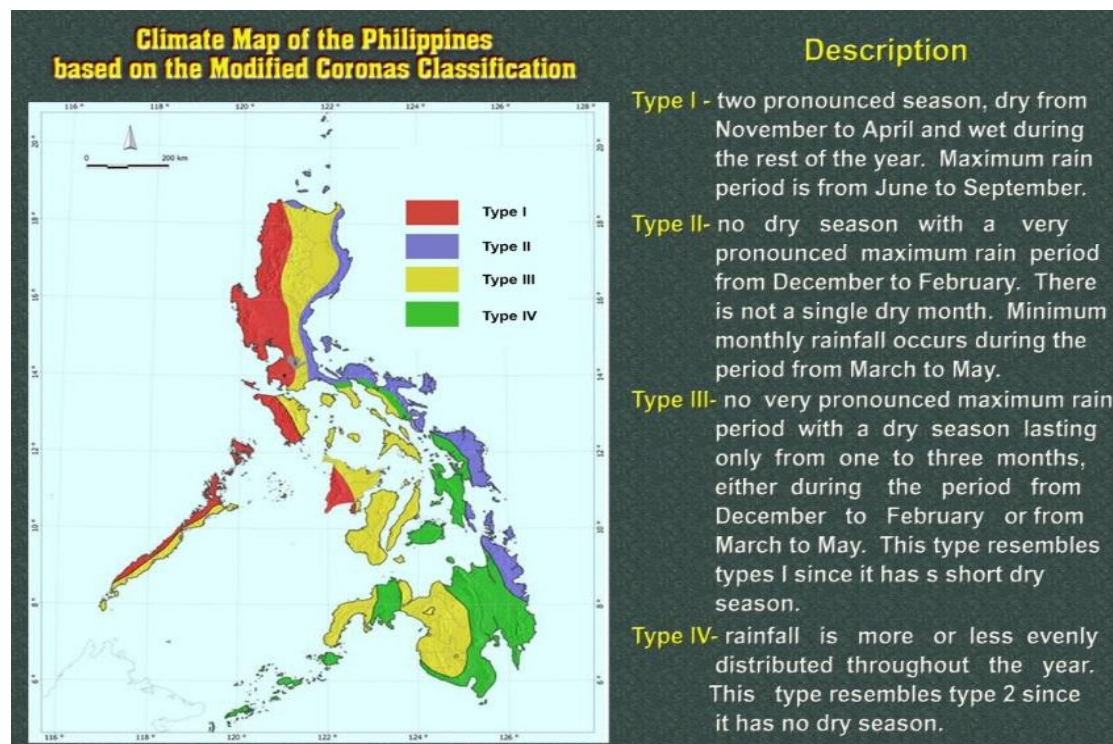


Figure 4-3. Climate map of the Philippines.

Rainfall

The rainfall pattern in Surigao del Sur (Hinatuan weather station) shows a pronounced wet period from November to February, which yields a mean monthly rainfall that exceeds 500 mm and contributes 53.77% to the mean annual rainfall of 5,204.8 mm. The month of January receives the highest amount of rain (950.7 mm) while September receives the least amount of rain (217.6 mm).

Table 4-1. Monthly rainfall in Surigao del Sur for the last 10 years.

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
2009	833.6	1,284.4	707.3	348.8	469.1	279.4	132.8	267.4	152.9	266.5	789.8	-2.0	5,532.0
2010	986.0	247.2	407.6	440.0	648.1	121.3	352.4	385.4	106.6	334.2	545.7	735.6	5,310.1
2011	1,596.4	1,126.8	862.6	326.0	448.8	357.8	449.7	436.6	231.4	325.2	735.7	1,197.2	8,094.2
2012	1,056.9	685.5	366.6	732.6	198.1	217.0	378.2	158.3	325.5	378.8	727.4	558.4	5,783.3
2013	1,077.8	666.6	380.4	474.7	266.7	385.9	384.0	393.2	46.8	377.3	528.8	387.9	5,370.1
2014	1,372.1	331.8	534.1	77.7	272.6	117.2	166.8	173.2	189.7	145.1	242.5	1,039.3	4,662.1
2015	715.2	391.8	234.3	156.3	96.2	297.8	157.1	180.5	344.8	155.6	755.0	375.9	3,860.5
2016	263.2	533.6	175.4	264.7	291.5	280.5	260.9	118.5	265.4	529.1	512.6	621.9	4,117.3
2017	936.1	747.9	647.6	243.3	544.8	364.2	340.0	135.4	231.9	182.8	688.3	278.3	5,340.6
2018	669.4	511.2	319.2	373.7	264.5	136.0	306.7	141.8	280.7	122.2	382.8	469.1	3,977.3
Ave.	950.7	652.7	463.5	343.8	350.0	255.7	292.9	239.0	217.6	281.7	590.9	566.2	5,204.8

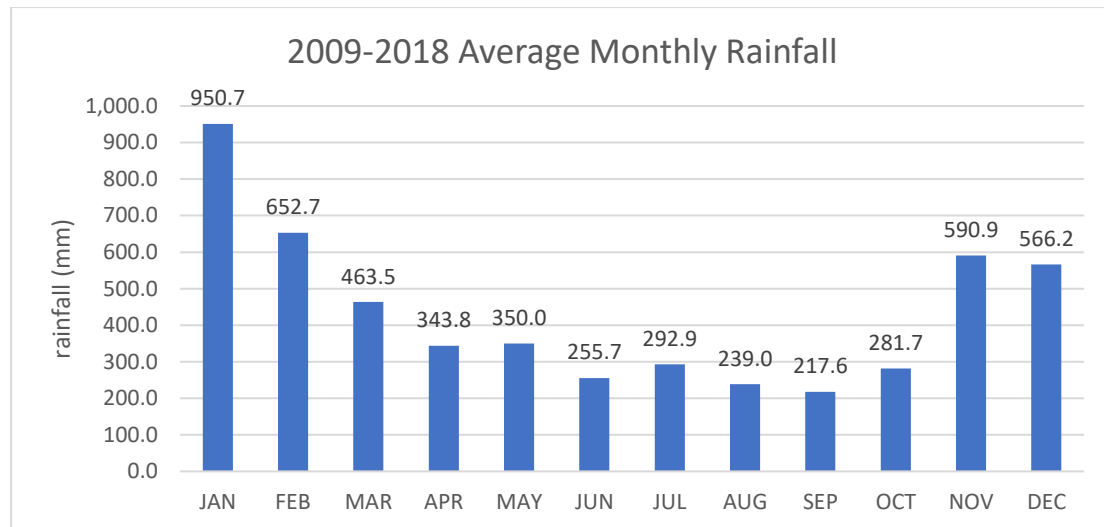


Figure 4-4. Monthly rainfall amount (Source: Hinatuan Weather Station).

Based on the 2014 EPRMP prepared by GAIA South, Inc., the climatological normal of Surigao del Norte (Surigao City weather station) shows that Surigao del Norte experiences an annual rainy days of 220 with January (26 days) and December (25 days) having the most number of rainy days and August (12 days) having the least number of rainy days.

Temperature

Surigao del Norte experiences a mean annual temperature of 27.9°C, annual average high of 32.7°C and annual average low of 23.3°C (2014 EPRMP). In the months of May, August and September, the hottest temperature (32.7°C) can be experienced while the coolest temperature (23.3°C) can be experienced in January.

Tropical Cyclones

The Philippines experiences an average of 20 cyclones annually. Carrascal and Cantilan as well as most of Surigao de Sur experiences one cyclone in two years. The occurrence of tropical cyclones in the Philippines is shown in Figure 4-5.

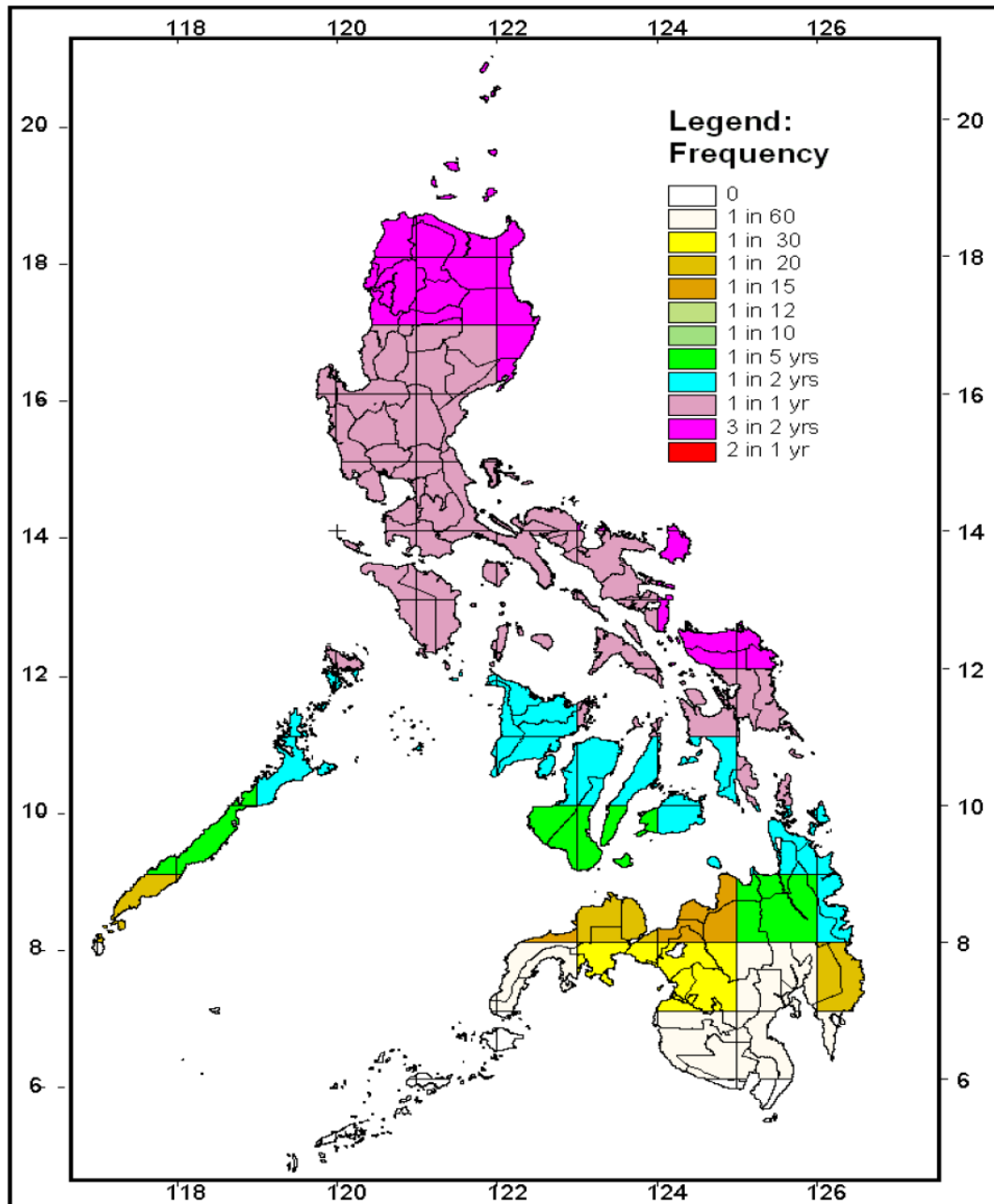


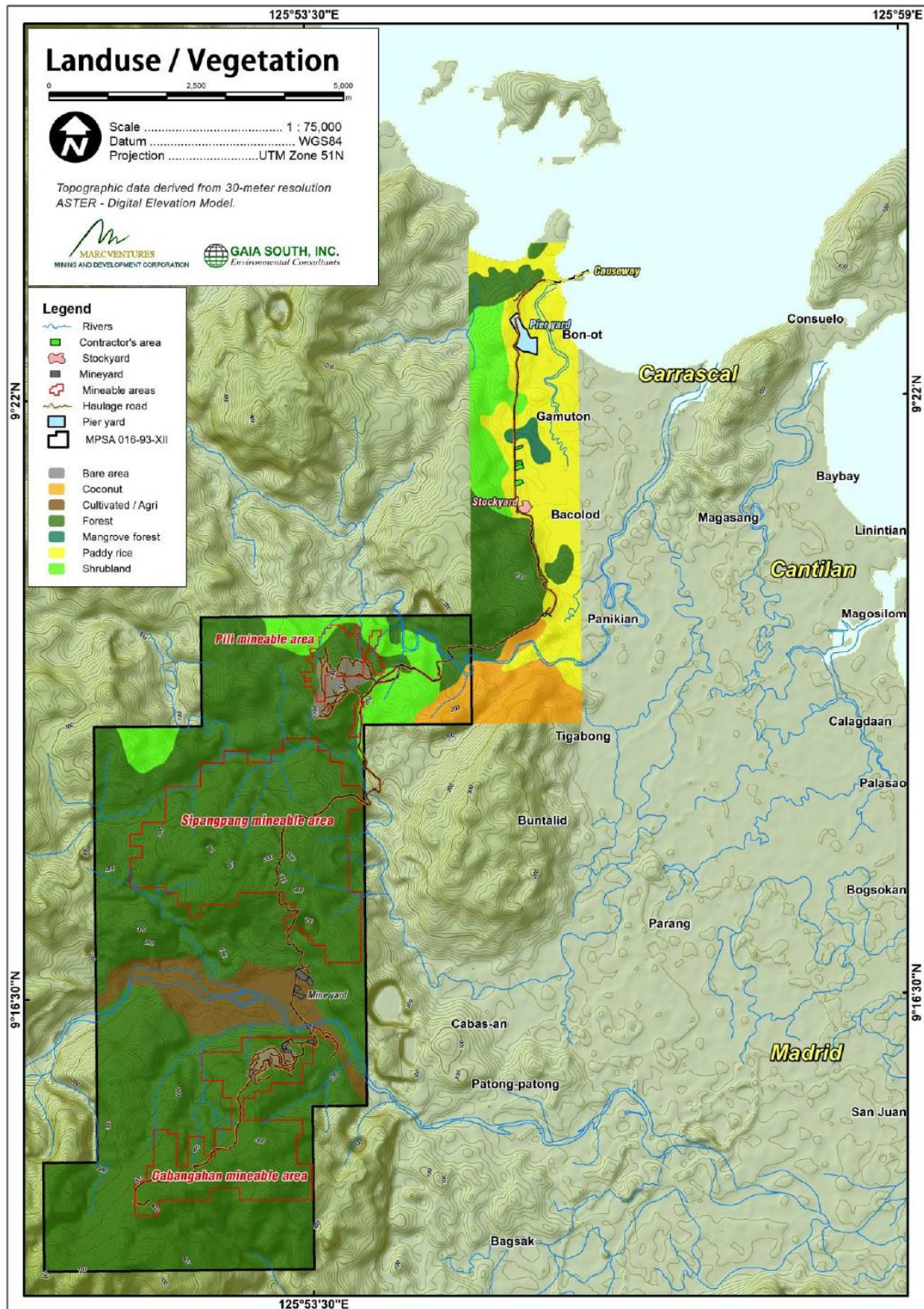
Figure 4-5. Cyclone map of the Philippines.

Wind Pattern

Eastern wind prevail in the area, bringing an annual wind speed of 2.4 m/s. The maximum wind speed of 3 m/s can be recorded in the months of January to March.

4.4 Land use and vegetation

Based on the 2014 Environmental Performance Report and Management Plan (EPRMP) prepared by third party consultant, GAIA South, Inc., There were seven land use units that were identified and mapped within the MPSA area, along the haulage road, pier yards and causeway. These are: 1) Forest, 2) Shrubland, 3) Coconut, 4) Cultivated area/ Agriculture (mixed coconut, paddy rice and corn), 5) Paddy rice, irrigated, 6) Mangrove forest, and 7) Bare area/mining area (Figure 4-3).



The Forest is the dominant landuse in the MPSA. It is generally composed of Luanan, Mountain Agoho, Batuan, Tangili, Miyapis, Falcata, Malapapaya, Giant Fern, etc.

Shrubland with Tonkat Ali, Lanipao, Pandan, Suhasuha, Tagum-tagum, Maymagan with Fern as undergrowth exists in the northern part of the MPSA.

The cultivated area or agricultural area exists on the river terraces of Carac-an River in Barangay Cabangahan. Crops are mixture of coconut, paddy rice and corn, and some abandoned areas are being used as pasture for cattle.

Bare areas are found in the mining areas in Pili and Cabangahan. At present, bare areas are also found in Sipangpang mine areas.

4.5 Socio Economic Environment

Surigao del Sur is located in the northeastern coast of Mindanao facing the Pacific Ocean between 125°40'E to 126°20'E longitude and 7°55'N and 9°20'N latitude. It is bounded on the northwest by the Province of Surigao del Norte, Davao Oriental on the southeast, the Pacific Ocean on the east, and the Province of Agusan del Norte and Agusan del Sur on the west and southwest. Surigao del Sur has two cities and 17 municipalities. Most of these LGUs are located in the coastal areas. Tandag is the capital and seat of the provincial government. The municipalities are subdivided into 309 barangays and are covered by two (2) congressional districts.

Based on the 2010 Census of Population and Housing (CPH), the province of Surigao del Sur posted a total population of 561,219 persons as of May 1, 2010. This is larger by 59,411 persons compared to its total population of 501,808 persons counted in the 2000 CPH. The increase in the population count from 2000 to 2010 translated to an average annual population growth rate (PGR) of 1.12%. This is higher than the 1.05% annual PGR of the province between census years 1990 and 2000.

Of the 560,140 household population in 2010, males accounted for 51.4% while females comprised 48.6%. These figures resulted in a sex ration of 106 males for every 100 females. In 2010, the median age of the population of the province was 21.8 years, which means that half of the population was younger than 21.8 years.

The number of households in 2010 was recorded at 114,969, higher by 20,941 households compared with the 94,028 households posted in 2000. The average household size in 2010 was 4.9 persons, lower than the average household size of 5.3 persons in 2000.

The results of the 2000 and 2010 national census is presented and compared in Table 4-2.

Table 4-2. Comparison of 2000 and 2010 National Population Census.

Municipality	2000		2010		Difference		%
	Persons	HHs	Persons	HHs	Persons	HHs	
Madrid	14,066	2,865	14,888	3,032	822	167	5.84%
Bayogo	821	167	769	157	-52	-11	-6.33%
Cantilan	26,553	5,386	30,321	6,132	3,678	746	13.85%
Cabangahan	794	161	1,031	209	237	48	29.85%
Carrascal	13,157	2,758	16,529	3,465	3,372	707	25.63%
Babuyan	443	93	514	108	71	15	16.03%
Panikian	1,835	385	1,970	413	135	28	7.36%

The population “pull” of the MMDC Nickel Laterite Mining Project is clear in the increase of population in Barangay Cabangahan by almost thirty percent (29.85%) within a 10-year period compared to the Municipality of Cantilan of only 13.85% in the same period. There were 48 new households that settled in Cabangahan and most of these households are migrants. There must be some extraordinary event or condition that pulled or encouraged persons to reside in Cabangahan, a barangay far from Poblacion with poor barangay road as access. This barangay was where MMDC conducted its first mining operations and employment and livelihood opportunities were created by the mining project, which attracted people who were residing outside of Barangay Cabangahan.

4.6 Environmental features

Terrestrial Flora

A total of 156 plant species belonging to 64 families were documented during the 2014 EPRMP baseline studies. Two (2) forest types, namely: Ultramafic forest and Limestone or Molave forest were observed within the MPSA. Ultramafic forests observed are located particularly in Pili and Sipangpang. Fifteen plant species recorded during the study are included in the redlist of the International Union for Conservation of Nature (IUCN). Critically endangered species are *Shorea almon*, *Shorea astylosa*, *Shorea contorta*, *Shorea negronensis*, *Shorea polosapis* and *Shorea polysperma* while *Nepenthes bellii* is considered as endangered based on the 2014 Red List of IUCN.

Terrestrial Fauna

A total of 40 species of birds, six (6) species of mammals, four (4) species of reptiles and five (5) amphibians were observed from three (3) survey sites that were established for the EPRMP baseline studies in 2014. All bird species are in the Least Concern category of IUCN and volant mammals observed have generally stable populations. Species of reptiles and amphibians are common and widespread.

Freshwater Ecology

Two major classifications were observed in the 10 sampling sites, namely: phytoplankton and zooplankton. Phytoplankton species observed belongs to major groups of Cyanophyte, Diatom, Dinoflagellate and Green algae. Benthic macroinvertebrates observed in the area belong to the Anthropoda, Annelida, Vertebrata, and Molluska group.

5.0 PREVIOUS WORK

The Surigao Mineral District rose to prominence as early as 1914 during the American occupation with the declaration by the US Governor General for the Philippines of a 640 sq.km. tract of land comprising what is now the Surigao provinces, as a mineral reservation. In 1939, the mineral reservation was further expanded by President Manuel L. Quezon by virtue of a presidential proclamation that included the islands of Nonoc, Dinagat and Siargao, designated as Parcels II, III and IV, respectively, with Masapelid Island as part of Parcel II (Figure 5-1). The original area declared as mineral reservation in 1914 comprising of the northern part of the mainland Mindanao, was designated as Parcel I. MMDC tenement is located immediately south of Parcel I.

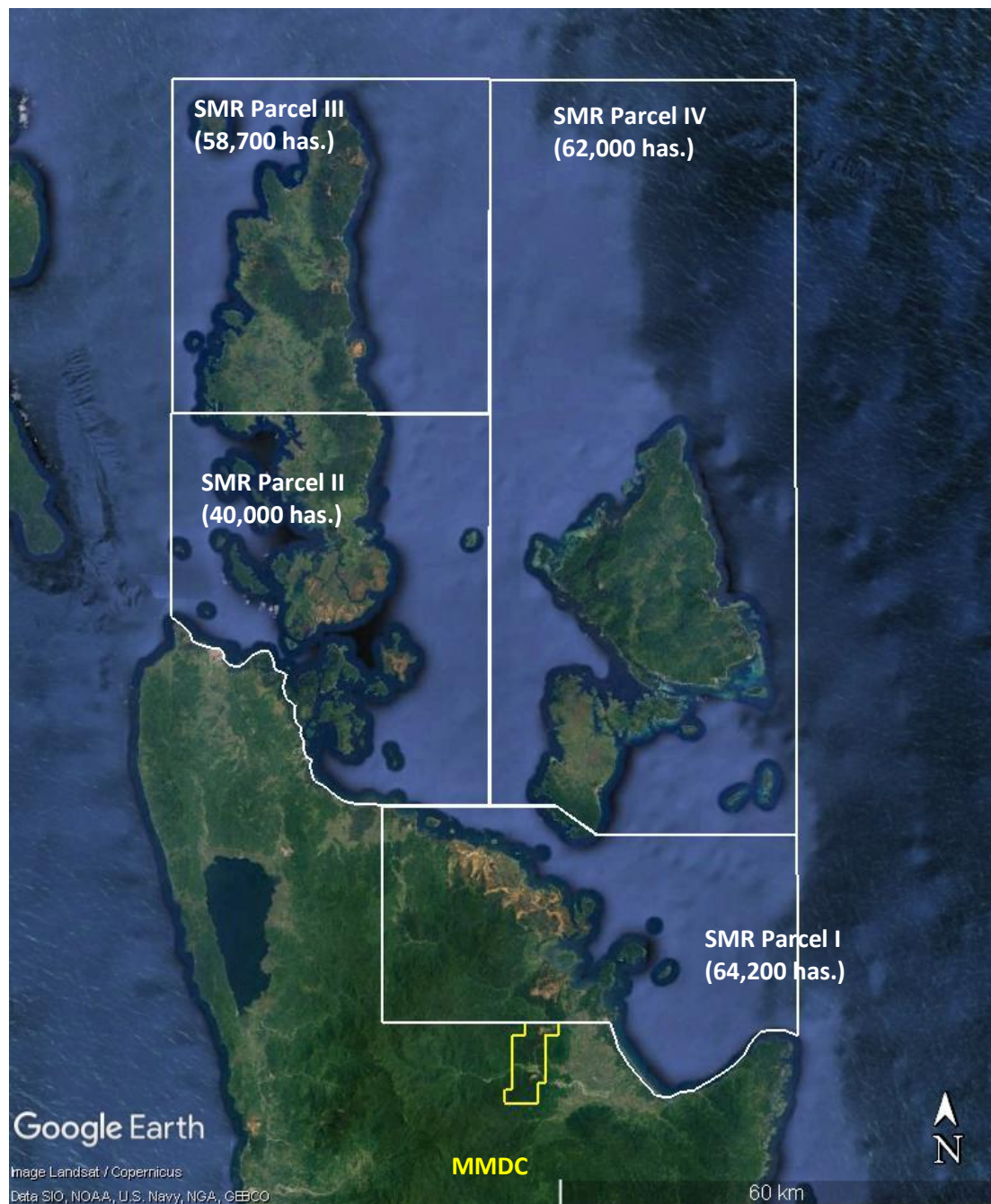


Figure 5-1. Surigao Mineral Reservation.

5.1 History of previous work

In the 1950s, the potential of northern Mindanao area for nickeliferous laterite was first recognized when the Bureau of Mines delineated areas with laterite in the Surigao Peninsula. Several companies had taken interest in the property including Surigao Nickel Mining and Industrial Corporation which entered in a joint venture with Marcopper Mining Corporation in the 1970s.

In 1991, Ventura Timber Corporation engaged Geomin Management Corporation to explore the area which was followed by Queensland Nickel Incorporated and Hinatuan Mining Corporation in 1992. Table 5-1 summarizes the previous exploration works undertaken in the tenement area.

Table 5-1. Summary of previous exploration work.

Period	Company/Group	Activity
1970	Marcopper Mining Corp./ Surigao Nickel Mining and Industrial Corp.	Auger drilling covering 1,300 hectares
1991	Geomin Management Corporation	Auger drilling and test pitting in Sipangpang (Area 1) and Cabangahan (Area 2)
1992	Hinatuan Mining Corporation	Mechanized drilling covering 25 has. in Cabangahan
1994	Ventura Timber Corporation	Auger drilling and test pitting covering approximately 1,500 has.
2000	QNI Philippines	Auger drilling covering 400 has.
2009	CP Carlo A. Arcilla/ Geosciences Foundation, Inc.	Mechanized drilling in Cabangahan area; prepared CP Technical Report on the mineral resource estimates
2009-2012	MMDC	Mechanized drilling in Pili, Sipangpang and Cabangahan
2012	CP Carlo A. Arcilla/ UP NIGS Teaching Staff and Geology students	Prepared a geologic report for MMDC
	CP Radegundo S. de Luna	Prepared the CP Technical Report on updated Mineral Resource as of end of 2012
2013	MMDC	Mechanized drilling in Pili, Sipangpang and Cabangahan
2014	CP Radegundo S. de Luna	Prepared the CP Technical Report on updated Mineral Resource as of end of 2013
	MMDC	Mechanized drilling in Cabangahan and Sipangpang
2015	CP Radegundo S. de Luna	Prepared the CP Technical Report on updated Mineral Resource as of end of 2014
	MMDC	Exploration drilling in Cabangahan; development drilling to upgrade resources
2016	CP Radegundo S. de Luna	Prepared the CP Technical Report on updated Mineral Resource as of end of 2015
	MMDC	Development drilling in Cabangahan to upgrade mineral resources
2017	CP Radegundo S. de Luna	Prepared the CP Technical Report on updated Mineral Resource as of end of 2016
	MMDC	Mechanized drilling in Cabangahan and Sipangpang
2018	CP Tomas D. Malihan	Prepared the CP Technical Report on updated Mineral Resource as of Dec. 31, 2017
	MMDC	In-pit geologic mapping; development drilling in Cabangahan and Sipangpang; confirmatory drillign in Cabangahan

5.2 Essential work done by previous workers

The primary means of exploration in the tenement area was initially by auger drilling and test pitting. Exploration for saprolite began in 1992 when Hinatuan Mining Corporation used mechanized drill machine to collect samples from several random locations. This saprolite drilling program identified a 120-hectare mineralized area in Cabangahan, which was referred then as “Area 2”. Results of this drilling program became the basis for the PMRC-compliant Technical Report by CP Carlo A. Arcilla in 2009 (revised 2010).

The delineation of Area 2 prompted a systematic drilling program from 2009 to 2012. Simultaneously, mechanized drilling was also conducted in the adjoining areas of Sipangpang and Pili, covering an additional 1,395 hectares. This drilling campaign yielded 892 drill holes and 15,159 samples which constitute the basis for an updated PMRC-compliant Technical Report by CP Carlo A. Arcilla in the early part of 2012.

Yearly systematic mechanized drilling program has been being conducted by MMDC from 2013 to 2018 (Table 5-2). The purpose of the annual drilling campaign is to block additional mineral resource and upgrade existing Indicated and Inferred mineral resource to Measured and Indicated.

Table 5-2. MMDC drilling accomplishments.

Period/ Year	Cabangahan			Sipangpang			Pili			TOTAL		
	DHs	Samples	Depth	DHs	Samples	Depth	DHs	Samples	Depth	DHs	Samples	Depth
2009-2012	1,009	17,080	17,095.88	231	3,088	3,091.30	49	107	1,079.80	1,289	20,275	21,266.98
2013	21	348	347.92	9	94	91.60	265	2,527	2,515.88	295	2,969	2,955.40
2014	147	2,030	2,032.39	120	802	798.84	0	0	0.00	267	2,832	2,831.23
2015	887	14,102	14,101.16	0	0	0.00	0	0	0.00	887	14,102	14,101.16
2016	588	9,801	9,801.12	0	0	0.00	0	0	0.00	588	9,801	9,801.12
2017	361	4,313	4,313.34	268	1,889	1,889.89	0	0	0.00	629	6,202	6,203.23
2018	255	2,034	1,992.03	257	2,615	2,614.51	0	0	0.00	512	4,649	4,606.54
Total	3,268	49,708	49,684	885	8,488	8,486.14	314	2,634	3,595.68	4,467	60,830	61,765.66

Confirmatory drilling was started in 2018 as requested by the Mine Engineering Department of MMDC. The purpose of the confirmatory drill holes is to confirm if the material and grade predicted in the block model occurs on the ground. Confirmatory drilling is conducted in areas where the Mine Operations will be producing subsequently. A total of 48 drill holes with a total depth of 517.05 m was completed by the Drilling Team for the year 2018.

5.3 Previous Resource Estimates

5.3.1 Estimates as of September 9, 2009 (CP Carlo A. Arcilla)

For the 120-hectare area previously identified by MMDC for its initial operating area, an evaluation of the drill hole intercepts yielded the Indicated mineral resources presented in Table 5-3. This became the basis for the Technical Report on Economic Assessment and Ore Reserve Estimation that was prepared by CP Mining Engineer Orlando S. Cruz dated March 31, 2010.

Table 5-3. Indicated Mineral Resources as of September 9, 2009.

Category	Density	Volume (m ³)	Tonnes (DMT)	Metal content (tonnes)	Metal grade (%)
Ni	1.2	10,590,000	12,708,000	195955.2	1.54
Fe				2483299	19.5
Ni	1.5	10,590,000	15,885,000	244944	1.54
Fe				3104124	19.5
Ni (Japan Grade)		1,440,000	2,160,000	48094.5	2.22

5.3.2 Estimates as of August 2010 (CP Carlo A. Arcilla)

CP Carlo A. Arcilla revised his 2009 resource estimates in consideration of additional drill hole data collected during the second phase drilling campaign. In the revised report, CP Arcilla reported a total of 3,867,000 dry metric tonnes of Indicated limonite resource at 1.0% Ni cut-off, averaging 1.3% Ni and 35.9% Fe, and 5,635,000 metric tonnes of Indicated saprolite resource at 1.0% Ni cut-off, averaging 1.4% Ni, within a 120-hectare portion of the 4,799-hectare tenement area.

5.3.3 Estimates as of September 2012 (CP Carlo A. Arcilla)

The estimates of Dr. Arcilla in 2012 discloses a total of 36,086,000 million tonnes of combined Measured and Indicated China ore, limonite and saprolite resources within 304 hectares out of the total 4,040 hectares of area with potential for laterite. This is based on 892 drill holes and 15,159 samples during the second phase of drilling campaign in 2009 to 2012. The 36 Million metric tonnes of Measured and Indicated laterite resources is broken down in Table 5-4.

Table 5-4. Laterite resource estimates by CP Arcilla (2012).

1. China ore resources (>47 percent iron, any nickel percent, bulk density 1.35)

Project Site	Resource Classification	Tonnage (MT) at 0.7% Ni cutoff	% Ni	% Fe
Area 2	Measured	176,000	1.07	48.66
Cabangahan	Indicated	220,000	0.94	48.91
Total Measured + Indicated		396,000	1.00	48.80
<i>Sipangpang</i>	<i>Inferred</i>	<i>2,358,000</i>	<i>0.86</i>	<i>49.39</i>

2. Limonite resources (≥30 percent iron and >0.25 percent nickel, bulk density 1.35)

Project Site	Resource Classification	Tonnage (MT) at 0.7% Ni cutoff	% Ni	% Fe
Area 2	Measured	2,203,000	1.27	28.86
Cabangahan	Indicated	5,534,000	1.15	26.28
Total Measured + Indicated		7,737,000	1.18	27.01
<i>Sipangpang</i>	<i>Inferred</i>	<i>9,710,000</i>	<i>0.82</i>	<i>31.97</i>

3. Saprolite resources (<30 percent iron and >0.25 percent nickel, bulk density 1.50)

Project Site	Resource Classification	Tonnage (MT) at 0.7% Ni cutoff	% Ni	% Fe
Area 2	Measured	8,917,000	1.26	13.93
Cabangahan	Indicated	19,036,000	1.14	16.36
Total Measured + Indicated		27,953,000	1.18	15.58
<i>Sipangpang</i>	<i>Inferred</i>	<i>9,771,000</i>	<i>0.80</i>	<i>27.20</i>

The China ore in the table refers to a sub-category of limonite, distinguished by its exceptionally high iron grade (> 47 percent), regardless of nickel content.

Estimation was done using ordinary kriging method in GEMS software. Search ellipsoids used in grade interpolation were 400m x 400m x 6m for Sipangpang, 150m x 150m x 3m for Cabangahan, and 50m x 50m x 3m for Area 2, the dimensions based on the drill spacing in each project site, where in Sipangpang, the drill spacing is 200m x 200m, in Cabangahan is 100m x 100m, and in Area 2 is 25m x 25m.

5.3.4 Estimates as of December 31, 2012 (CP Radegundo S. de Luna)

On December 2012, MMDC requested CP Radegundo S. de Luna to update the CP Technical Report of MMDC based on the results of the second phase drilling campaign carried out by MMDC from 2010 to 2012. A total of 1,289 drill holes with an aggregate depth of 21,266.98 m have been drilled during the drill campaign. Cut-off grade used for saprolite estimation is ≥1.5% Ni and <20% Fe. While for limonite, cut-off grade used was ≥0.7% NI and ≥20% Fe.

Resources were classified purely as a function of drilling density. Resource estimation used is the manual polygon method in which the classification guidelines applied are consistent with the CIM or JORC classification standards, to wit:

Table 5-5. Resource classification guidelines (de Luna, 2013).

Resource Classification	Limonite	Saprolite
Measured	50m x 50m, or less	25m x 25m, or less
Indicated	100m x 100m, or less	50m x 50m, or less
Inferred	up to 300m x 300m	up to 300m x 300m

Table 5-6. MMDC Mineral Resource as of December 2012 (de Luna, 2013).

Area	Class	Type	Tonnes		%Ni	%Fe	Ni Tonnes	
			(Wet)	(Dry)				
Cabangahan	Measured	Saprolite	2,400,000	1,580,000	1.91	11.77	30,152	
		Limonite	2,634,000	1,637,000	1.24	42.36	20,367	
		Total/Ave.	5,034,000	3,217,000	1.57	27.33	50,519	
	Indicated	Saprolite	482,000	347,000	1.88	12.00	6,524	
		Limonite	12,512,000	7,758,000	1.06	44.61	82,299	
		Total/Ave.	12,994,000	8,105,000	1.47	28.31	88,822	
	Measured and Indicated			18,028,000	11,322,000	1.52	27.82	139,341
	Inferred	Saprolite	4,483,000	2,909,000	1.73	13.08	50,343	
		Limonite	4,699,000	2,914,000	1.08	46.64	31,561	
		Total/Ave.	9,182,000	5,823,000	1.41	29.86	81,905	
Sipangpang	Indicated	Saprolite	0	0	0.00	0.00	0	
		Limonite	839,000	520,000	0.94	49.18	4,874	
		Total/Ave.	839,000	520,000	0.94	49.18	4,874	
	Inferred	Saprolite	0	0	0.00	0.00	0	
Total/Ave.		9,770,000	6,058,000	1.01	47.49	60,958		
Pili	Inferred	Saprolite	0	0	0.00	0.00	0	
		Limonite	7,493,000	6,058,000	0.95	49.35	57,661	
		Total/Ave.	7,493,000	6,058,000	0.95	49.35	57,661	
Total	Measured	Saprolite	2,401,000	1,580,000	1.91	11.77	30,152	
		Limonite	2,640,000	1,637,000	1.24	42.36	20,367	
		Total/Ave.	5,041,000	3,217,000	1.58	27.07	50,519	
	Indicated	Saprolite	482,000	347,000	1.88	12.00	6,524	
		Limonite	13,352,000	8,278,000	1.05	44.90	87,173	
		Total/Ave.	13,834,000	8,625,000	1.47	28.45	93,696	
	Measured and Indicated			18,875,000	11,842,000	1.52	27.76	144,215
	Inferred	Saprolite	4,484,000	2,909,000	1.73	13.08	50,343	
		Limonite	21,962,000	15,029,000	1.00	47.93	150,181	
		Total/Ave.	26,446,000	17,938,000	1.37	30.58	200,524	
Measured + Indicated + Inferred contained nickel in tonnes							344,739	

5.3.5 Estimates as of December 31, 2013 (CP Radegundo S. de Luna)

The March 2014 Technical Report prepared by CP R. de Luna discloses the updated Measured, Indicated and Inferred Mineral Resource estimated by means of polygon method as of December 2013. Resource estimation method used is still manual polygon method.

Table 5-7. MMDC Mineral Resource as of December 2013 (de Luna, 2014).

Area	Class	Type	Tonnes (Wet)	Tonnes (Dry)	% Ni	% Fe	Ni Tonnes	
Cabangahan	Measured	Saprolite	2,459,446	1,612,098	1.91	12.04	30,830	
		Limonite	2,158,254	1,512,766	1.16	43.36	17,499	
		Total/Ave.	4,617,700	3,124,864	1.55	27.20	48,330	
	Indicated	Saprolite	468,289	335,851	1.87	12.10	6,281	
		Limonite	16,092,900	9,977,598	0.97	44.65	96,325	
		Total/Ave.	16,561,188	10,313,449	0.99	43.59	102,607	
	Measured and Indicated			21,178,889	13,438,313	1.12	39.78	150,936
	Inferred	Saprolite	3,304,821	2,167,646	1.72	13.07	37,228	
		Limonite	0	0	-	-	-	
		Total/Ave.	3,304,821	2,167,646	1.72	13.07	37,228	
	Sipangpang	Measured	Saprolite	0	0	-	-	-
			Limonite	2,367,200	1,467,664	0.75	48.93	10,936
Total/Ave.			2,367,200	1,467,664	0.75	48.93	10,936	
Indicated		Saprolite	0	0	-	-	-	
		Limonite	21,495,251	13,327,056	0.70	47.49	92,685	
		Total/Ave.	21,495,251	13,327,056	0.70	47.49	92,685	
Measured and Indicated			23,862,451	14,794,720	0.70	47.63	103,620	
Pili		Measured	Saprolite	0	0	-	-	-
			Limonite	4,789,415	3,071,731	0.83	49.79	25,424
			Total/Ave.	4,789,415	3,071,731	0.83	49.79	25,424
		Indicated	Saprolite	0	0	-	-	-
			Limonite	4,105,778	2,668,756	0.86	49.42	22,987
	Total/Ave.		4,105,778	2,668,756	0.86	49.42	22,987	
	Measured and Indicated			8,895,193	5,740,487	0.84	49.62	48,411
	Total	Measured	Saprolite	2,459,446	1,612,098	1.91	12.04	30,830
			Limonite	9,314,870	6,052,161	0.89	47.97	53,859
			Total/Ave.	11,774,315	7,664,259	1.10	40.41	84,689
		Indicated	Saprolite	468,289	335,851	1.87	12.10	6,281
			Limonite	41,693,929	25,973,409	0.82	46.60	211,997
Total/Ave.			42,162,218	26,309,260	0.83	46.16	218,279	
Measured and Indicated			53,936,533	33,973,520	0.89	44.86	302,968	
Inferred		Saprolite	3,304,821	2,167,646	1.72	13.07	37,228	
		Limonite	0	0	-	-	-	
		Total/Ave.	3,304,821	2,167,646	1.72	13.07	37,228	
Measured + Indicated + Inferred contained nickel in tonnes							340,196	

Several factors contributed to the huge increase in the estimated Measured and Indicated Resource from end of 2012 to end of 2013:

1. Upgrade of Pili and Sipangpang Inferred Mineral Resource to Indicated Mineral Resource due to increase in the level of confidence in the Pili Limonite Resource as demonstrated by the positive result in Pili mine operations
2. Adjusted nickel cut-off grade for High Iron Limonite, from 0.7% Ni to 0.1% Ni, due to recent development in economic factors
3. Adjusted density from 1.11 to 1.16 resulting from studies conducted on Pili limonite resource
4. Additional in-fill drilling at 100-m, 50-m and 25-m interval in Sipangpang, Pili and Cabangahan

5.3.6 Estimates as of December 31, 2014 (CP Radegundo S. de Luna)

On March 2015, CP de Luna prepared the Technical Report for the updated mineral resource estimates of MMDC as of December 31, 2014. Estimation methodology used is still manual polygon method. The report considers additional drill hole data collected during its 2014 drilling campaign which consists of 267 drill holes and 2,832 samples from Cabangahan and Sipangpang.

After the 2014 mining season, there were only about 51.7 million WMT remaining resource. However, about 13.7 million WMT of additional resources were blocked due to the drilling activities in Sipangpang and Cabangahan. This resulted to an increase in the remaining mineral resource from 51.7 million WMT to 65.4 million WMT (Table 5-8).

Table 5-8. MMDC Mineral Resource as of December 31, 2014 (de Luna, 2015).

Area	Class	Type	WMT	DMT	% Ni	% Fe	Ni Tonnes
Cabangahan	Measured + Indicated	Sap III	2,713,000	1,773,000	1.96	12.26	35,000
		Sap IV	496,000	329,000	1.54	10.51	5,000
		Sub-total/Ave.	3,209,000	2,102,000	1.90	11.98	40,000
		Lim low iron	8,414,000	5,217,000	1.21	31.51	63,000
		Lim high iron	13,203,000	8,186,000	0.82	49.48	67,000
		Sub-total/Ave.	21,617,000	13,403,000	0.97	42.48	130,000
		Measured and Indicated	24,826,000	15,505,000	1.10	38.35	170,000
	Inferred	Saprolite	1,524,000	967,000	1.77	14.35	17,000
		Limonite	753,000	471,000	1.54	13.82	7,000
		Sub-total/Ave.	2,277,000	1,438,000	1.69	14.18	24,000
Pili	Measured + Indicated	Sap III	-	-	-	-	-
		Sap IV	-	-	-	-	-
		Sub-total/Ave.	-	-	-	-	-
		Lim low iron	353,000	224,000	1.35	34.40	3,000
		Lim high iron	7,704,000	4,894,000	0.84	49.92	41,000
		Sub-total/Ave.	8,057,000	5,119,000	0.81	47.73	44,000
	Measured and Indicated	8,057,000	5,119,000	0.81	47.73	44,000	
Sipangpang	Measured + Indicated	Sap III	-	-	-	-	-
		Sap IV	-	-	-	-	-
		Sub-total/Ave.	-	-	-	-	-
		Lim low iron	4,393,000	2,723,000	1.01	32.98	27,000
		Lim high iron	28,090,000	17,416,000	0.69	49.83	120,000
		Sub-total/Ave.	32,482,000	20,139,000	0.69	49.83	147,000
	Measured and Indicated	32,482,000	20,139,000	0.69	49.83	147,000	
Total	Measured + Indicated	Sap III	2,713,000	1,773,000	1.96	12.26	35,000
		Sap IV	496,000	329,000	1.54	10.51	5,000
		Sub-total/Ave.	3,209,000	2,102,000	1.90	11.98	40,000
		Lim low iron	13,160,000	8,165,000	1.14	32.08	93,000
		Lim high iron	48,997,000	30,496,000	0.75	49.75	228,000
		Sub-total/Ave.	62,157,000	38,660,000	0.83	46.02	322,000
		Measured and Indicated	65,366,000	40,762,000	0.89	44.26	361,000
	Inferred	Saprolite	1,524,000	967,000	1.77	14.35	17,000
		Limonite	753,000	471,000	1.54	13.82	7,000
		Sub-total/Ave.	2,277,000	1,438,000	1.69	14.18	24,000
Measured + Indicated + Inferred contained nickel in tonnes							386,000

5.3.7 Estimates as of December 31, 2015 (CP Radegundo S. de Luna)

MMDC continuously implemented development drilling simultaneous to the 2015 mining season. A total of 278 holes were drilled in Cabangahan from March to December 2015 with a total combined depth of 4,340.58 m at 25-m drilling interval.

The 2015 drilling program resulted to an increase in the remaining mineral resource after mining season from 62.34 million WMT to 63.15 million WMT (Table 5-9).

Table 5-9. MMDC Mineral Resource as of December 31, 2015 (de Luna, 2016).

Area	Category	Ore Class	WMT	DMT	%Ni	%Fe	Ni Tonnes
Cabangahan	Measured + Indicated	Sap III	2,522,352	1,644,806	1.93	12.30	31,716
		Sap IV	591,383	388,604	1.54	11.02	5,999
		Sub-Total/Ave.	3,113,735	2,033,410	1.85	12.05	37,716
		Lim low iron	8,464,473	5,247,973	1.21	31.59	63,430
		Lim high iron	13,226,887	8,200,670	0.82	49.46	67,388
		Sub-Total/Ave.	21,691,360	13,448,643	0.97	42.49	130,818
		TOTAL	24,805,096	15,482,053	1.09	38.49	168,534
	Inferred	Saprolite	2,063,030	1,288,280	1.69	14.69	21,804
		Limonite	-	-	-	-	-
		Sub-total	2,063,030	1,288,280	1.69	14.69	21,804
Pili	Measured + Indicated	Sap III	-	-	-	-	-
		Sap IV	-	-	-	-	-
		Sub-Total/Ave.	-	-	-	-	-
		Lim low iron	321,421	204,008	1.35	34.39	2,758
		Lim high iron	5,540,674	3,523,067	0.84	49.93	29,703
		Sub-Total/Ave.	5,862,095	3,727,075	0.87	49.08	32,461
	TOTAL	5,862,095	3,727,075	0.87	49.08	32,461	
Sipangpang	Measured + Indicated	Sap III	-	-	-	-	-
		Sap IV	-	-	-	-	-
		Sub-Total/Ave.	-	-	-	-	-
		Limonite Low Iron	4,392,664	2,723,451	1.01	32.98	27,371
		Limonite High Iron	28,089,694	17,415,610	0.69	49.83	119,633
		Sub-Total/Ave.	32,482,358	20,139,062	0.73	47.55	147,005
	Total/Ave.	32,482,358	20,139,062	0.73	47.55	147,005	
TOTAL	Measured + Indicated	Sap III	2,522,352	1,644,806	1.93	12.30	31,716
		Sap IV	591,383	388,604	1.54	11.02	5,999
		Sub-Total/Ave.	3,113,735	2,033,410	1.85	12.05	37,716
		Lim low iron	13,178,558	8,175,433	1.14	32.12	93,560
		Lim high iron	46,857,255	29,139,347	0.74	49.74	216,724
		Sub-Total/Ave.	60,035,813	37,314,780	0.83	45.88	310,284
		Measured and Indicated	63,149,548	39,348,189	0.88	44.13	348,000
	Inferred	Saprolite	2,063,030	1,288,280	1.69	14.69	21,804
		Limonite	-	-	-	-	-
		Sub-Total/Ave.	2,063,030	1,288,280	1.69	14.69	21,804

5.3.8 Estimates as of December 31, 2016 (CP Radegundo S. de Luna)

A total of 558 holes were drilled from March to December 2016 simultaneous to the 2016 mining season of MMDC. Drilling interval was at 50, 25 and 12.5 meters. Total combined depth is 9,801.12 m. Results of the updated mineral resource estimation is presented in the March 2017 Technical Report prepared by CP de Luna.

The 2016 development and exploration drilling program as well as adjustment to the cut-off grades used in resource estimation resulted to an increase in the remaining

mineral resource (inclusive of ore reserve) as of December 31, 2016 from 63.15 million WMT to 66.35 million WMT Measured and Indicated resource (Table 5-10).

Table 5-10. MMDC Mineral Resource as of December 31, 2016 (de Luna, 2017).

Ore Type	Category	% Ni cut-off	% Fe cut-off	Tonnage (wmt)	% Ni	% Fe
Saprolite High Nickel	Measured and Indicated	≥ 1.6	< 20	3,069,369	1.89	12.79
Saprolite Low Nickel	Measured and Indicated	1.5 - 1.6	< 20	5,388,523	1.28	12.89
Sub-total Measured and Indicated Saprolite Resource				8,457,892	1.50	12.85
Limonite High Iron	Measured and Indicated	≥ 0.6	≥ 45	44,103,092	0.76	49.56
Limonite Low Iron	Measured and Indicated	≥ 0.7	20 - 45	13,784,262	1.17	31.56
Sub-total Measured and Indicated Saprolite Resource				57,887,353	0.86	45.27
Total Measured and Indicated Limonite and Saprolite Resource				66,345,245	0.94	41.14
Saprolite High Nickel	Inferred	≥ 1.6	< 20	625,774	1.71	14.68
Saprolite Low Nickel	Inferred	1.5 - 1.6	< 20	6,841,070	1.22	21.07
Sub-total Measured and Indicated Saprolite Resource				7,466,844	1.26	20.53
Limonite High Iron	Inferred	≥ 0.6	≥ 45	0	0.00	0.00
Limonite Low Iron	Inferred	≥ 0.7	20 - 45	0	0.00	0.00
Sub-total Measured and Indicated Saprolite Resource				0	0.00	0.00
Total Inferred Limonite and Saprolite Resource				7,466,844	1.26	20.53

5.3.9 Estimates as of December 31, 2017 (CP Tomas D. Malihan)

The Technical Report for the updated mineral resource estimates as of December 31, 2017 was prepared by the Geology and Exploration (now Resource Development and Exploration) technical personnel and was reviewed and certified by CP Tomas D. Malihan on March 2018.

For 2017, a total of 629 holes were drilled from March to November 2017 with a total combined depth of 6,203.23 m. Average depth drilled in Cabangahan was 11.98 m and 7.05 m in Sipangpang. Drilling interval was at 50 m. The exploration procedures adopted in the 2017 drilling campaign followed the usual standard operating procedure observed in the previous years with the usual emphasis in the standard drilling protocol such as drill hole location survey, handling of cores retrieved from drill holes, core logging, sampling, sample processing and analysis, QA/QC and sample security.

Manual Polygon method was used in processing the consolidated drill hole data from 2009 to 2017. The Ni and Fe cut-off grades that were used in 2016 were applied in estimating the remaining resource of MMDC as of end of 2017. The cut-off grades for limonite and saprolite were adjusted to include low-nickel saprolite due to the newly developed market for low grade saprolite ore.

Table 5-11. MMDC Mineral Resource as of December 31, 2017 (Malihan, 2018).

Area	Material	% Ni cut-off	% Fe cut-off	WMT	DMT	% Ni	% Fe	Ni Tonnes
Measured and Indicated Resource as of Dec. 31, 2017								
CABANGAHAN	Saprolite High Nickel	≥ 1.6	< 20	2,323,000	1,487,000	1.86	13.29	28,000
	Saprolite Low Nickel	1.0 - 1.6	< 20	5,783,000	4,014,000	1.27	13.55	51,000
	Sub-total/Ave.			8,106,000	5,501,000	1.44	13.48	79,000
	Limonite High Iron	≥ 0.5	≥ 45	15,528,000	9,627,000	0.82	48.89	79,000
	Limonite Low iron	≥ 0.7	20 - 45	8,246,000	5,112,000	1.23	31.23	63,000
	Sub-total/Ave.			23,774,000	14,739,000	0.96	42.76	142,000
TOTAL/AVE.			31,880,000	20,240,000	1.08	35.32	221,000	
SIPANGPANG	Saprolite High Nickel	≥ 1.6	< 20	-	-	-	-	-
	Saprolite Low Nickel	1.0 - 1.6	< 20	-	-	-	-	-
	Sub-total/Ave.			-	-	-	-	-
	Limonite High Iron	≥ 0.5	≥ 45	26,002,000	16,121,000	0.71	49.67	114,000
	Limonite Low iron	≥ 0.7	20 - 45	3,789,000	2,349,000	1.06	32.70	25,000
	Sub-total/Ave.			29,791,000	18,470,000	0.75	47.51	139,000
TOTAL/AVE.			29,791,000	18,470,000	0.75	47.51	139,000	
PILI	Saprolite High Nickel	≥ 1.6	< 20	-	-	-	-	-
	Saprolite Low Nickel	1.0 - 1.6	< 20	-	-	-	-	-
	Sub-total/Ave.			-	-	-	-	-
	Limonite High Iron	≥ 0.5	≥ 45	1,261,000	782,000	0.81	49.44	6,000
	Limonite Low iron	≥ 0.7	20 - 45	611,000	379,000	1.13	32.89	4,000
	Sub-total/Ave.			1,872,000	1,161,000	0.91	44.04	10,000
TOTAL/AVE.			1,872,000	1,161,000	0.91	44.04	10,000	
TOTAL	Saprolite High Nickel	≥ 1.6	< 20	2,323,000	1,487,000	1.86	13.29	28,000
	Saprolite Low Nickel	1.0 - 1.6	< 20	5,783,000	4,014,000	1.27	13.55	51,000
	Sub-total/Ave.			8,106,000	5,501,000	1.44	13.48	79,000
	Limonite High Iron	≥ 0.5	≥ 45	42,791,000	26,530,000	0.75	49.38	199,000
	Limonite Low iron	≥ 0.7	20 - 45	12,646,000	7,840,000	1.17	31.75	92,000
	Sub-total/Ave.			55,437,000	34,370,000	0.85	45.36	291,000
TOTAL/AVE.			63,543,000	39,871,000	0.92	41.29	370,000	
Inferred Resource as of Dec. 31, 2017								
CABANGAHAN	Saprolite High Nickel	≥ 1.6	< 20	584,000	362,000	1.71	14.38	6,000
	Saprolite Low Nickel	1.0 - 1.6	< 20	6,252,000	3,914,000	1.22	13.38	48,000
	Sub-total/Ave.			6,836,000	4,276,000	1.26	13.47	54,000
	Limonite High Iron	≥ 0.5	≥ 45	-	-	-	-	-
	Limonite Low iron	≥ 0.7	20 - 45	-	-	-	-	-
	Sub-total/Ave.			-	-	-	-	-
TOTAL/AVE.			6,836,000	4,276,000	1.26	13.47	54,000	

6.0 HISTORY OF PRODUCTION

6.1 Production history of district and area, if any

CARAGA Region hosts several mining projects producing various mineral commodities particularly gold, copper, chrome, nickel, iron and limestone for concrete cement production. It is located in the northeastern tip of Mindanao Island and located in the eastern seaboard of the Philippines. With its geographic location facing the Pacific Ocean, CARAGA is prone to various weather conditions and geologic conditions such as typhoons, tsunami, surges and earthquakes.

The nickel resources of the region are in the form of nickeliferous laterite derived from the physical and chemical weathering of ultramafic rocks. Nickel mines in the CARAGA Region are listed in Table 6-1.

Table 6-1. Nickel mines in CARAGA Region.

Nickel Mining Company	Location
AAMPhil Natural Resources Exploration and Development Corporation	Claver, Surigao del Norte
Adnama Mining Resources, Inc.	Urbiztondo, Claver, Surigao del Norte
Agata Mining Ventures, Inc.	Tubay, Cabadbaran, Agusan del Norte
Cagdianao Mining Corporation	Valencia, Cagdianao, Dinagat Islands
Carrascal Nickel Corporation	Carrascal, Surigao del Sur
Century Peak Corporation	Loreto, Dinagat Islands
CTP Construction and Mining Corporation/Adlay Mining Project	Adlay, Carrascal, Surigao del Sur
CTP Construction and Mining Corporation/Dahican Nickel Project	Dahican, Carrascal, Surigao del Sur
Hinatuan Mining Corporation	Talavera, Hinatuan Island, Surigao del Norte
Marcventures Mining and Development Corporatio	Cantilan and Carrascal, Surigao del Sur
Oriental Synergy Mining Corporation	Loreto, Dinagat Islands
Platinum Group Metals Corporation	Cagdianao, Claver, Surigao del Norte
SR Metals Inc.	Tubay, Cabadbaran, Agusan del Norte
Taganito Mining Corporation	Hayanggabon, Claver, Surigao del Norte
VTP Mining and Construction Inc.	Adlay, Carrascal, Surigao del Sur
Wellex Mining Corporation	Dinagat Islands

MMDC neighboring mining companies include Carrascal Nickel Corporation (CNC), CTP Construction and Mining Corporation (CTP) and Platinum Group Metals Corporation (PGMC). PGMC started its mining operations in 2007 while CNC and CTP started around the same time as MMDC which is around 2009 to 2010.

6.2 Areas mined within the tenement area

In 2010, mine development started in the initial 120-hectare area in Cabangahan covered by a Partial DMPF and an approved ECC for 1.5 million WMT annual tonnage. Mine production commenced in 2011 with the completion of MMDC's first shipment by the third quarter of 2011. Mining started in the northeastern part of the Cabangahan

mine area, moving southwestward as mining progressed. MMDC averaged 3 vessels of saprolite ore per year from 2011 to 2012 equivalent to about 1.3 million WMT of limonite and saprolite.

By April 2013, the amendment to MMDC's ECC was approved thereby granting the company permit to operate within the whole 4,799 hectares of the MPSA area. Due to subdued prices in saprolite ore and higher production costs, MMDC ceased its operations in Cabangahan and concentrated its mining activities in Pili area which is located nearer (about 12 km) to the causeway compared to 22 km distance from Cabangahan. For the year 2013, MMDC was able to extract from Pili area around 2.93 million WMT of limonite ore averaging 0.87% Ni and 49.71% Fe. In the same year, the company shipped out 50 vessels of limonite ore equivalent to about 2.8 million WMT averaging 0.84% Ni and 50.61% Fe.

Table 6-2. MMDC limonite and saprolite production.

Year	Limonite			Saprolite			Total		
	WMT	% Ni	% Fe	WMT	% Ni	% Fe	WMT	% Ni	% Fe
2010	37,800	*	*	0	*	*	37,800	*	*
2011	498,181	*	*	189,379	*	*	687,560	*	*
2012	401,181	*	*	157,170	*	*	558,351	*	*
2013	2,945,090	0.87	49.70	13,600	1.58	14.90	2,958,690	0.87	49.54
2014	1,343,797	0.91	49.50	241,870	1.50	15.80	1,585,668	1.00	44.36
2015	2,448,462	0.93	49.60	522,931	1.58	17.70	2,971,393	1.04	43.99
2016	1,793,701	0.88	49.60	774,629	1.55	19.60	2,568,330	1.08	40.55
2017	829,099	0.72	49.30	1,429,013	1.57	18.40	2,258,112	1.26	29.75
2018	359,057	0.69	50.10	678,079	1.62	20.00	1,037,136	1.30	30.42

*No data available

Production in Sipangpang mine area started in 2016 to supplement limonite ore requirement since high iron limonite in Pili mine area started to be depleted. In 2017, Pili mine area was declared as "mined out" considering that the remaining low-grade limonite ore in the area is not economically viable. During mid-2018, mining in Sipangpang was suspended due to global low market price of high iron limonite. About 350,000 WMT limonite ore was extracted from Sipangpang in 2018 before cessation.

The following figures presents the Materials Classification Guide charts that were used by MMDC in its mining operations over the years.

2014 MATERIAL CLASSIFICATION GUIDE

Ore Names	Beneficiated Ore			Pit Segregation				Dumping Area		
	Ore Class	Cut-off Grades		Ore Class	Cut-off Grades		FS Flagging		Horn Signal	
		% Ni	% Fe		% Ni	% Fe				
LFO	S-4	≥2.4	<20.0	S-4	≥2.4	<20.0	Green	4 Short	Cabangahan Mine Yards (10 trucks per pile, 10 increments)	
	S-3a	2.20-2.39	<20.0	S-3	2.00-2.39	<20.0	Red	3 Short		
	S-3b	2.00-2.19	<20.0							
LGSO	S-2	1.70-1.99	<20.0	S-2	1.70-1.99	<20.0	Yellow	2 Short		
	S-1a	1.60-1.69	<20.0	S-1	1.50-1.69	<20.0	Blue	1 Short		
	S-1b	1.50-1.59	<20.0							
HFO	L-4	≥2.00	≥20.0	L-4	≥2.00	≥20.0	Orange	4 Long		
LGHF	L-3	1.50-1.99	≥20.0	L-3	1.50-1.99	≥20.0	Brown	3 Long		
LIMO	L-2	0.80-1.49	20.0-44.9	L-2	0.80-1.49	20.0-44.9	Pink	2 Long		Cabangahan Stock Yard (30 trucks of 10 increments per sample)
	L1-A	0.80-1.49	45-46.99	L1-A	0.80-1.49	45-46.99	White	1 Long, 1 short		Cabangahan Stock Yard (30 trucks of 10 increments per sample)
	L1-B	0.80-1.49	47-47.99	L1-B	0.80-1.49	47-47.99	Blue and White	1 Long, 2 short		
	L1-C	0.80-0.99	≥48	L1-C	0.80-0.99	≥48	Red and White	1 Long, 3 short	Bon-ot Stock Yard (30 trucks of 10 increments per sample)	
	L1-D	≥1.00	≥48	L1-D	≥1.00	≥48	Yellow and White	1 Long, 4 short	Ave-Maria Stock Yard (30 trucks of 10 increments per sample)	
HFO	CRO-3	≥2.00								
LGHF	CRO-2	1.75-1.99								
	CRO-1	1.50-1.74								

Figure 6-1. 2014 Material Classification Guide used for operations in Pili and Cabangahan.

2015 Materials Classification Guide

Beneficiated Ore			PIT SEGREGATION				Dumping Area	
Ore Class	Cut-off Grades		Ore Class	Cut-off Grades		FS Flagging		Horn Signal
	% Ni	% Fe		% Ni	% Fe			
S-4	≥2.4	<20.0	S-4	≥2.4	<20.0	Green	4 Short	Cabangahan Mine Yard (12 trucks of 12 increments per sample)
S-3a	2.20-2.39	<20.0	S-3	2.00-2.39	<20.0	Red	3 Short	
S-3b	2.00-2.19	<20.0						
S-2	1.70-1.99	<20.0	S-2	1.70-1.99	<20.0	Yellow	2 Short	
S-1a	1.60-1.69	<20.0	S-1	1.50-1.69	<20.0	Blue	1 Short	
S-1b	1.50-1.59	<20.0						
S-1c	1.20-1.49	<20.0						
L-6	0.80-1.19	45-47.99	L-6	0.80-1.19	45-47.99	Brown and White	2 Long	Bon-ot Stock Yard (30 trucks of 10 increments per sample)
L-5	1.20-1.69	40-44.99	L-5	1.20-1.69	40-44.99	Pink	1 Long, 5 short	Cabangahan Mine Yard (12 trucks of 12 increments per sample)
L-4	1.20-1.69	20-39.99	L-4	1.20-1.69	20-39.99	White	1 Long, 4 short	Cabangahan Mine Yard (12 trucks of 12 increments per sample)
L-3	0.80-1.19	20-44.99	L-3	0.80-1.19	20-44.99	Blue and White	1 Long, 3 short	Bon-ot Stock Yard (30 trucks of 10 increments per sample)
L-2	1.20-1.69	45-48.99	L-2	1.20-1.69	45-48.99	Red and White	1 Long, 2 short	Cabangahan Mine Yard (12 trucks of 12 increments per sample)
L1-A	0.80-0.84	≥48.0	L1-A	0.80-0.84	≥48.0	Yellow and White	1 Long, 1 short	Bon-ot Stock Yard (30 trucks of 10 increments per sample)
L1-B	0.85-0.89	≥48.5	L1-B	0.85-0.89	≥48.5	Green and White	1 Long, 6 short	Bonot Stockyard (30 trucks of 10 increments per sample)
L1-C	0.90-0.99	≥49.0	L1-C	0.90-0.99	≥49.0	Red and Blue	2 Long, 1 short	Bon-ot Stock Yard (30 trucks of 10 increments per sample)
L1-D	≥1.0	≥49.0	L1-D	≥1.0	≥49.0	Brown and Yellow	2 Long, 2 short	Bonot Stockyard (30 trucks of 10 increments per sample)
CRO-3	≥2.00							
CRO-2	1.75-1.99							
CRO-1	1.50-1.74							

Figure 6-2. Material Classification Guide used for operations in Pili and Cabangahan.

2016-2017 Material Classification Guide

SAPROLITE					
ORE CLASS	CUT-OFF GRADES		FLAGGING		DUMPING AREA
	%Ni	%Fe			
1	≥1.7	<20.0	BLUE	PINK	BON-OT SY
2	1.5-1.69	<20.0	RED	PINK	BON-OT SY/CABANGAHAN SY
3	1.4-1.49	<20.0	GREEN	PINK	SIPANGPANG SY/BONOT SY
4	1.3-1.39	<20.0	YELLOW	PINK	SIPANGPANG SY
5	≥1.5	20.0-44.99	VIOLET	PINK	SIPANGPANG SY/BONOT SY
LGO	1.2-1.49	20.0-44.99	BROWN	PINK	WASTE DUMP 3
WASTE	≤1.29	<20.0	BLACK		WASTE DUMP 1-2

LIMONITE					
ORE CLASS	CUT-OFF GRADES		FLAGGING		DUMPING AREA
	%Ni	%Fe			
A	≥0.95	≥50	BLUE		BON-OT SY
B	0.90-0.94	≥49.0	RED		BON-OT SY
	≥0.95	49.0-49.99			
C	≥0.9	48.0-48.99	GREEN		BON-OT SY
D	0.8-0.89	≥49.0	VIOLET		BON-OT SY
E	0.6-0.79	≥49.0	YELLOW		WASTE DUMP PILI 1
LGO	0.6-1.19	45.0-47.99	BROWN		WASTE DUMP PILI 2
	0.6-0.89	48.0-48.99			
WASTE	<0.6	<45.0	BLACK		WASTE DUMP PILI 3

Figure 6-3. 2016 to 2017 Material Classification Guide used in the operations of Pili, Sipangpang and Cabangahan.

2018 - present Material Classification Guide

JANUARY-APRIL			APRIL-MAY			JUNE-JULY			JULY-PRESENT		
Ore Class	Cut-off Grade		Ore Class	Cut-off Grade		Ore Class	Cut-off Grade		Ore Class	Cut-off Grade	
	% Ni	% Fe		% Ni	% Fe		% Ni	% Fe		% Ni	% Fe
SPL1	>2	≤20	SA	1.9-2	Regardless of Iron	S1	>2	Regardless of Iron	S1	>2	Regardless of Iron
SPL2	1.8-1.99	≤20	SB	1.8		S2	1.76-1.99		S2	1.8-1.99	
S1	1.7-1.79	≤20	SC	1.7		S3	1.6-1.75		S3	1.66-1.79	
S2	1.5-1.69	≤20	SD	1.6		S4	1.45-1.59		S4	1.5-1.65	
S3	1.4-1.49	≤20	SE	1.5		S5	1.3-1.44		S5	1.35-1.49	
S4	1.3-1.39	≤20	SF	1.4		Waste	≤1.29		Waste	≤1.34	
S5	1.5-1.69	>20	SG	1.3							
SLGO	1.2-1.29	≤20	SH	1.2							
LOW	1.0-1.19	≤20	Waste	<1.2							

Figure 6-4. 2018 Material Classification Guide used in the operations in Sipangpang and Cabangahan. This will also be used in the 2019 mining operations in Cabangahan.

While the uncertainty and frequent changing of nickel prices all over the globe challenges the capability of MMDC to produce valuable nickel ore, MMDC's strategy for 2019 mining season is to concentrate on producing and shipping saprolite ore from Cabangahan mine area.

6.3 Mining Method

The mining method being used by MMDC is surface mining through *Contour Mining* method, a method which is applicable and feasible for shallow ore deposits and follows the contour or profile of the mineralized ore deposits, such as lateritic ore. MMDC mining method is briefly described as follows:

1. Clearing, grubbing and overburden stripping – involves clearing of vegetation, recovery of timber and other organic matter which will then be collected and

- hauled to an area assigned for composting. Topsoil or overburden will be removed and stockpiled in designated area for future use in rehabilitation.
2. Ore extraction – after removal of topsoil/overburden, benches are formed and sampled vertically (face sampling) at an interval of 3 m for saprolite or closer if necessary, and 5 m for limonite. Extraction at the benches will proceed once assay results of the face samples are available. The face of the bench where the sample was obtained is labelled with colored ribbons which shall serve as guide for the backhoe operator during excavation and segregation. Ore is excavated using backhoe with a bucket capacity of 0.8 to 1.0 cu.m. A standard 3-meter bench height is followed.
 3. Ore transportation – An 18-tonner dump truck is used for both ore and waste handling. Trucks are loaded with ore on the bench that is being mined by the backhoe excavator stationed on the bench above. An average of 10 swings is required to fill a truck. This includes dead swings or when boulders are removed.
 4. Ore sorting, sizing and stockpiling – Saprolite ore coming from the mine areas are transported to the stockyard for sorting and sizing. Saprolite ore are stockpiled according to its grade for blending and mixing purposes to meet buyer specifications and for sun drying to reduce moisture content. At most times, limonite ore are directly loaded to the barge and to the vessel if moisture is acceptable.
 5. Barge and ship loading – at acceptable moisture content and quality, ore from the stockpile area are transported using 18-tonner dump trucks to the causeway where it is loaded into barges which in turn transports the ore to a waiting vessel offshore.
 6. Progressive rehabilitation – once an area is declared as mined out, previously stockpiled overburden is used to reshape and prepare the area. Seedlings and grasses are planted and maintained periodically.

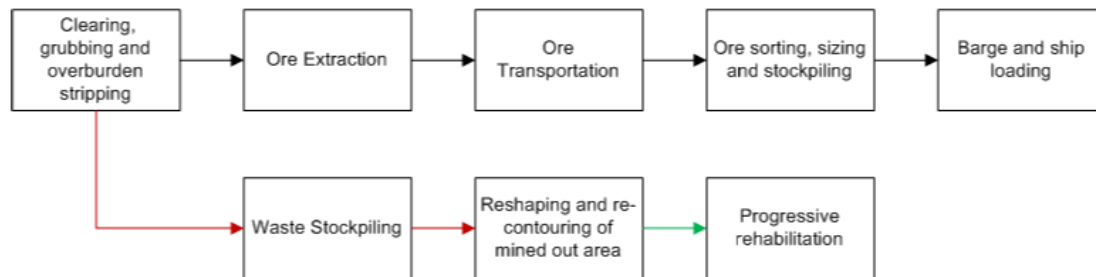


Figure 6-5. Contour mining process flow chart.



Figure 6-6. Loading of removed topsoil.



Figure 6-7. Loading of ore to 18-ton capacity dump trucks.



Figure 6-8. Ore stockpiled at Bon-ot Stock Yard area.



Figure 6-9. Loading of ore to LCT.



Figure 6-10. Reforestation of mined-out area (Pili mine area).

7.0 REGIONAL AND DISTRICT GEOLOGY

7.1 Regional Geologic Setting

The basement rocks in the district are basalts and slabs of the Dinagat Ophiolite and metamorphic rocks of the Cretaceous Sohoton Greenschist. The ophiolite consists of amphibolite, peridotite, pyroxenite, gabbro and dunite. They are regionally serpentinized and can be found along the Malimono Ridge and along the Northern Pacific Cordillera. These rocks were dated Cretaceous to Paleocene.

Overlying the basement rocks are calcareous conglomerates of the Upper Eocene Madanlog Formation in Surigao, and its equivalent terrigenous and calcareous sediments of the Nadanog Formation in Agusan. These formations are in turn overlain by the late Oligocene to Early Miocene Bacuag Formation. The Bacuag Formation consists of basaltic flow and breccia, limestone, limestone conglomerate, wackes, siltstone and muddy limestone.

Intruding the Bacuag Formation and other older formations is the Asiga Diorite named after the river where most outcrops of the intrusive are observed. The Early to Late Miocene Alipao Andesite also intrudes the Bacuag Formation in the vicinities of Alipao and in the Siana mine pit. The Bacuag Formation is overlain by the Lower to Middle Miocene Mabuhay Formation. The Middle Miocene coralline Timamana Limestone unconformably overlies the Bacuag and Mabuhay Formations.

Andesitic pyroclastic eruption and lava flows formed the Tugunan Formation during the Pliocene. Associated magmatism brought about the epithermal mineralization of the Surigao District and produced the andesites referred to as the Andesite Group by Santos et.al. (1962) and as the Andesite Series by Santos-Ynigo (1944). These were separated by MGB (2010) into Early to Late Pleistocene Ipil Andesite, Late Pliocene Bad-as Dacite and the Pleistocene Maniayao Andesite. Pleistocene deposits in the region consist of the Mainit Formation, Hinatigan Formation and Placer Conglomerate, all of which are dominated by conglomerates and sandstones.

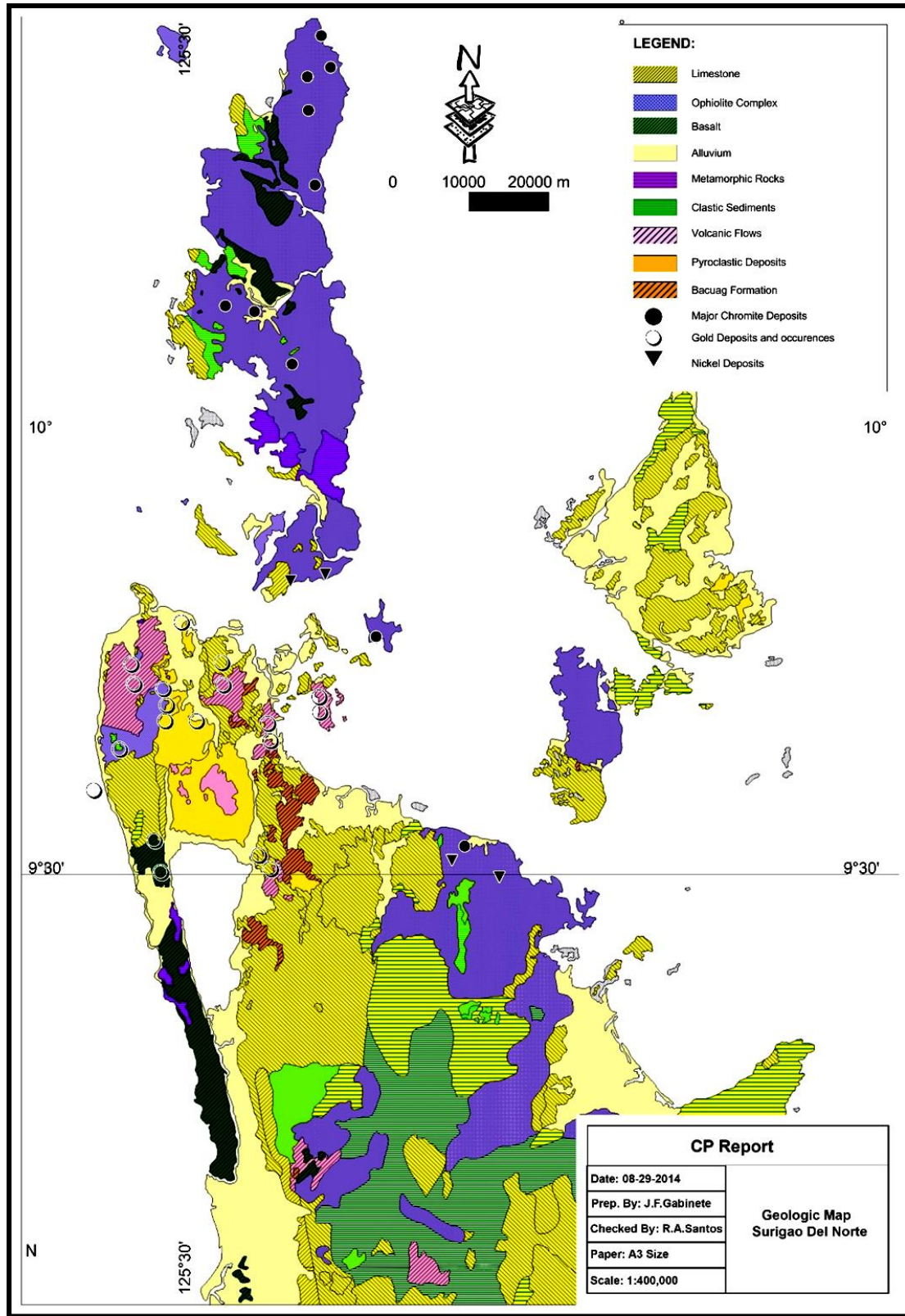


Figure 7-1. Regional geologic map of Surigao (Source: Santos, 2018).

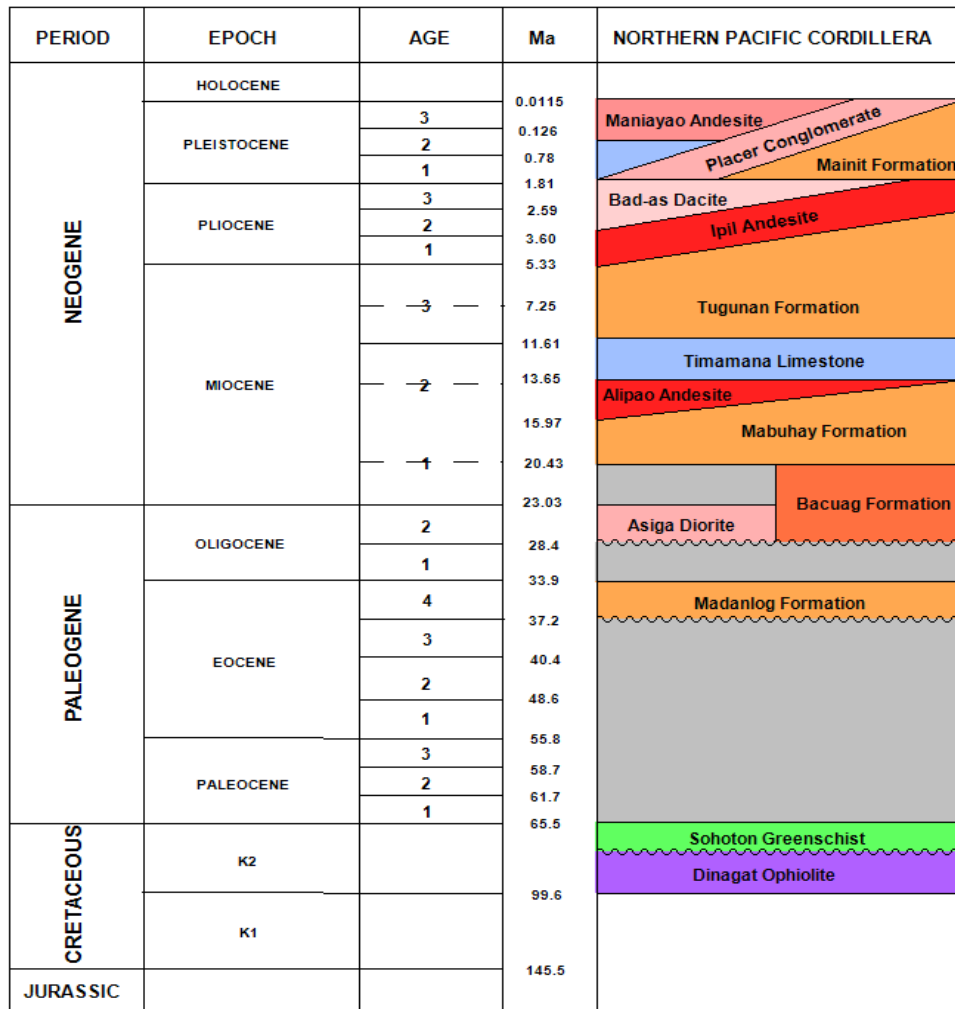


Figure 7-2. Northern Pacific Cordillera stratigraphic column.

7.2 Structural Geology

The principal tectonic element of the Philippine archipelago is the elongate Philippine Mobile Belt which is bound to the east and west by two major subduction zone systems and bisected along its north-south axis by the Philippine Fault.

The Philippine Fault and its associated faults play an important role in the mineralization of the Surigao District. The trace of the Philippine Fault in Surigao is marked by highly rectilinear NNW-SSE-trending Tubay Valley, Lake Mainit and Maniayao Volcano. These structures were formed by pull-apart mechanism associated with left-stepping left-lateral strike slip fault.

There is no indication however if the faults and folds observed in the area have significantly affected the laterite mineralization in the area. Minor effect of faulting would be the formation of cracks and fractures in the host ultramafic rocks that serve as conduit for water to seep through and as weak points for chemical weathering to start.

7.3 Mineralization location and general description

The nickel/iron deposits within the MMDC tenement area are in the form of laterite (limonite and saprolite) derived from the in-situ physical and chemical weathering of the underlying ultramafic rocks belonging to the Dinagat Ophiolite Complex.

Basically, laterites are residual soils that are rich in ferro-magnesian minerals, formed by chemical weathering with special ground-water conditions. Factors required for the development of nickel laterite include the following:

1. Parent rock with iron content – mafic and ultramafic rocks rich in ferromagnesian minerals are suitable for this. Among the ultramafic rocks, dunites and high-olivine peridotites are more likely to yield higher concentrations of nickel than pyroxenites and hornblendites.
2. Temperature – tropical climates where temperatures are generally higher than 20°C are ideal for laterite development. Most laterite deposits in the work occur either in present-day warm tropical environments or where presence of warm temperatures can be deduced during their time of formation.
3. High rainfall – rainfall is required to initiate chemical weathering and to remove dissolved solids in ground water. Varying amount of rainfall results to different types of lateritic soils. Less rainfall will cause poor “flushing” of soils in wet-dry climate wherein magnesia and silica in the form of smectite/nontronite clays are retained. On the other hand, the constant “flushing” of magnesia and silica in humid climate prevents formation of clays.
4. Slightly acidic waters – mineral solubility increases in water with lower pH levels than normal making slightly acidic water suitable in hastening the process of chemical weathering. This type of water is available in wet tropical climate through natural acid rain and through humic acid produced by decaying vegetation on the forest floor.
5. Strongly oxidizing environment – oxygen in the environment allows the conversion of divalent iron and divalent manganese to highly insoluble trivalent iron and trivalent and tetravalent manganese. The insolubility of these elements in this form causes residual concentrations.
6. Gentle topography – for the preservation of recently formed laterite, it is important that the topography must not be very steep nor extremely flat. Very steep land surfaces will lead to constant erosion of lateritic soil while extremely flat topography does not favor development of laterite soil due to poor “flushing”. Ideal topography for laterite formation is gently to moderately rolling terrain and plateaus.
7. Adequate time – the estimated duration to produce mature laterite with significant thickness and grade is about a few million years.

Limonite is the accumulation of the residual product of the upper oxidizing zone in the weathering profile. It is essentially made up of clay and other oxide minerals rich in iron. The lower reducing zone directly underlying the limonite is the saprolite, a secondary nickel-enriched zone made up of rocks and clay in silicate form. Laterites are surface and near surface deposits localized by topographic controls and favourable geologic structures.

The MMDC tenement comprises of three (3) laterite-covered areas, namely: Cabangahan, Sipangpang and Pili.

The typical laterite deposit in Cabangahan shows distinct color variation with depth: 1) a pale yellowish and light brown upper to near surface limonite, 2) a middle section of yellowish limonite and saprolite transition, and 3) a multi-colored bottom section of saprolite just before the fresh bedrock. The color described is the gross effect of several colors as viewed in its totality.

However, a closer examination of the laterite would reveal various shades of red, brown, orange, yellow and gray. They appear as alternating bands, streaks, oolites, lenses and mottled colors. Occasional chromite, magnetite and manganese specks are noted.

The laterite profile in Pili area consists mainly of limonite ore surrounded by nearly ubiquitous horizon of ferruginous concretions. Saprolite zone occurs as soft, foliated, earthy aggregates with no marketable ore grade content. Sipangpang has almost the same characteristics as Pili, such that it also lacks underlying high-nickel saprolite in its laterite profile.

8.0 MINERAL PROPERTY GEOLOGY

8.1 Geological work undertaken by the company in the property

Geologic mapping was conducted by geologists from MMDC Exploration Group in 2014. The activity included creek and road mapping. Outcrop sampling was done when necessary and hand specimens were collected for further reference.

Before the 2018 mining season, a more detailed geologic mapping was conducted along creeks surrounding the Cabangahan mine area. Lithologic units were identified and structure trends were recorded for reference. Grid mapping within the Cabangahan mine area was also conducted to delineate the extent of remaining limonite and saprolite material in the mine area. Results of the grid mapping were utilized in updating the Cabangahan database as well as for the preparation of level plans.

Upon cessation of mining activities in Sipangpang in June 2018, grid mapping was also conducted within its mine area to delineate extent of remaining limonite ore. Results of the grid mapping activity were used as basis in updating the Sipangpang database.

8.2 Rock types and their geological relationships

Based on the 2014 mapping, the MMDC tenement is covered by lateritic deposit derived from the in-situ physical and chemical weathering of the underlying ultramafic rocks. The geology of the project area could be described based on the five major rock units found in the area, namely: Quaternary Alluvium, Timamana Limestone, Alipao Andesite, Sohoton Greenschist and Dinagat Ophiolite Complex (Figure 8-1).

Quaternary Alluvium

This unit is made up of unconsolidated sand and gravel deposited by fluvial system along the valley floors. The alluvial materials consist of a mixture of all rock types eroded where the river system passes through. This unit can be observed along the flood plain of Carac-an River which is located between the Cabangahan and Sipangpang mine areas.

Timamana Limestone

Residual hills at the eastern peripheries of the project area are underlain by the thick Middle Miocene Timamana Limestone. It is composed of massive coralline limestone and may contain oolites, coral and shell fragments. The limestone unit caps the ultramafic unit with outcrops found in Sitio Pili, Barangay Panikian. This is located east of the Pili mine area.

Outcrops are generally cream to gray in color. Hand samples are also cream to gray color and composed of sand- to mud-sized calcareous sediments.

Alipao Andesite

The Alipao Andesite intrudes all older units and is assigned to a Middle Miocene age by the UNDP (1987). Outcrops were found west of Sipangpang area with some minor outcrop in the northwestern part of Cabangahan area.

Rock samples exhibit gray to greenish color with no observed manifestation of having undergone metamorphism. Texture is aphanitic to porphyritic with long amphibole phenocrysts in fine-grained matrix.

Sohoton Greenschist

The Sohoton Greenschist is composed of greenschist, phyllite and low-grade metamorphic sedimentary and volcanic rocks with marble interbeds. Phyllite and low-grade metamorphic rocks are distributed over the northwestern part of the tenement area, majority of which is located west of Pili area.

Dinagat Ophiolite Complex

The Dinagat Ophiolite Complex is composed of amphibolite, residual peridotite, cumulate peridotite, massive layered gabbro, sheeted dike complex and pillow basalts dated Cretaceous in age.

Serpentinized peridotite, pyroxenite and dunite are exposed along road cuts in Barangay Panikian and Barangay Cabangahan. Fresh rock samples are greenish black to black in color. Dunite is predominantly composed of olive-green grains of olivine. Pyroxene occurs as fine to coarse black crystals in peridotite and pyroxenite. During the creek mapping in Cabangahan, pyroxenite were observed to be intertonguing with dunite in some portion.

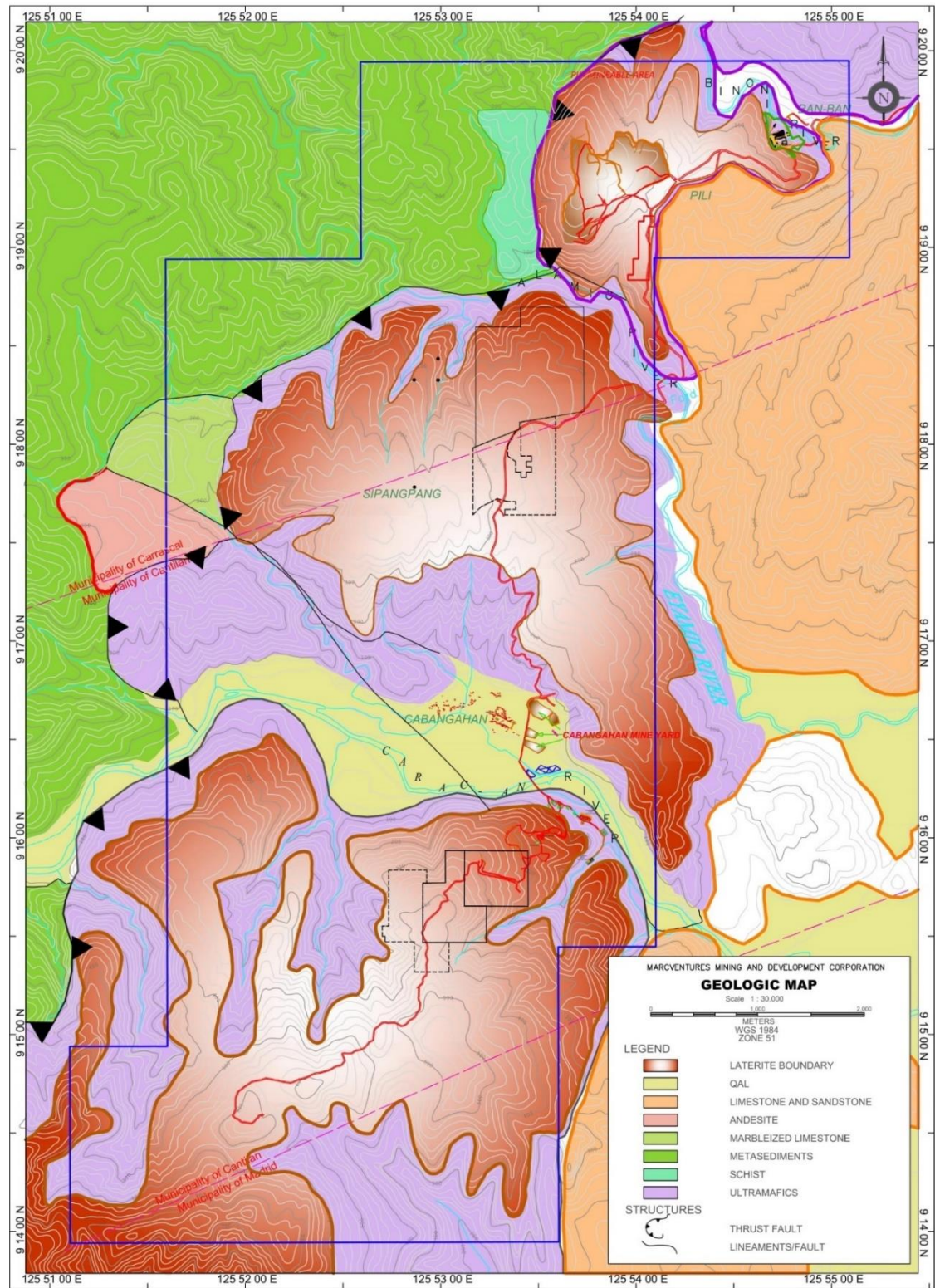


Figure 8-1. Geologic map of MMDC tenement area.

8.3 Description of various geological structures and their trends

The contact between the Dinagat Ophiolite and the Sohoton Greenschist is interpreted as a thrust which trend northeast-southwest. Minor northwest-southeast lineaments were also observed within the tenement. One of these lineaments follow the trend of Alamio River while another one is located within the Sipangpang area where the Alipao Andesite is inferred.

9.0 MINERALIZATION IN THE MINERAL PROPERTY

9.1 Overview of the mineralization

Nickel-iron deposits in the MMDC tenement area are in the form of laterite derived from the in-situ physical and chemical weathering of the underlying ultramafic rocks. The laterite profile within MMDC can be divided into limonite and saprolite. The limonite zone is the accumulation of the residual product of the upper oxidizing zone in the weathering profile. It is essentially made up of clay and other oxide minerals rich in iron. The lower reducing zone underlying the limonite is the saprolite, a secondary nickel enriched zone made up of rocks and clay in silicate form. They are surface and near surface deposits localized by topographic controls and, at times, geologic structures.

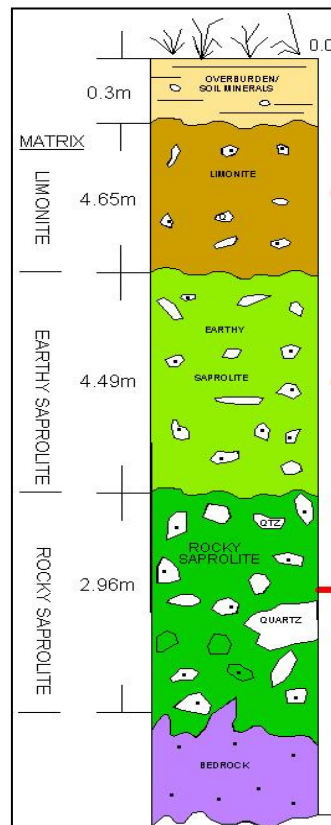


Figure 9-1. Typical laterite profile (Santos, 2018).

9.2 Laterite profile

The laterite within MMDC tenement area can be divided geologically into two distinct areas:

1. A Northern Area characterized by well-developed limonite and absence (thin) of economical saprolite. This type of laterite can be observed in the Pili and Sipangpang mine areas.

The Pili laterite is characterized by thick high-iron limonite which contains relatively high nickel. It was usual to encounter limonite in Pili with 0.9 to 1.0% Ni and 49 to 51% Fe. Thickness of ore-grade limonite in Pili ranged from 8 up to 12 m.

The laterite in Sipangpang is similar to that in Pili such that the limonite zone is well-developed but with uneconomical and very thin saprolite. The limonite in Sipangpang has high iron content (usually 49 to 50% Fe) but with lower nickel (0.6 to 0.75% Ni) compared to that in Pili. Sipangpang limonite is also thinner and ranges only from 4 to 8 m.

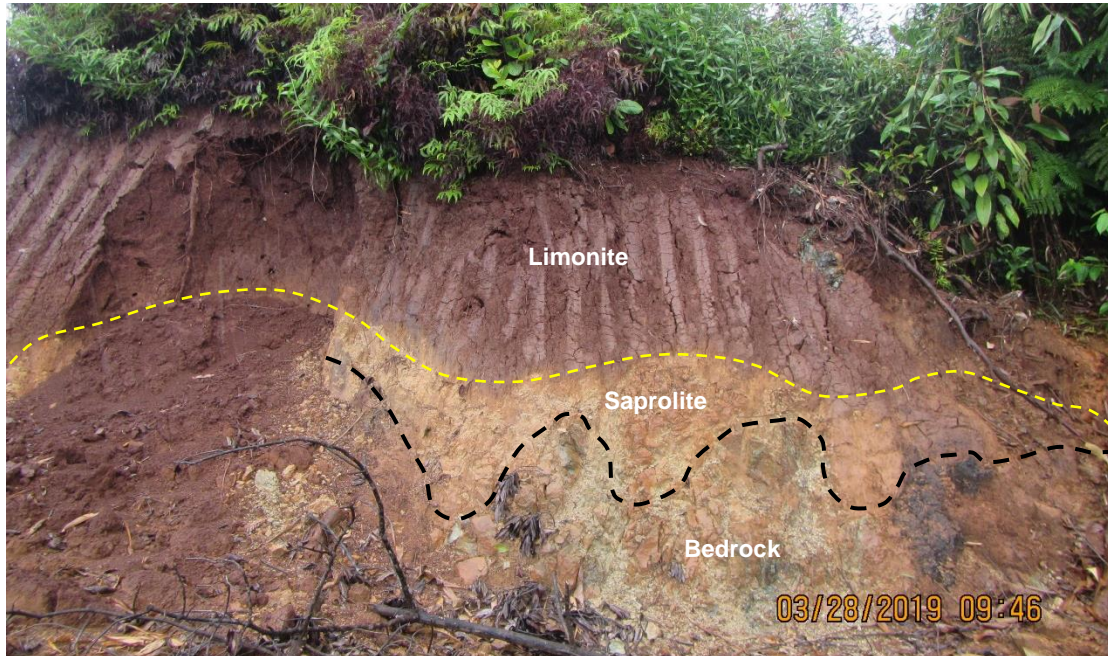


Figure 9-2. Pili laterite profile.

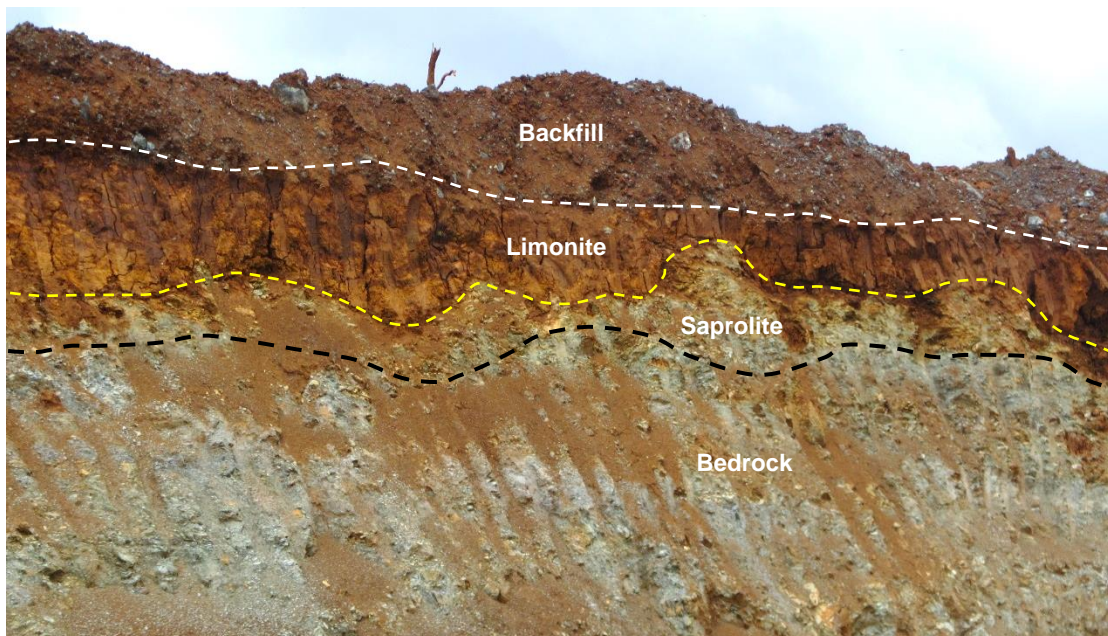


Figure 9-3. Sipangpang laterite profile.

2. A Southern Area characterized by complete laterite profile. This is exhibited in Cabangahan area wherein the laterite has limonite and well-developed saprolite overlying the bedrock. Comparing the Cabangahan limonite to the limonite in the Northern Area, its iron is relatively lower averaging 48% with

some highs of up to 49 to 50% but with higher nickel content at 0.8 to 1.0% Ni. Nickel grades of Cabangahan saprolite may range from 1.3 to up to 2.0%. However, majority of the saprolite belongs to the “mid-grade” type containing 1.4 to 1.5% Ni.

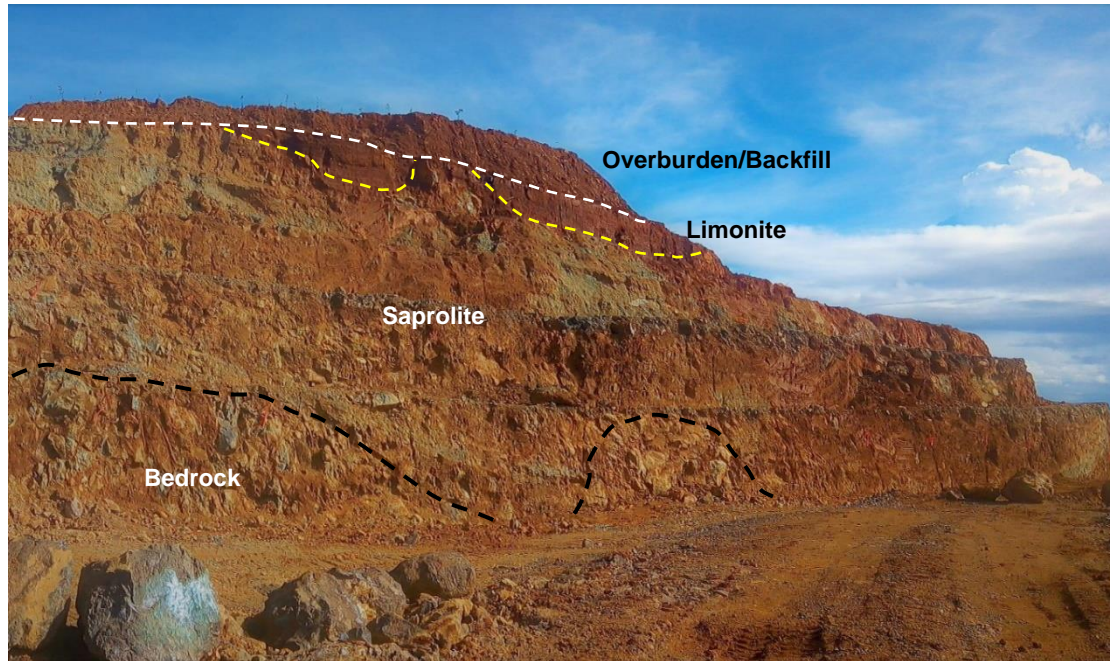


Figure 9-4. Cabangahan laterite profile.

9.3 Laterite Mineralogy

CP Arcilla in his 2010 CP Report (revised 2009 CP Report) presented X-ray Diffraction (XRD) analysis results of four samples taken from the tenement area: 1) a sample with highest Ni value during sample collection (KDH61-5-6), 2) a sample recovered from the greatest core depth (B2YDH68-18-19), 3) sample taken from a mixed limonite-saprolite layer (YDH70-1-2), and 4) sample taken from a ferrous overburden (KDH61-0-1). Table 9-1 summarizes the results of the XRD analysis.

As indicated in the XRD results, goethite and serpentine are the primary nickel-carrying minerals. Pimelite, a nickel-bearing smectite, is present in all the samples except for the overburden/limonite sample.

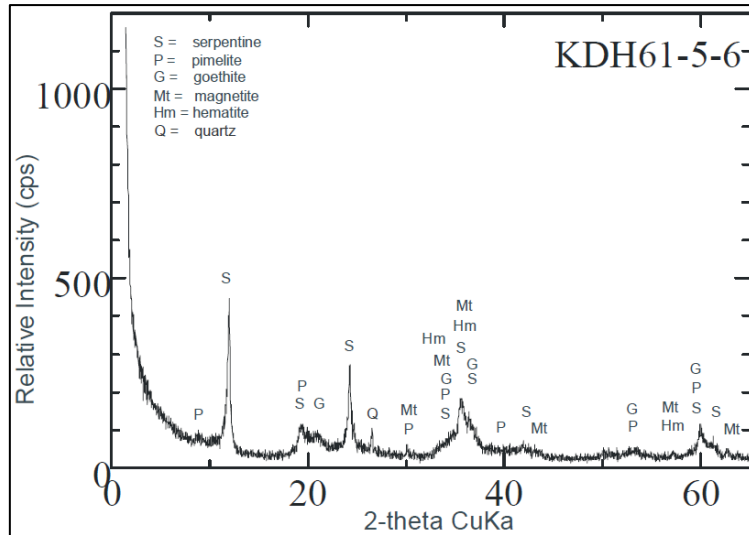


Figure 9-5. XRD result of saprolite sample.

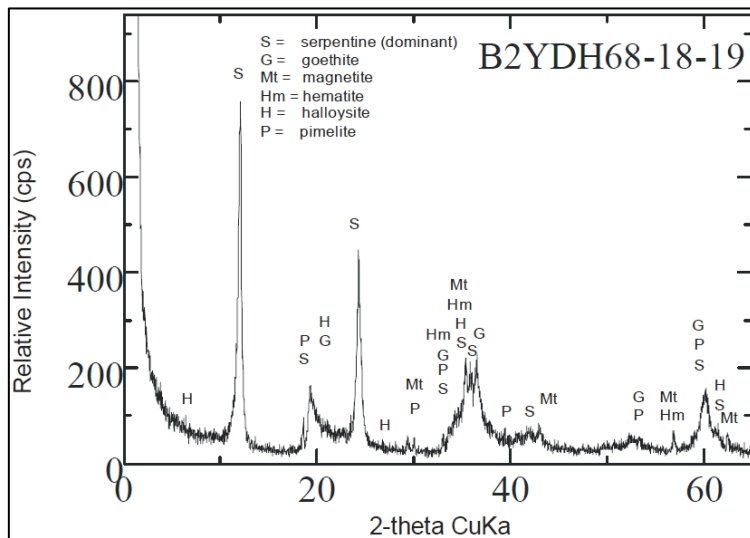


Figure 9-6. XRD result of weathered bedrock sample.

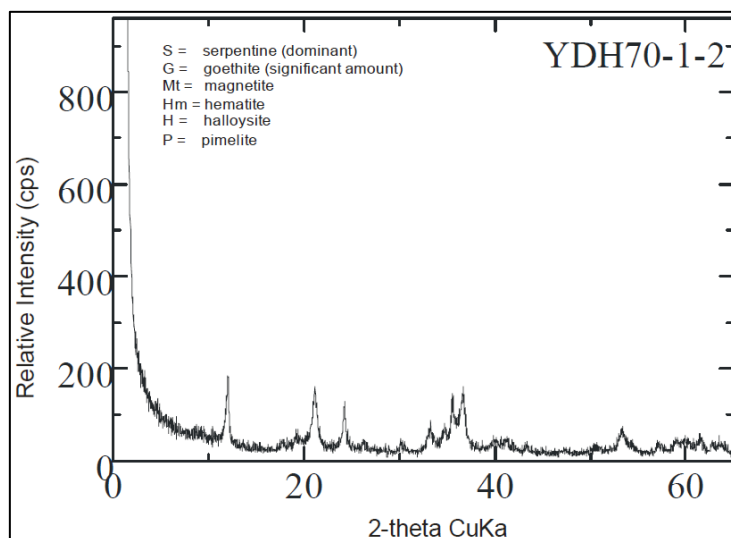


Figure 9-7. XRD result of sample from transition zone.

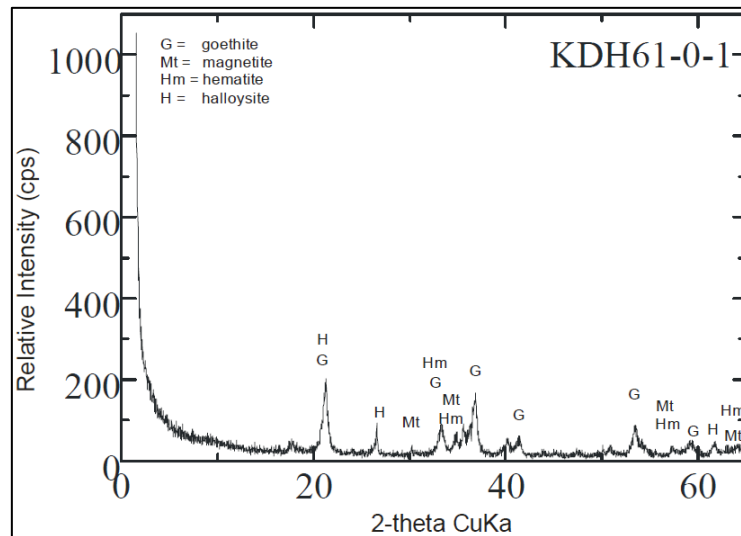


Figure 9-8. XRD result of limonite sample.

Table 9-1. MMDC laterite mineralogy.

Sample ID	Material type	goethite	halloysite	hematite	magnetite	pimelite	quartz	serpentine
KDH61-5-6	saprolite	✓		✓	✓	✓	✓	✓
B2YDH68-18-19	weathered bedrock	✓	✓	✓	✓	✓		dominant
YDH70-1-2	Transition/ earthy saprolite	✓	✓	✓	✓	✓		dominant
KDH61-0-1	overburden/ limonite	✓	✓	✓	✓			

In the 2012 CP Technical Report of CP Arcilla, it was mentioned that garnierite veins were noted at several locations within the tenement area, particularly along road cuts. This was also observed by the undersigned during a field work. These materials are easily recognized by their conspicuously bright blue-green color, waxy texture and their tendency to occur as fillings in fractures. Most notable is a garnierite vein located along a road cut going to Pili mine area. The garnierite vein is one-meter thick and when assayed yielded 23% Ni. XRD analysis of the sample showed that it is composed primarily of serpentine (magnesium-phyllsilicate).

9.4 Element grade levels and patterns

Nickel and iron grade distribution in Figure 9-6 and Figure 9-7 show that Cabangahan Area contains the most saprolite samples among the three areas. This is manifested by higher number of iron values around 5 to 15 percent in the distribution graph than at around 45 to 55 percent. Likewise, abundance of nickel values from 1.5 to 3 percent also denote high number of saprolite samples. The iron grade distribution shows the typical trend observed for most laterite deposits in the country. However, trend of nickel grade distribution observed so far in other laterite deposits in the country show normal or bell-shaped distribution with the peak at around 1 percent. In the Cabangahan Ni distribution graph, there is an unusual peak at low nickel values between 0.2 to 0.5 percent. This does not indicate predominant low grades in the area, but instead indicates an unusually high number of bedrock samples drilled.

The nickel grade distribution of Pili (Figure 9-8) and Sipangpang (Figure 9-10) shows similar trend such that both are skewed to the right or the peaks are at the lower nickel grades. Pili nickel histogram peaks at 0.7 to 0.9 percent while for Sipangpang at 0.6 to 0.8 percent. There is also notable decrease in the number of samples from 1.2 percent nickel which indicates that there is no significant high nickel saprolite in these areas. This is also exhibited in the iron grade distribution of Pili (Figure 9-9) and Sipangpang (Figure 9-11) wherein both has higher peaks at the higher iron grades indicating abundance of limonite material in these areas.

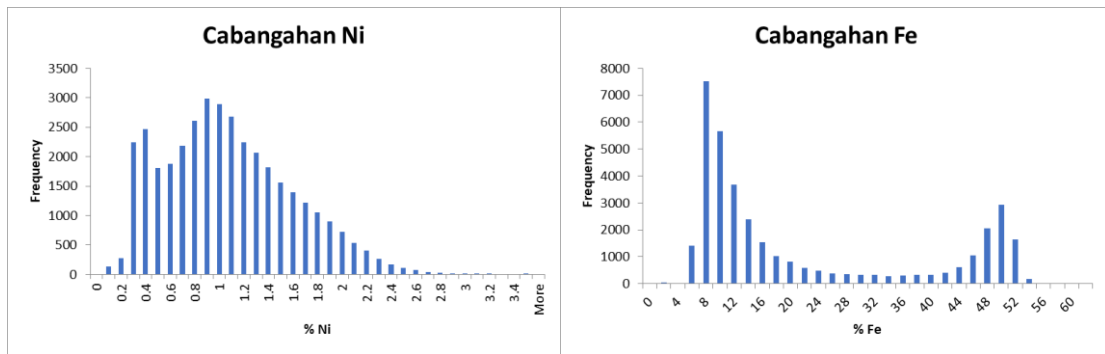


Figure 9-9. Cabangahan nickel and iron grade histogram.

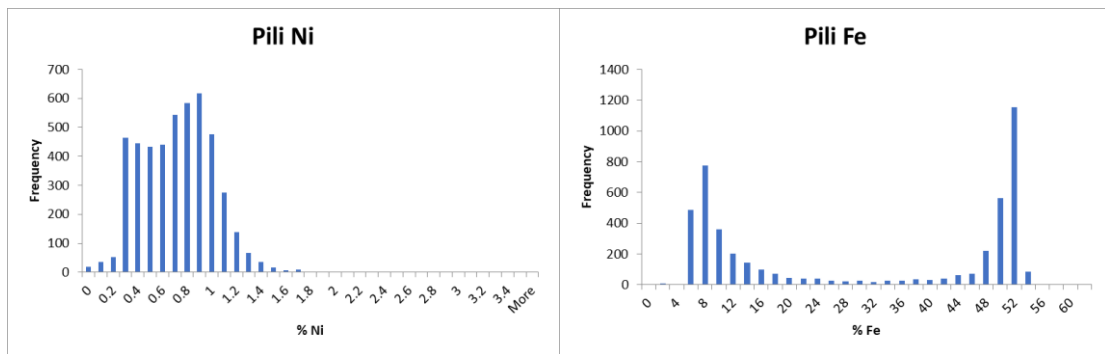


Figure 9-10. Pili nickel and iron grade histogram.

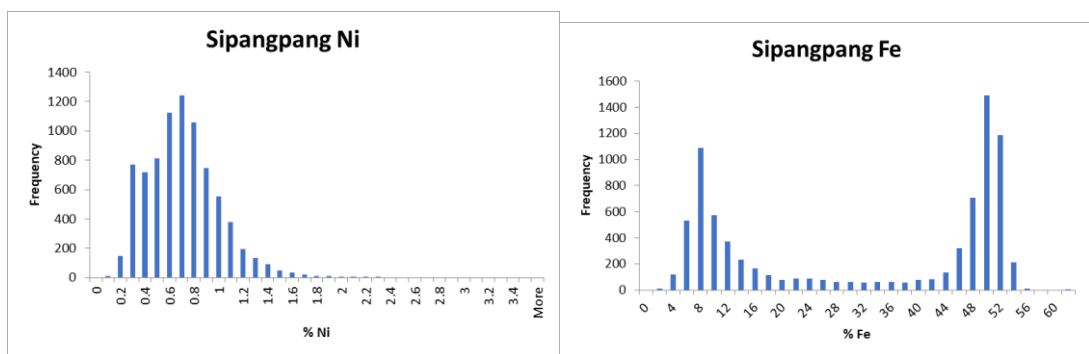


Figure 9-11. Sipangpang nickel and iron grade histogram.

10.0 EXPLORATION

Attached as Appendix 1 are Standard Operating Procedures (SOPs) of MMDC Resource Development and Exploration Department which is the guide and go-to manual in implementing the exploration program of the company.

10.1 Geological work

10.1.1 2014 Geologic Mapping

Regional geologic mapping activity was conducted within MMDC and BRC tenement areas by the Exploration Team headed by Sr. Geologist Herbert T. Villano on June 2014. The objective of the activity is to identify the lithology and structures within the area, provide additional geologic information and to produce a district geologic map for MMDC and BRC.

Review of previous geologic reports, interpretation of topographic maps and satellite images, and geobotany were conducted prior to the start of field mapping activity.

Lithology was verified through actual field mapping wherein outcrops and structures were mapped and marked using Global Positioning System (GPS) device. Brunton compass was used to read attitude of structures and beds while hand lens and other field equipment was used for the megascopic identification of minerals in hand specimens.

Based on the result of the geologic mapping, nine (9) lithologic units were observed and delineated along the vicinity of the tenement area: 1) Residual laterite which extensively covers the majority of the tenement area, 2) Quaternary Alluvium covering the flood plains of Carac-an river, 3) Limestone and sandstone mostly concentrated along the northeastern portion of the tenement area, 4) Volcaniclastic andesite (?), 5) Diorite, 6) Marbleized Limestone and 7) Metasediments along the western portion of the tenement area, 8) Schist, of minor occurrence, along the southwest portion of Pili mining area and, 9) Ultramafic rocks composed of serpentized peridotite and pyroxenite which underlies majority of the tenement area.

10.1.2 2018 Stream Mapping

The MMDC Exploration Team composed of six geologists conducted stream mapping from February 8, 2018 to March 28, 2018 along the major streams that drain the Cabangahan area. It aims to collect a substantial amount of data from outcrops and structures in detail in order to set a standard lithology, especially in relation to the host rock, of the area.

Three (3) streams, namely: the 1) Maitom Creek, 2) Anibongan Creek and 3) Opakon Creek, were simultaneously mapped from February 8-10, 2018 by dividing the fieldwork party into three (3) groups. Subsequently, the remaining creek, 4) Mapula Creek, was mapped on March 28, 2018.

A total of forty-two (42) outcrops were distinguished from the four (4) streams wherein massive outcrops of densely fractured serpentized peridotite predominates. Structures such as shear zones were also common, but majority of the outcrops exhibits irregular fracturing with no preferred orientation.

Exception to this is the contact noted between massive limestone overlying ultramafic peridotite which was observed downstream of Anibongan Creek.

10.1.3 2018 In-pit Grid Mapping

Grid mapping activity was progressively conducted along the active mining area and disturbed portions of Cabangahan and Sipangpang. This is in order to generate a reliable detailed geologic map of the aforementioned areas which will aid in the updating of the remaining mineral resource.

Topographic base maps in WGS 84 coordinate system was generated wherein base line and equidistant picket lines composed of twenty (20) meter interval observation points were pre-determined. Simultaneously, drone photo of the entire subject area is taken in which the observation points are plotted.

Drone photo analysis was conducted prior to the start of the actual field mapping by means of photo mapping units (PMU) which aides in the interpretation and pre-delineation of rock or material units.

Actual field mapping for each picket line was then carried out by locating pre-entered observation points using a GPS device. Detailed information and photo documentation of the outcrops observed from individual observation points were taken using various field equipment such as brunton compass, fiber tape, laser range finder, etc. and aforementioned data was then recorded in the standard Field Data Sheet (FDS).

Geologic map of the areas (Figure 10-1 and Figure 10-2) were generated using the data consolidated from the field data sheets.

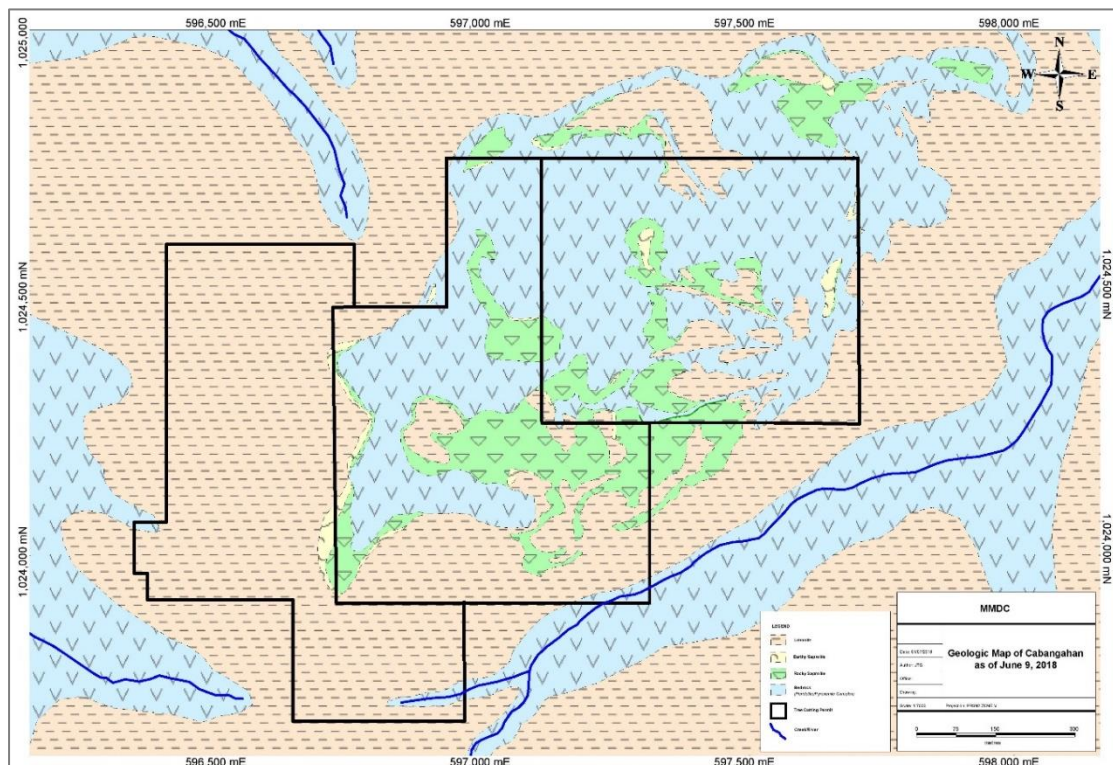


Figure 10-1. Geologic map generated from the in-pit grid mapping in Cabangahan.

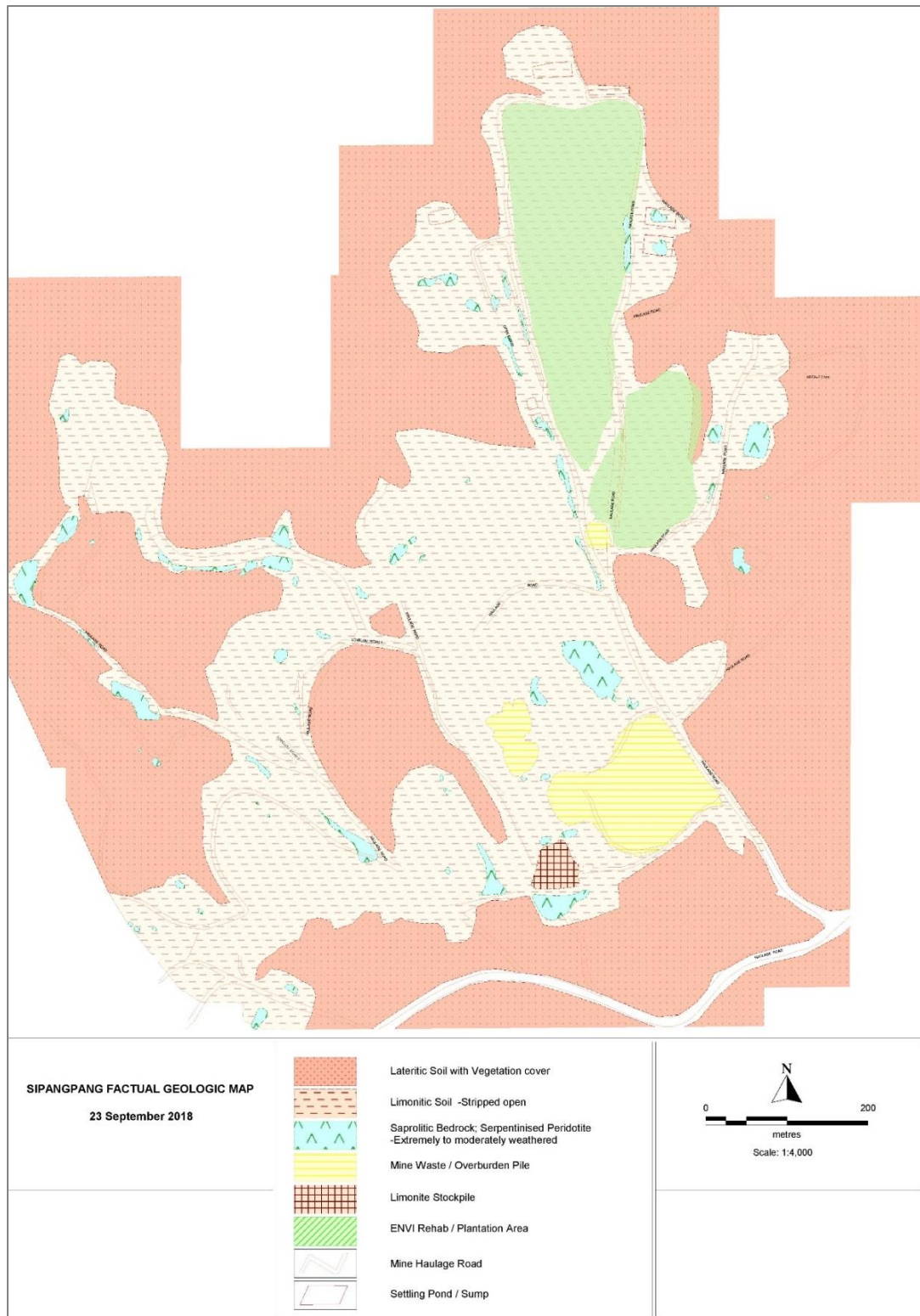


Figure 10-2. Geologic map generated from in-pit mapping in Sipangpang.

10.2 Surface sampling

10.2.1 Outcrop sampling

Grab sampling of outcrops were simultaneously conducted with stream mapping along the major streams in Cabangahan. Advancing upstream, outcrops and structures were

marked using a Global Positioning System (GPS) device in Long-Lat WGS 84 format. Significant details such as specific location of outcrop, its physical description, structures, as well as a sketch of the outcrop's plan view and cross-section view are recorded in the standard Field Data Sheet.

Detailed photograph for each outcrop was also taken along with individual hand specimens. Megascopic identification of minerals on the collected hand specimen was conducted using a hand lens wherein primary, secondary and accessory minerals were identified and illustrated in the same data sheet.

Hand specimens are then contained in a sample bag for future reference and possible in-depth investigation or petrographic analysis.



Figure 10-3. Hand specimen of serpentized peridotite.

10.2.2 Trench sampling

Trench sampling is conducted during advances in mining operations wherein a backhoe is used to excavate up to 3 m depth along the area of interest to determine in advance whether the next area to be mined is marketable. Samples are collected vertically along the face of the trench at 3 m interval, or closer if necessary. This is conducted by the Grade Control Department.

10.2.3 Test pit sampling

The oldest test pits in the tenement area are those excavated before 2009. Since 2009, only drilling were conducted in the tenement area. For the purpose of conducting due diligence over properties being offered to MMDC, the Exploration Team has also an SOP for Test Pitting (Appendix 1).

10.3 Topographic Survey

Collar survey was conducted by MMDC in-house Survey Team using Topcon Total Station (GPT-3107N and GTS-100N) using PRS 92 as the reference system. Surveyed proposed drill hole locations were marked with stake and flagging tape and the hole properly identified with Block ID, Drill Hole No., local northing and easting and collar elevation.

10.4 Drilling and sampling

Figure 10-4 presents the general flow of process being followed by the Resource Development and Exploration Team in conducting drilling and sampling activities.

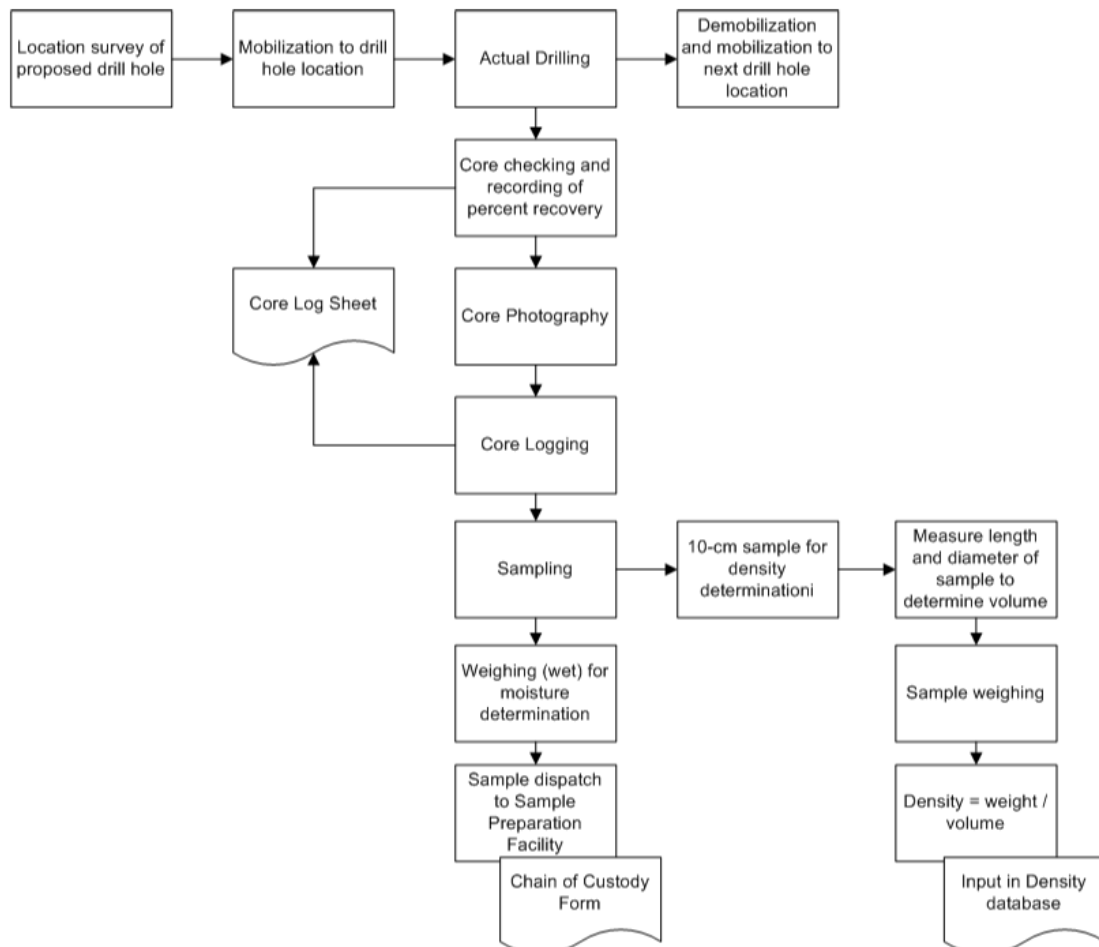


Table 10-4. Drilling and sampling flow chart.

10.4.1 Type of drilling program

MMDC owns 17 units of YHP-model drill machines since 2014. For the 2018 drilling campaign, the team utilized eight (8) units of YHP-model drill machines in its in-fill drilling operation in Sipangpang and Cabangahan area. The drill rigs are powered by 8HP Robin engines and utilizes NQ size single tube core barrel.

The drilling crew moves its assigned drill rig to a designated surveyed drill hole location and commences drilling (Figure 10-4 and Figure 10-5). The drilling supervisor monitors the drilling activities and records the drill run, core length and percent recoveries which are recorded in the standard Drill Hole Data Sheet.



Figure 10-5. Mobilization of drill unit to drill site.



Figure 10-6. MMDC in-house drilling.

10.4.2 Drill site spacing, depth of drilling

In-fill drilling program upgraded the Indicated resources to Measured resources for both areas within the tenement. In detail, drill holes in Sipangpang at 100 m grid interval were surveyed and drilled to 50 m grid interval. Whereas, drill holes in

Cabangahan at 50 m grid interval were surveyed and drilled to 25 m grid interval. In 2018, total of 257 drill holes were drilled in Sipangpang area whereas 255 drill holes were drilled in Cabangahan Area (Table 10-1).

During the 2018 drilling campaign, average drilling depth in Sipangpang is 10 m while it is 7 m in Cabangahan. Drilling penetration is ceased if bedrock of at least 2 m is intercepted.

Table 10-1. 2018 drilling accomplishment.

	Sipangpang		Cabangahan		Total	
	Target	Actual	Target	Actual	Target	Actual
No. of holes	329	257	447	255	776	512
Total Depth (m)	2,961.00	2,585.74	5,005.00	1,992.03	7,966.00	4,577.77
No. of samples	2,961	2,615	5,005	2,034	7,966	4,649

Drill core sample is retrieved after each drill run and carefully placed in an empty core box and marked properly with core block labelled with the Block ID, local northing, local easting, elevation, depth, date drilled and the responsible drilling crew.

10.4.3 Core photography

Core photography was done for digital archiving of the drill cores (Figure 10-6). The photos will serve as reference to validate/correlate with results of laboratory analyses when needed in the future.



Figure 10-7. Sample core photograph.

10.4.4 Specific gravity determination

In every drill hole, a 10-cm solid core sample is taken from each lithology: limonite, earthy saprolite, rocky saprolite and bedrock for density determination (Figure 10-7). Samples are wrapped using cling wrap and labeled with the hole id, elevation, drill run, lithology and top and bottom indicators.

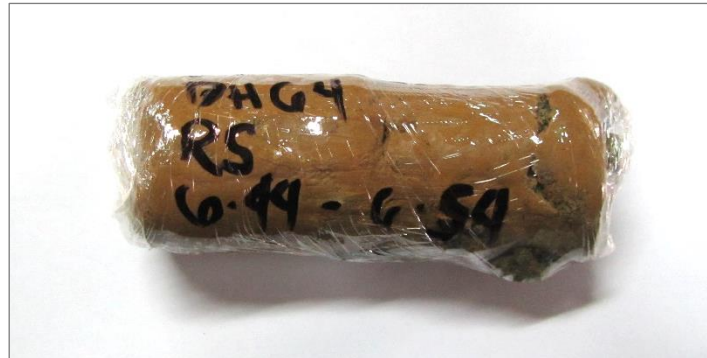


Figure 10-8. 10-cm core sample for density determination.

Average core length and diameter are measured using a caliper and are then submitted to assay laboratory for individual digital weighing of wet samples and then subjected to oven drying before obtaining individual dry weight.

10.4.5 Core logging

Core recovery is re-checked by an experienced geologic aide on site (Figure 10-8). Percent recovery is recorded in the Core Log Sheet form (Figure 10-9). Core sample will then be graphically logged by the site geologist describing the physical characteristics observed such as but not limited to; color, texture, matrix size, clast to matrix percentage, consistency, weathering, visible minerals present and geotechnical properties.



Figure 10-9. Core checking and logging at field camp.



PROJECT: Cabangahan
 CONTRACTOR/RIG NO: JBM 9
 DATE STARTED: Aug. 13, 2018
 DATE COMPLETED: Aug. 14, 2018

SHIFT/TIME: Day
 SHIFT/TIME: Day

BLOCK: H19
 NORTHING: 475
 EASTING: 50
 COLLAR ELEVATION: 357.89

DRILL RUN		CORE LENGTH		Y/MATERI	GRAPHIC	PHYSICAL DESCRIPTION	ANALYSIS				
FROM	TO	CM	% REC.	AL	LOG		SAMPLE ID	%Ni	%Fe	%Al	OTHERS
0	0.89	83	83	L		0.0-0.89 Reddish brown, clay sized matrix w/ fine grained texture. compact and sticky consistency. moist and completely weathered. No visible minerals noted. Plant roots present from 0.0-0.30m drill run.	3644	0.93	44.17	5.75	
0.89	1.89	100	93	L			3645	1.12	51.37	5.26	
1.89	2.89	100	96	L			3646	0.97	57.05	5.45	
2.89	3.89	100	100	L		0.89-2.89 Orange brown, clay sized matrix w/ fine grained texture. compact and sticky consistency. moist and completely weathered. Minor amount of goethite noted w/30%.	3647	0.83	51.44	5.60	
3.89	4.89	100	100	L			3648	0.94	46.16	5.75	
4.89	5.89	100	100	L			3649	1.50	34.07	4.77	
5.89	6.89	100	100	L		2.89-3.89 Dark brown, clay sized matrix w/ fine grained texture. compact and sticky consistency. moist and completely weathered. Minor amount of goethite noted w/30.00	3650	1.47	34.71	4.70	
6.89	7.89	100	100	L			3651	1.52	24.02	2.72	
7.89	8.89	100	100	ES			3652	1.84	21.94	7.38	
8.89	9.89	100	86	ES		3.39-4.89 Orange brown, clay sized matrix w/ fine grained texture. compact and sticky consistency. moist and completely weathered. Moderate amount of goethite noted w/40%.	3653	2.10	22.57	7.94	
9.89	10.89	100	97	RS			3654	1.88	19.65	7.53	
10.89	11.89	100	100	RS		4.89-7.89 Yellowish brown, clay sized matrix w/ fine grained texture. compact and sticky consistency. moist and completely weathered. High amount of goethite noted w/50-60% along w/ high amount of MnO and pyroxene.	3655	1.74	16.77	7.44	
11.89	12.89	100	100	RS			3656	1.71	10.96	1.69	
12.89	13.89	700	33	B		7.89-10.89 Yellowish orange, soft sand sized matrix w/ w/30% hard pebble sized clast. compact and sticky consistency. moist and completely weathered. High amount of goethite noted w/60% along w/ high amount of MnO and pyroxene. Hard rock clast, pebble-cobble sized noted from 8.79-9.49m and 9.09-4.89m drill run.	3657	1.85	10.10	1.50	
						10.89-12.89 Yellowish green, coarse sand sized matrix w/ w/30% hard pebble sized clast. compact friable consistency. moist and highly weathered. High amount of goethite noted w/50%.					
						12.89-13.89 Gray, mechanically weathered hard rock material. Serpentine min noted.					

LEGEND	
	L LIMONITE; reddish- yellowish brown, clay sized matrix w/ fine grained texture, compact and sticky consistency, moist and completely weathered, visible minerals; goethite, hematite, manganese oxide and detrital chromite. Soft- moderately hard soil.
	ES EARTHY SAPROLITE; yellowish brown, soft sand sized matrix w/ 1-30% mod. hard pebble sized clast, compact-friable consistency, moist and highly weathered, visible minerals; goethite, hematite, manganese oxide, detrital chromite, garnierite.
	RS ROCKY SAPROLITE; yellowish green- greenish gray, mod. hard sand sized matrix with 30-90% hard pebble sized clast, compact-friable consistency, moist and highly weathered, visible minerals: goethite, serpentine minerals, garnierite.
	B BEDROCK; greenish gray in color, hard sand sized matrix with >80% hard pebble sized clast, compact, moist and fresh- slightly weathered, serpentine minerals noted along clast surface.

DEPTH (M): <u>13.89</u>	LOGGED BY: <u>Jarlan Uy</u>	TOTAL NO. OF SAMPLES: <u>19</u>
PREPARED BY: <u>NA</u>	GEOLOGIST/CORE LOG SPECIALIST	

Figure 10-10. Sample core log sheet.

10.4.6 Moisture Determination

After logging, core sampling is done at a nominal interval of one (1) meter down the hole regardless of laterite horizon boundaries. Samples are weighed individually using analog weighing scale as part of the moisture analysis procedure before it is placed in a properly labelled plastic sample bag (Figure 10-10).



Figure 10-11. Core sampling.

Samples are collectively placed in an empty sack labeled with the corresponding hole ID before it is delivered at MMDC's Sample Preparation Facility located at Sitio Banban, Barangay Panikian. After drying at the Sample Preparation Facility, sample is weighed to get the dry weight. This is then used to determine the moisture of the sample by using the formula:

$$\% \text{ Moisture} = \frac{\text{Wet Weight} - \text{Dry Weight}}{\text{Wet Weight}} \times 100$$

10.5 Sample Preparation, Analyses and Security

Drill samples together with a Chain of Custody (COC) form are delivered to MMDC's Sample Preparation Facility located at Sitio Banban, Barangay Panikian. This is located adjacent to the in-house Assay Laboratory of the company. Standard operating procedures (SOPs) for Exploration Sample Preparation as well as Pressed Preparation and XRF Analysis are attached to this report as Appendix 1.

10.5.1 Security and Chain of Custody of Samples

All sample deliveries are covered by a Chain of Custody Form containing the following information:

1. Date/Time submitted
2. Date/Time received
3. Sample description
4. Element(s) for analysis
5. Method of analysis
6. Disposal/storage instructions

7. Name of person submitting the sample
8. Name of person receiving the sample
9. Total number of sample

10.5.2 Sample Preparation Facility

Sample preparation is housed in a separate building from assaying which is located around 10 to 12 m from the assay lab. The distance is considered safe from vibration and potential dust accumulation coming from sample preparation. The facility has the following equipment:

1. Primary Jaw Crusher – 2 units
2. Secondary Jaw Crusher – 2 units
3. Pulverizers (bowl) – 2 units
4. Pulverizers (disk) – 2 units
5. Air compressor (moisture-free) – 1 unit
6. Drying oven (walk-in) – 2 units
7. Drying oven (<1.0 cu.m.) – 5 units
8. Top loading scales – 2 units



Figure 10-12. Electric oven for sample drying.



Figure 10-13. Primary jaw crusher, secondary jaw crusher and pulverizer.

10.5.3 Sample preparation

In case of discrepancy or lack of information during sample receipt, concerned department is immediately informed and corrective actions are done before any batch is processed. When sample receipt procedures are done and found to be in order, samples are transferred to clean sample pans and arranged in the trolley carts for drying. The sequence and arrangement are noted, and this will be followed until processing is completed. Samples are dried in the oven for 12 hours at about 105°C.

Samples are weighed after drying. Weights are also reported to the Exploration Team for moisture determination.

The dried samples undergo stage crushing until all materials pass 10 mm screen. Volume is then reduced to roughly 500 grams using a riffle (Jones) splitter with ½ in opening. For exploration, the remaining sample after the 200 to 250 g split is put back to its original container and returned to the Exploration Department for storage.

Split samples are pulverized to at least 90% passing 200 mesh using the bowl pulverizer as this is sealed and have very small chance of cross-contamination. For samples that have high clay materials, the disk pulverizer is used since clay has tendency to granulate.

Figure 10-13 presents sample preparation flow chart.

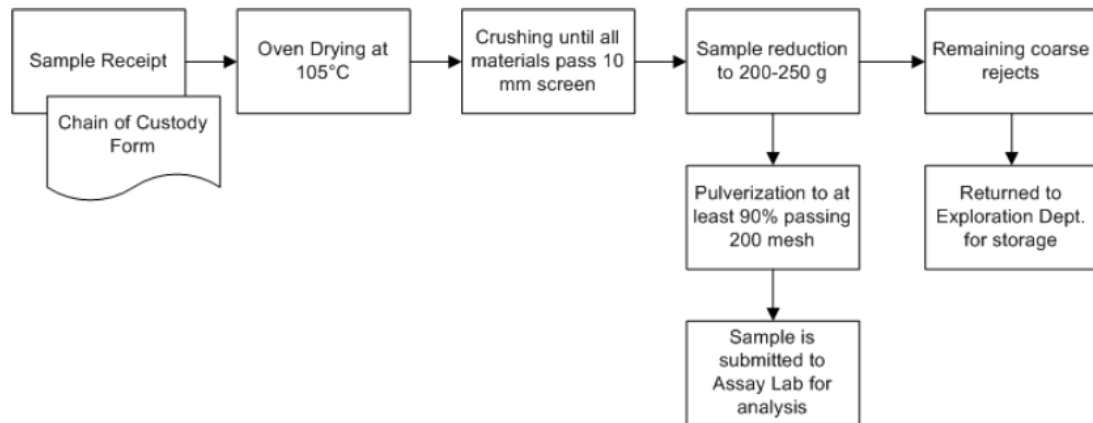


Figure 10-14. Sample preparation flow chart.

10.5.4 Analytical methods

Marketable metals Ni and Fe are analyzed using pressed pellet followed by XRF scanning. Pulverized samples are mixed with a binder (wax) and pressed via in a mould and die at 15 tons pressure. The pellet is cleaned, dried and placed in a desiccator to ensure this is free from moisture. Together with a Certified Reference Material (CRM), the sample is subjected to scanning. If multi-element is required by end-user, then this is included in the scanning.



Figure 10-15. Hydraulic press for sample pelletizing.

The current XRF-ED (Schimadzu brand) has 12 slots feeder. For every batch, two are CRM and 10 are actual samples. The choice of CRMs should be as close as the range of results for each batch.



Figure 10-16. XRF-EDS Shimadzu brand with computer unit.

Results are collated and reviewed by the QA/QC Supervisor before posting in the shared folders for easy access to end-users.

Flow chart for sample analysis, from pelletization to XRF analysis is presented in Figure 10-17.

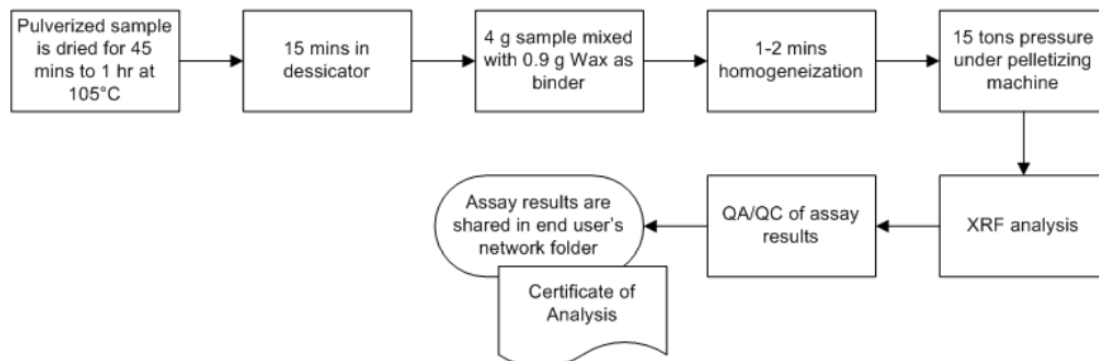


Figure 10-17. XRF analysis flow chart.

10.5.5 Quality Assurance and Quality Control

A Quality Control and Quality Assurance program (QA-QC) ensures that data are of high integrity for the purpose of attaining a reliable mineral resource estimate. QA-QC program in the mineral industry aims to prevent entry of large errors into the geological database and to allow problems to be realized rapidly to minimize their effect. QA-QC procedures are necessary to monitor accuracy, precision and possible contamination from field sampling to sample preparation and laboratory analysis. A comprehensive QA-QC program includes, but is not limited to, insertion of field duplicates, field blanks, standards and laboratory duplicates. Standards may be a Certified Reference Material (CRM) or in-house which is prepared by the company laboratory. This may also include repeat analysis and inter-laboratory analysis to assess accuracy of analytical procedure.

The QA-QC program described in this portion of the report focuses on the QA-QC program of the Assay Laboratory.

To ensure quality of sample preparation work, each sample pulverized sample is manually checked by pressing the sample between the thumb and middle fingers and if there is a gritty feeling then the sample is further pulverized. This check is further confirmed randomly for every 10 samples by wet screening using 200 mesh sieve screens. The oversize is then collected, dried and weighed. Percentage passing should not be below 90%.

In case test results fails, then 5 samples up and down the list shall be re-pulverized or re-processed. When samples are weighed for analysis, a manual check is again done by rubbing the sample using a spatula to the flap of the kraft envelope.

On the assaying side, every 10th sample is assayed in duplicate trials. If the values of both replicates do not agree or do not have close results, then the 5 up and 5 down the list shall be applied and these samples shall be re-assayed.

Each batch of sample as listed in the covering COC shall have a minimum of 2 standards that will undergo simultaneous analysis with actual samples. The results are included in the Certificate of Analysis (COA). A monthly evaluation of CRM results is plotted in a sensitivity graph for reference for compliance and improvements.

For 3rd party external tests, 10% of number of samples are sent to a local 3rd party laboratory for cross-check. Results are used for reference for further improvements if necessary.

A total of 515 laboratory duplicates, 77 in-house standards and 858 CRMs were inserted with the 2018 drilling samples. This is equivalent to 7%, 1% and 11% of the total number of samples submitted to the laboratory, respectively.

The methods used for comparison of the laboratory duplicates, in-house standards and CRMs are the X/Y scatter plot with regression line and the Mean Percent Relative Difference (MPRD).

In the scatter plot, the original assay is plotted on x-axis and the duplicate assay on y-axis to look for a correlation between the data sets. The correlation coefficient (R^2) gives the measure of the strength of the linear association between the two data sets. A perfectly correlated will have a correlation coefficient of 1.

In MPRD, it is assumed that each analysis run (accepted value and actual result) has its own errors and that these errors are equally distributed between each analysis. The mean of the assays (or average) is treated as the reference value or “true” value and deviations from the reference value is expressed as a percentage of the mean.

$$\text{MPRD} = \frac{(\text{assay}_{\text{original}} - \text{assay}_{\text{duplicate}})}{(\text{assay}_{\text{original}} + \text{assay}_{\text{duplicate}}) / 2} \times 100$$

A symmetrical pattern around zero MPRD means there is nil bias. If pattern is not symmetrical, this means there might be bias during sample preparation or analysis.

Results of the QA-QC analysis is presented in the following figures and table.

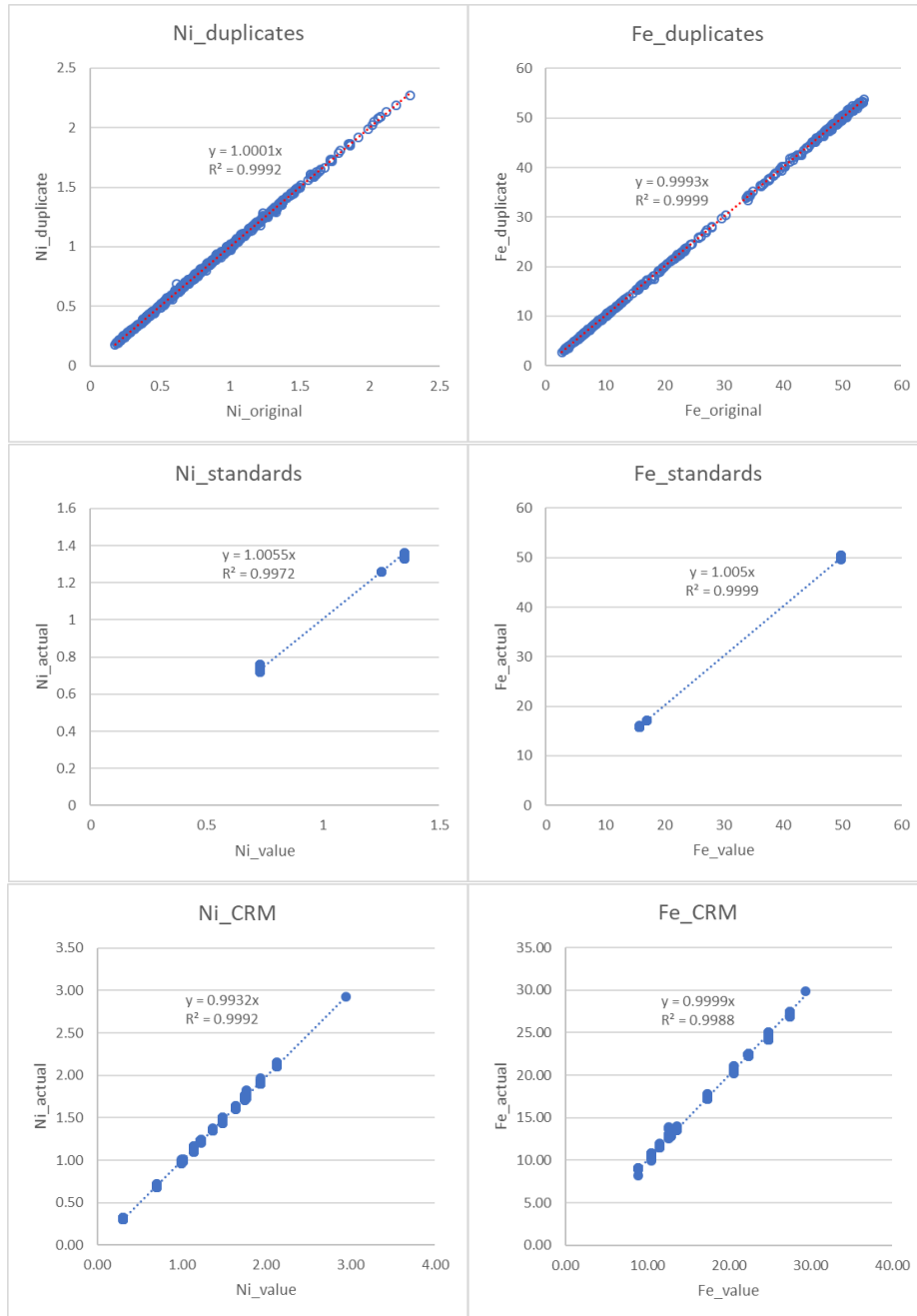


Figure 10-18. Ni and Fe scatter plots of duplicates, in-house standards and CRMs.

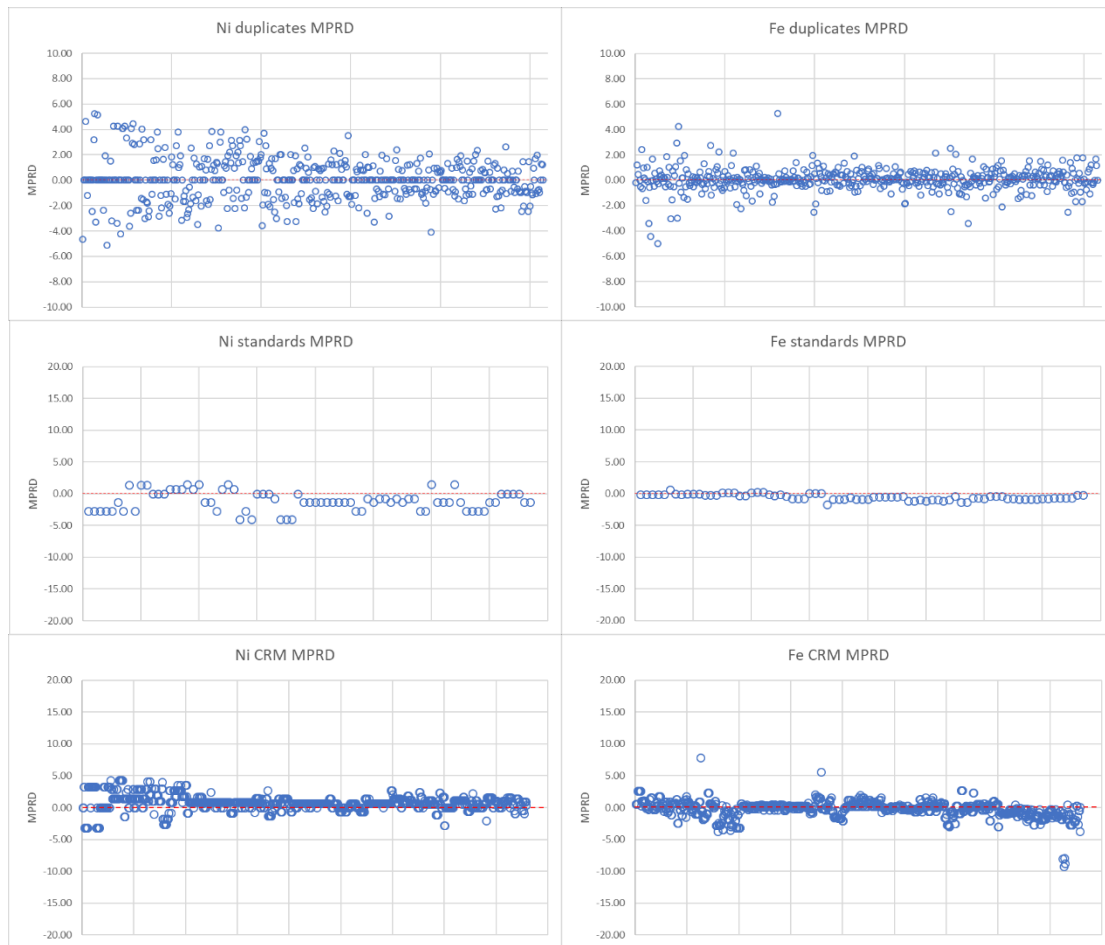


Figure 10-19. Ni and Fe MPRD graphs for duplicates, in-house standards and CRMs.

Table 10-2. Results of QA-QC analysis.

	Duplicates		Standards		CRMs	
	Ni	Fe	Ni	Fe	Ni	Fe
Correlation Coefficient	0.9992	0.9999	0.9972	0.9999	0.9992	0.9988
Percentage of samples within $\pm 10\%$ MPRD	99.8%	99.8%	100%	100%	100%	100%
Minimum MPRD	-10.69	-4.98	-4.03	-1.76	-3.17	-9.2
Maximum MPRD	5.22	10.41	1.49	0.56	4.32	7.82

All QA-QC samples have correlation coefficient nearing 1, thereby denoting very good correlation between the original and duplicate assays as well as between the accepted value and actual assay. The MPRD plot for nickel and iron of the duplicate samples show symmetrical pattern which means that there is nil bias. The nickel and iron MPRD graph of the standard samples tends to lean to the negative MPRD values which denotes that actual assays for the standards tends to be higher than the accepted value. However, this bias can be considered insignificant considering that the MPRD values ranges from -5 to 5 only.

The nickel MPRD graph of the CRMs shows slight bias to the positive values which denotes accepted values are generally higher than actual assay. The iron MPRD graph for CRMs shows symmetrical trend with minor (1-3 samples) spikes on the negative and positive results. The trend denotes nil bias but the spikes may have to be investigated further.

Assay results of each core samples are recorded in the Core Log Sheet upon receipt from the Laboratory through the local network. Results are checked against the material logged to validate if the assay results are within the expected grade range for that material. This is a way to check whether there has been a sample mix up since the range of nickel and iron grade for limonite and saprolite has already been established and any migration from these range should be investigated.

In the next drilling campaign, the Resource Development and Exploration Team will implement a more comprehensive QA-QC program utilizing insertion of field duplicates and field blanks.

10.5.6 Statement of the CP on the quality of sample security, preparation and analysis

Based on the observed implementation of the exploration program by the undersigned CP as well as review of the process and database, the undersigned finds that there is no significant bias in the samples and assay results of MMDC. As such, the CP deems that the quality of sampling, preparation and analysis, and in effect the resulting database, are sufficient and acceptable for the purpose of block modelling and resource estimation.

11.0 MINERAL RESOURCE ESTIMATE

11.1 Mineral Resource Database used in the estimation of resources

The database used to update the resource estimates includes old drill holes generated by MMDC as well as new (2018) drill holes from Sipangpang and Cabangahan (Table 11-1). Database was created in MS Excel in .csv format incorporating all information such as hole ID, northing, easting, collar elevation, total depth, sampling interval, analysis results, etc (Table 11-2). The database was grouped into four main tables: collar, survey, assay, geology.

Table 11-1. Descriptive statistics of the database used in the resource estimation.

MMDC Geostatistics- Raw Data						
Area Variable	Cabangahan		Sipangpang		Pili	
	Ni	Fe	Ni	Fe	Ni	Fe
Mean	0.92	22.91	0.66	30.98	0.76	25.37
Standard Error	0.00	0.11	0.00	0.21	0.01	0.54
Median	0.88	13.70	0.64	42.19	0.74	16.37
Mode	0.80	6.79	0.64	49.56	0.80	10.12
Standard Deviation	0.45	17.07	0.29	19.31	0.31	18.19
Sample Variance	0.21	291.39	0.08	372.82	0.10	330.78
Kurtosis	0.07	1.36	1.03	1.78	1.55	1.64
Skewness	0.54	0.61	0.72	0.24	0.87	0.36
Range	3.45	57.48	2.26	60.04	2.04	48.30
Minimum	-	-	-	-	0.25	4.68
Maximum	3.45	57.48	2.26	60.04	2.29	52.98
Sum	23,044.63	570,864.95	5,372.41	251,222.99	870.34	28,873.18
Count	24,922.00	24,922.00	8,108.00	8,108.00	1,138.00	1,138.00
Confidence Level(95.0%)	0.01	0.21	0.01	0.42	0.02	1.06

Table 11-2. Database component.

Table	Fields
collar	hole_id, y, x, z, max_depth
survey	hole_id, depth, dip, azim
assay	hole_id, depth_from, depth_to, ni, fe
geology	hole_id, depth_from, depth_to, lith

All 3188 drill holes and 34,182 assays from Cabangahan, Sipangpang and Pili were regularly sanitized: portions of DH which were “mined-out” were tagged and remove from the database. Sanitized database is updated and the collars snapped to the topo survey file as of December 12, 2018 for Cabangahan and January 2019 for Sipangpang. Distribution of drill holes is shown in Figure 11-1.

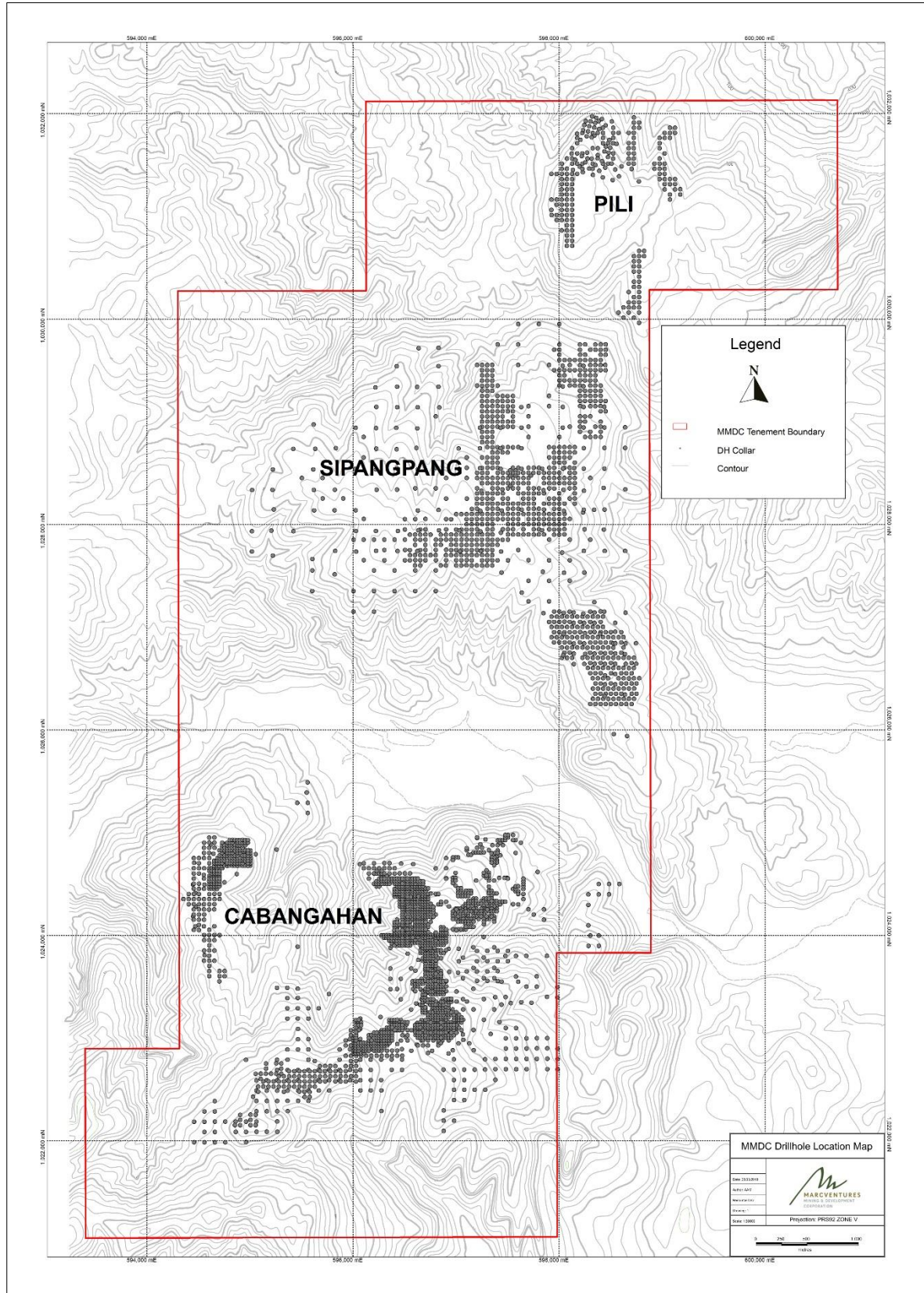


Figure 11-1. Drill hole location map.

11.2 Integrity of exploration and Mineral Resources database

Assay results are collated and reviewed by the Assay Laboratory's QA/QC Supervisor before transmitting to end-users. Transmittal of assay results is done through posting in shared folders over the company's network. Results which are in excel format are copied into Resource Development's database format which in turn is imported into Surpac. This methodology eliminates human error in the database such as typographical error/s.

New data is appended to the existing historical data in csv format and re-imported into Surpac. MMDC database went through two stages of initial error validation, the first one is by manual checking, and the second one is by computerized checking within Surpac software. Standard checking covers Hold duplicates, missing collars, double coding of assay, duplicate values, missing values and survey.

Identified error/s were then cross-checked and corrected across the database.

11.3 Data Verification and Validation

The undersigned is the Resource Development and Exploration Head of MMDC and is involved in the implementation of the company's exploration and drilling campaign. Review of database includes the following procedures:

1. Comparison of digital drill hole data with topography
2. Comparison of digital drill hole data versus core photograph
3. Review of drill hole in cross sections
4. Manual review of database to check typo errors

11.4 Cut-off Grades used in the estimations

As stated in the PMRC 2007, a Mineral Resource is a concentration of material of intrinsic economic interest in or on the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. Emphasis on the 'eventual economic extraction', the cut-off grades presented in Table 11-3 were set in consideration of what types of ore and grade specifications have been marketable in the past and would be marketable in the future based on market projections. The cut-off grades for limonite and saprolite were adjusted to include low-nickel saprolite and low-iron limonite.

Table 11-3. Mineral resource cut-off grade.

Material	% Ni cut-off	% Fe cut-off
Saprolite High Nickel	≥ 1.6	< 20
Saprolite Low Nickel	1.0 - 1.6	< 20
Limonite High Iron	≥ 0.5	≥ 45
Limonite Low Iron	≥ 0.7	20 - 45

Furthermore, the term 'reasonable prospects for eventual economic extraction' implies a judgment by the CP with respect to the technical and economic factors likely to influence the prospect of economic extraction, including approximate mining parameters. In other words, a Mineral Resource is not an inventory of all mineralization drilled or sampled, regardless of cut-off grade, likely mining dimensions, location or continuity. It is a realistic inventory of mineralization which, under assumed and

justifiable technical and economic conditions, might, in whole or in part, become extractable.

11.5 Mineral Resource estimation method

Except for the resource estimation of CP Arcilla which is Inverse Distance Weighting (IDW), all other previous resource estimates of MMDC by CP de Luna and CP Malihan are conducted by way of Manual Polygon Method. In this method, each drill hole is assigned a polygon that represents the extent of the area of influence of the drill hole. The assumption is that everywhere within the polygon, the thickness and grade of the resource material is uniform and, more or less, the same to the resource material of the drill hole enclosed by the polygon. The area of influence of each drill hole is based on the *halfway rule*, which states that the influence of a drill hole sample extends halfway to other samples laterally adjacent to it.

The mineral resource estimation methodology used in this report is the Nearest Neighbor interpolation which is discussed in detail in Section 11.7.

11.6 Mineral Resource categories used

The Mineral Resource categories used are based on the PMRC Code 2007 and its implementing rules and regulations. Data preparation and collation, interpretation and resource estimation were undertaken by MMDC technical personnel under the supervision of CP Geologist, Jayvhel Tria Guzman. The team include Senior Geologist Glynn Q. Fernandez, Resource Geologist Arlene A. Morales, Geologist Cherry Ann R. Carlom and Geologist Gisella May E. Dida.

Categorization of resources is mainly based on Section VII – Reporting of Mineral Resources in the PMRC Code 2007, to wit:

1. A 'Measured Mineral Resource' is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity.
2. An 'Indicated Mineral Resource' is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed.
3. An 'Inferred Mineral Resource' is that part of a Mineral Resource for which tonnage, grade and mineral content can be estimated with a low level of confidence. It is inferred from geological evidence, sampling and assumed but not verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes which may be limited or of uncertain quality and quantity.

The appropriate category of Mineral Resource is determined by the Competent Person based on the quantity, distribution and quality of data available and the level of confidence on the data. For this resource estimation, mineral resource are classified purely as a function of the drilling density or spacing.

For Cabangahan, the drilling interval for a Measured Mineral Resource for limonite is 50m x 50m and 25m x 25m for saprolite. This is due to the higher variability of grades in saprolite compared to limonite due to the unpredictable occurrence of unmineralized rocks within the enriched saprolite profile. Drilling interval for limonite Indicated Mineral Resource is 100m x 100m and 50m x 50m for saprolite. For Inferred Mineral Resource, drilling interval at 200m x 200m is used for limonite and 100m x 100m for saprolite.

In the case of Sipangpang and Pili which are both limonite areas, the drilling interval considered for Measured Mineral Resource is at 50m x 50m and 100m x 100m. Drilling interval at 200m x 200m is categorized as Indicated Mineral Resource considering the demonstrated lateral homogeneity of the two areas during mine operations. Table 11-4 summarizes the parameters in classifying mineral resources.

Table 11-4. Mineral resource categories used.

Area	Material	Measured	Indicated	Inferred
Cabangahan	Saprolite	25m x 25m	50m x 50m	100m x 100m
	Limonite	25m x 25m 50m x 50m	100m x 100 m	-
Sipangpang Pili	Limonite	50m x 50m 100m x 100m	200m x 200m	-

11.7 Mineral Resource Estimation Method

The resource estimation was done by Resource Geologist Arlene A. Morales with the supervision of the undersigned CP. She is a license geologist who is a member of the Geological Society of the Philippines and has sufficient experience in mineral resource estimation. Resource estimation was thoroughly evaluated and correlated with previous resource reports.

The method employed for recent MMDC resource run is Nearest Neighbor (NN). NN which is also known as the proximal interpolation is a simple multivariate interpolation and is the computerized version of polygon method in Surpac. This method selects and assign value of the nearest assay from the centroid of the block with unknown value thus the term nearest neighbor.

11.7.1 Block Size

The block size used for MMDC resource run is 25x25x1 patterned after the resource estimation general rule of thumb that the x-y size of the estimation block should be half of the regular drill hole distance.

11.7.2 Compositing

Assay values used in the estimation is composited from collar down to the bottom at 1-meter interval. Compositing is essential to minimize bias of unequal sample lengths. Sample assays which have less than 0.50 m were not included in the estimates. For Cabangahan, about 0.7% of sample length fell below the nominated 0.5 m acceptable

length after composite while 1% for both Sipangpang and Pili. Details are listed in Table 11-5.

Table 11-5. MMDC Composite Statistics.

MMDC Composite			
Area	Cabangahan	Sipangpang	Pili
Holes process	1980	984	224
Raw sample length statistics:			
Number of samples	24,934.00	8,110.00	1,138.00
Total	24,909.76	8,122.80	1,138.18
Minimum	0.06	0.45	0.51
Maximum	1.80	8.79	1.49
Mean	1.00	1.00	1.00
Standard deviation	0.07	0.17	0.07
Variance	0.01	0.03	0.00
Composite sample length statistics:			
	String 1	String 1	String 1
Number of samples	24,929.00	8,119.00	1,138.00
Total	24,736.20	8,019.77	1,130.42
Minimum	0.50	0.50	0.51
Maximum	1.00	1.00	1.00
Mean	0.99	0.99	0.99
Standard deviation	0.05	0.07	0.04
Variance	0.00	0.00	0.00
Short composite sample length statistics:			
	String 2	String 2	String 2
Number of samples	691.00	334.00	32.00
Total	173.56	85.39	7.76
Minimum	0.01	0.01	0.01
Maximum	0.49	0.49	0.49
Mean	0.25	0.26	0.24
Standard deviation	0.15	0.14	0.15
Variance	0.02	0.02	0.02

11.7.3 Domain

MMDC's deposit domains are bounded by the topography in the upper portion and the end of hole DTMs in the lower end. The deposit is sub-domain by material class namely: limonite, saprolite, and bedrock. The amount of iron (Fe%) was used as guide to determine contacts of each sub-domain.

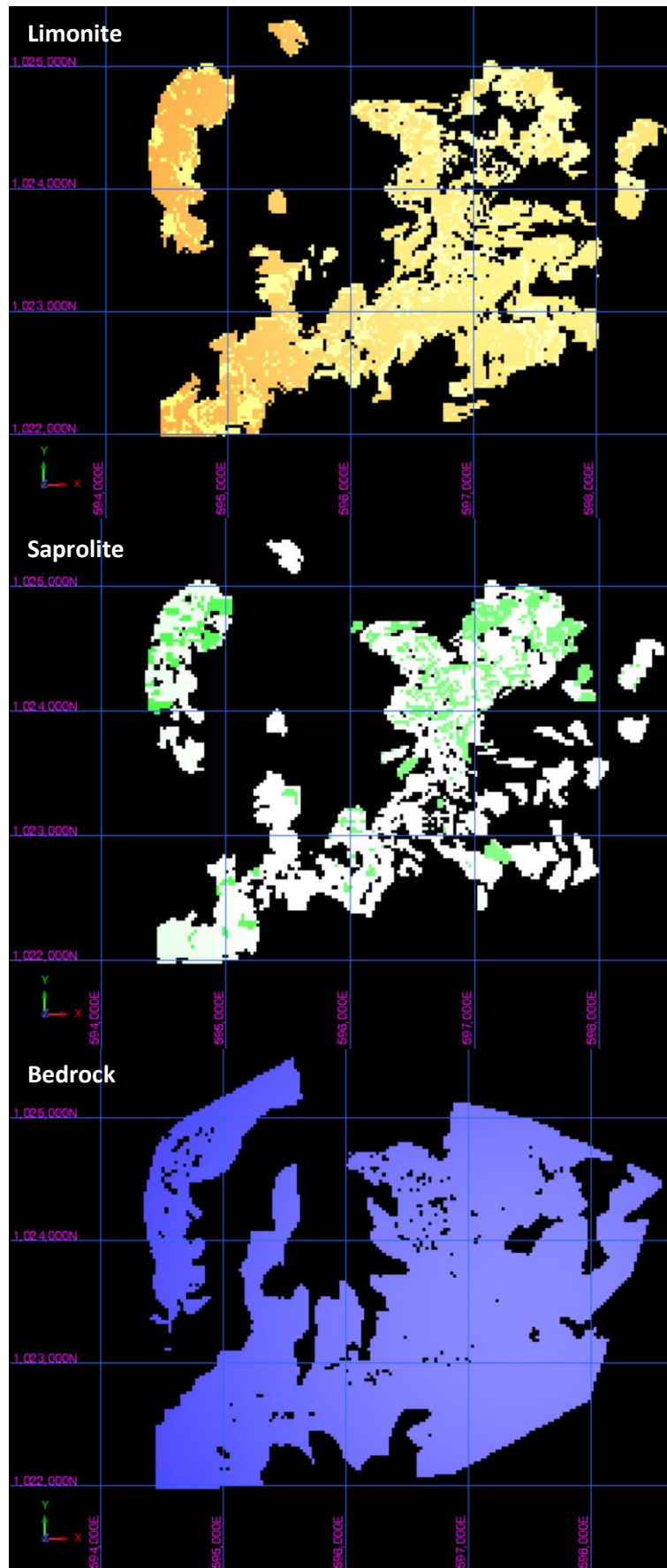


Figure 11-2. Cabangahan Domain.

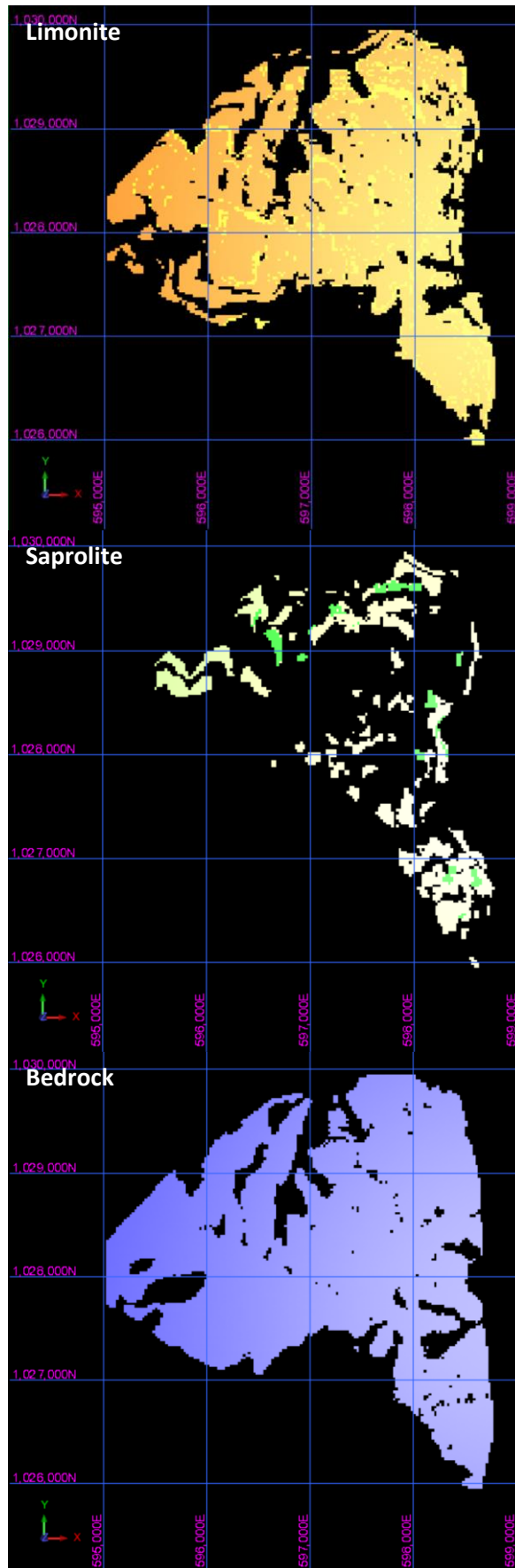


Figure 11-3. Sipangang Domain.

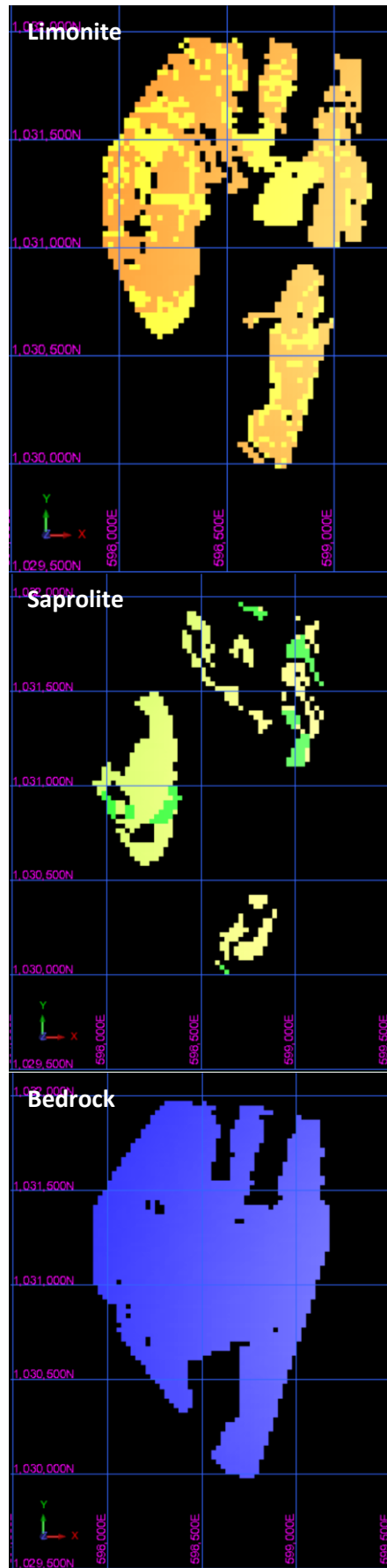


Figure 11-4. Pili Domain.

11.7.4 Partial Percentage

For volume adjustments, partial percentage was used to determine how much portion of each block is below topography and should be counted as actual tonnage.

11.8 Mineral Resource Statement

The estimated mineral resource is summarized in Table 11-6. Grade-tonnage data per cut-off grade is given in Table 11-7 and Table 11-8 with corresponding grade-tonnage graphs shown in Figure 11-5 and 11-6.

From the mineral resource estimates of 63.54 Million WMT Measured and Indicated saprolite and limonite resource as of Dec. 31, 2017, the mineral resource as of Dec. 31, 2018 is estimated to be at 75.55 Million WMT Measured and Indicated saprolite and limonite resource. Increase in the mineral resource tonnage is attributed to the following:

1. Additional mineral resources were blocked resulting from development drilling conducted in Cabangahan
2. Inferred mineral resource were upgraded to Indicated mineral resource resulting from in-fill drilling conducted within Cabangahan and Sipangpang
3. Transfer from Manual Polygon method to software-aided Nearest Neighbor interpolation using Surpac 6.7

Block model and other relevant data may be provided by the preparer upon request of the interested end-user.

Table 11-6. MMDC Mineral Resource as of Dec. 31, 2018.

Area	Material	WMT	DMT	Ni	Fe	Ni Tonnes
Measured and Indicated Resource						
CABANGAHAN	Saprolite High Nickel	2,087,000	1,293,940	1.79	13.59	23,000
	Saprolite Low Nickel	9,807,000	6,080,340	1.25	12.45	76,000
	Sub-total/Ave.	11,894,000	7,374,280	1.34	12.65	99,000
	Limonite High Iron	16,095,000	9,978,900	0.83	48.99	83,000
	Limonite Low Iron	11,487,000	7,121,940	1.19	31.70	85,000
	Sub-total/Ave.	27,582,000	17,100,840	0.98	41.79	168,000
	TOTAL/AVE.	39,476,000	24,475,120	1.09	33.01	267,000
SIPANGPANG	Saprolite High Nickel					
	Saprolite Low Nickel					
	Sub-total/Ave.					
	Limonite High Iron	27,837,000	17,258,940	0.75	49.48	129,000
	Limonite Low Iron	7,224,000	4,478,880	0.98	33.46	44,000
	Sub-total/Ave.	35,061,000	21,737,820	0.80	46.18	173,000
	TOTAL/AVE.	35,061,000	21,737,820	0.80	46.18	173,000
PILI	Saprolite High Nickel					
	Saprolite Low Nickel					
	Sub-total/Ave.					
	Limonite High Iron	636,000	394,320	0.74	50.10	3,000
	Limonite Low Iron	378,000	234,360	0.94	31.80	2,000
	Sub-total/Ave.	1,014,000	628,680	0.82	43.28	5,000
	TOTAL/AVE.	1,014,000	628,680	0.82	43.28	5,000
TOTAL	Saprolite High Nickel	2,087,000	1,293,940	1.79	13.59	23,000
	Saprolite Low Nickel	9,807,000	6,080,340	1.25	12.45	76,000
	Sub-total/Ave.	11,894,000	7,374,280	1.34	12.65	99,000
	Limonite High Iron	44,568,000	27,632,160	0.78	49.31	215,000
	Limonite Low Iron	19,089,000	11,835,180	1.11	32.37	131,000
	Sub-total/Ave.	63,657,000	39,467,340	0.88	44.23	346,000
	TOTAL/AVE.	75,551,000	46,841,620	0.95	39.26	445,000
Inferred Resource						
	Saprolite High Nickel	605,000	375,100	1.76	13.58	7,000
	Saprolite Low Nickel	4,068,000	2,522,160	1.23	12.80	31,000
	Sub-total/Ave.	4,673,000	2,897,260	1.30	12.90	38,000
	Limonite High Iron					
	Limonite Low Iron					
	Sub-total/Ave.					
	TOTAL/AVE.	4,673,000	2,897,260	1.30	12.90	38,000

Notes:

- MMDC Mineral Resource statement has been generated under the supervision of Ms. Jayvhel T. Guzman, licensed geologist and accredited Competent Person under the definition of the Philippine Mineral Reporting Code. She has sufficient experience relevant to the style of mineralization and type of deposit under consideration and to the activity that has been undertaken to qualify as a Competent Person as defined in the PMRC Code.
- Mineral Resources are reported in accordance with the PMRC 2007.
- The Mineral Resources reported in the table above represent estimates as of December 31, 2018. Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape, continuity of the mineralization and the availability of sampling results. Tonnages in the table have been rounded to the nearest thousands to reflect the relative uncertainty of the estimate.
- Cut-off grades used: Saprolite: Ni \geq 1.0%, Fe < 20%
 Limonite: Ni \geq 0.5%, Fe \geq 45%; Ni \geq 0.7%, Fe \geq 20% to < 45%

Table 11-7. Cabangahan Grade-Tonnage data per Ni cut-off grade.

COG	Tonnes	Ni	Fe
0.50	39,476,215	1.09	33.01
0.60	38,008,810	1.11	32.39
0.70	35,453,632	1.14	31.18
0.80	30,906,107	1.20	29.01
0.90	26,296,027	1.27	26.13
1.00	22,843,553	1.31	23.54
1.10	17,982,594	1.39	22.38
1.20	13,768,508	1.47	21.10
1.30	10,406,997	1.54	20.55
1.40	7,477,842	1.61	19.67
1.50	5,052,819	1.70	19.20
1.60	3,354,381	1.78	18.91
1.70	2,042,223	1.87	18.11
1.80	1,209,479	1.96	18.01
1.90	681,855	2.05	16.57
2.00	374,940	2.13	15.60
2.10	182,040	2.23	13.89
2.20	81,284	2.32	12.68
2.30	41,611	2.39	12.42
2.40	19,618	2.47	14.90
2.50	2,683	2.63	12.36
2.80	808	2.87	15.09

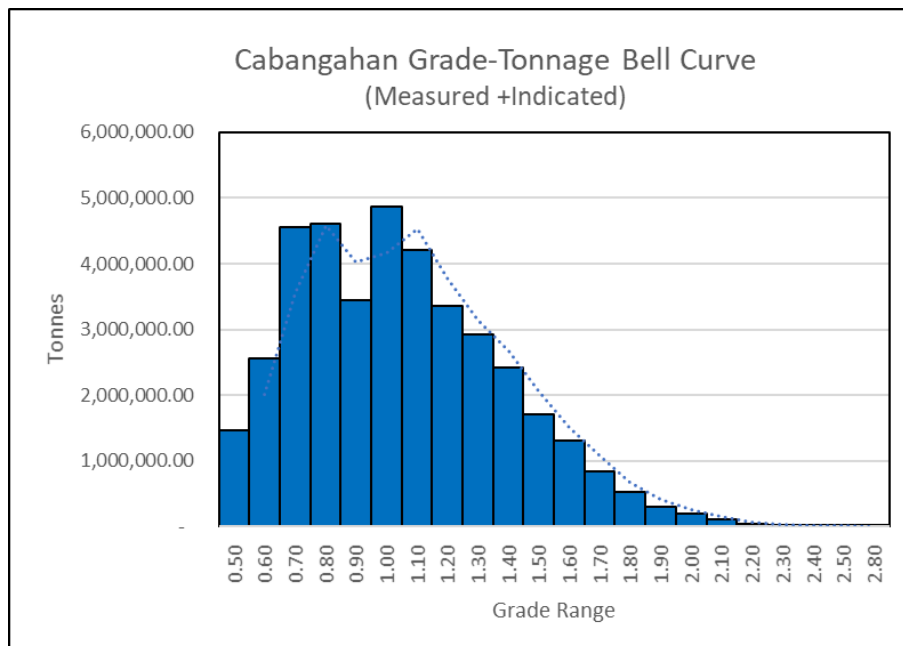


Figure 11-5. Cabangahan Grade-Tonnage Bell Curve for Measured and Indicated Mineral Resource.

Table 11-8. Sipangpang Grade-Tonnage data per Fe cut-off grade.

COG	Tonnes	Fe	Ni
45	27,836,686	49.49	0.75
46	26,718,490	49.65	0.75
47	24,750,645	49.90	0.74
48	22,245,059	50.17	0.74
49	17,572,485	50.61	0.73
50	12,200,004	51.11	0.74
51	5,678,119	51.85	0.76
52	1,516,912	52.98	0.75
53	530,693	53.89	0.74
54	196,317	54.49	0.60
55	40,389	55.27	0.53

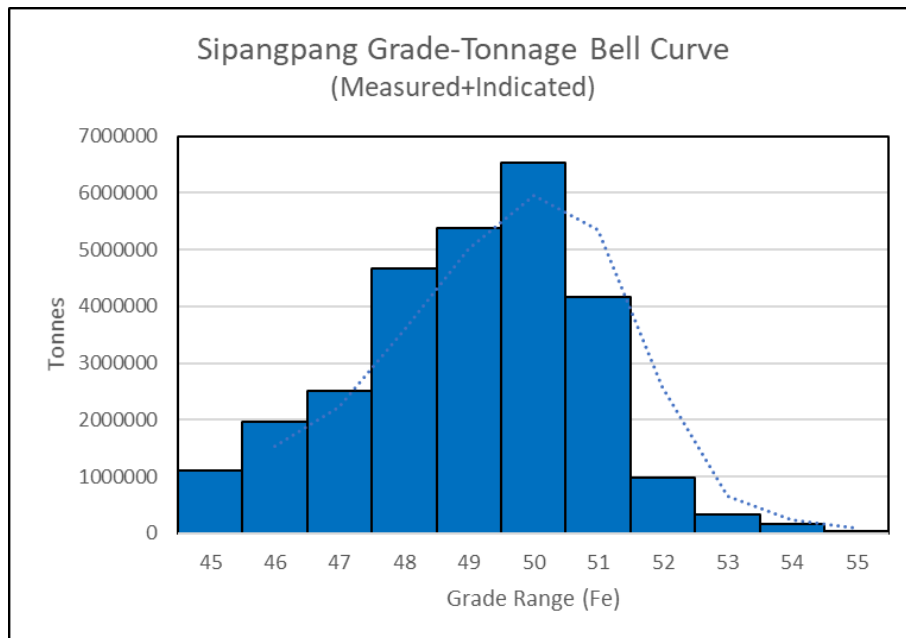


Figure 11-6. Sipangpang Grade-Tonnage Bell Curve for Measured and Indicated Mineral Resource.

12.0 INTERPRETATION AND CONCLUSIONS

12.1 Synthesis of all the data

The development and in-fill drilling in 2018 resulted to additional data from Cabangahan and Sipangpang with significant nickel and iron grades. Combined with historical drilling data, the resulting database was used to update the mineral resource estimates of MMDC. Mineral resource estimation was done in accordance with the criteria defined within the PMRC Guidelines for reporting Exploration Results and Mineral Resources wherein valid and verified data was used. Table 12-1 summarizes the highlights of the resource reporting.

Table 12-1. Resource reporting highlights (PMRC Table 1).

Criteria	Explanation
Sampling Techniques and Data	
<i>Sampling techniques</i>	<i>Sampling was done at a nominal 1-meter interval down the hole regardless of laterite horizon boundaries.</i>
<i>Drilling techniques</i>	<i>The in-house drilling team utilized 10 units YHP-model drill machines with NQ size bits.</i>
<i>Core Logging</i>	<i>Core samples are graphically logged by the site geologist describing physical characteristics such as color, texture, matrix size, clast to matrix percentage, consistency, weathering, visible minerals present.</i>
<i>Sub-sampling techniques and sample preparation</i>	<i>Whole 1-meter core is placed in plastic sample bag and submitted to Assay Laboratory for sample preparation and analysis. At the Sample Preparation Facility, the whole core sample is dried, crushed and pulverized for analysis.</i>
<i>Quality of assay data and laboratory</i>	<i>Quality of sample preparation is checked manually by way of pressing the sample between the thumb and middle finger. A gritty sample will be re-pulverized. In terms of assaying, duplicates and standards are included in the assaying batch.</i>
<i>Verification of sampling and assaying</i>	<i>No twin hole drilling has been made to date.</i>
<i>Drill hole location</i>	<i>Drill holes were surveyed by MMDC in-house Survey Team using Total Station and RTK.</i>
<i>Data spacing and distribution</i>	<i>Drill holes were spaced initially at 100m interval. Areas with significant nickel and iron values are drilled at closer 50m and eventually 25m interval.</i>
<i>Orientation of data in relation to geological structure</i>	<i>The laterite deposits occur along top ridges as thin covering. There is no preferred orientation or horizontal anisotropy identified in the MMDC laterite.</i>
Reporting of Exploration Results	
<i>Mining rights and land tenure status</i>	<i>MMDC's MPSA 016-93-XI has been extended for 9 years or until July 1, 2027 due to force majeure. The term is renewable for another 25 years.</i>
<i>Exploration done by other parties</i>	<i>All previous Technical Report, database and resource estimates were collated and compiled by the Resource Development and Exploration Department. Previous exploration activities were done using standard Exploration Protocol.</i>
<i>Geology</i>	<i>The tenement area is underlain mainly by ultramafic rocks dunite, peridotite and pyroxenite which are part of the Dinagat Ophiolite Complex. Chemical and physical weathering of these ultramafic rocks produces laterite.</i>
<i>Data aggregation methods</i>	<i>The drilling data specifically the assay results were composited to an optimized 1m composite to remove potential bias which could result from small or uneven sample intervals.</i>

<i>Relationship between mineralization widths and intercept lengths</i>	<i>Laterite deposits are blanket-like deposits that occur as covers along top ridges. Considering that the deposit is basically horizontal, and that drilling was done vertically and within inclination, the actual thickness of the mineralization is reflected by the intercept lengths.</i>
<i>Balanced reporting</i>	<i>All drill hole results were used in the resource estimates regardless if it's low grade or uneconomical</i>
<i>Further work</i>	<i>Density and moisture determination using core samples were also started during the later part of 2018. This will be incorporated in the Exploration SOP of the Exploration Team.</i>
Estimation and Reporting of Mineral Resources	
<i>Database integrity</i>	<i>Minor errors in the drill hole database were corrected. This includes typographical errors during transfer of raw data to the database format.</i>
<i>Geological interpretation</i>	<i>Lateral and vertical continuity of the limonite and saprolite deposits were established by core drilling.</i>
<i>Estimation and modelling techniques</i>	<i>Resource estimation was done by way of Nearest Neighbor interpolation which is basically computerized manual polygon method. Block size was set at 25x25x1 to be consistent with the previous manual polygon method.</i>
<i>Moisture</i>	<i>Moisture used is 38% which based on the initial results of the moisture determination done by the Exploration Team.</i>
<i>Cut-off parameters</i>	<i>Ni and Fe cut-off grades used are as follows:</i> <ul style="list-style-type: none"> • Saprolite high nickel = ≥ 1.6 Ni; ≤ 20 Fe • Saprolite low nickel = 1.0-1.6 Ni; ≤ 20 Fe • Limonite high iron = ≥ 0.5 Ni; ≥ 45 Fe • Limonite low iron = ≥ 0.7 Ni; 20-45 Fe
<i>Mining factors or assumptions</i>	<i>None</i>
<i>Metallurgical factors or assumptions</i>	<i>None</i>
<i>Bulk density</i>	<i>Bulk density used is 1.5 which is based on the average density determined during density determination using core samples. This coincides to the historical values used by previous CPs in their resource estimation which is loose density (1.16) multiplied by swell factor (1.35)</i>
<i>Classification</i>	<i>Resource classification is based on drilling density or spacing. Closer spaced drilling is necessary for saprolite given its characteristic wherein there is higher variability of grades in saprolite compared to limonite due to the unpredictable occurrence of unmineralized rocks within the enriched saprolite profile.</i>

12.2 Adequacy of data, overall data integrity and areas of uncertainty

The data used in the resource estimate of MMDC Nickel Laterite Mining Project was verified and validated by the undersigned and has been determined to be sufficiently reliable to support mineral resource estimation.

12.3 Overall conclusions by the CP

The undersigned CP and the Resource Development and Exploration Team have ensured that all exploration activities and resource estimation done for the MMDC Nickel Laterite Mining Project is in accordance with the guidelines provided by the PMRC Code. Adherence of the team to the Company's standard operating procedures for exploration activity indicates proper implementation and supervision of the exploration program.

Table 12-1 summarizes the highlights of this Technical Report which support the mineral resource estimates and classification of the mineral resources for release to the public.

In addition, the undersigned is reporting the mineral resource estimates in this Technical Report in accordance to the PMRC Code within the accuracy of the available data.

13.0 RECOMMENDATIONS

To increase the mineral resource estimates of MMDC and further improve its Exploration Protocol, the following are recommended:


1. Continue implementation of in-fill drilling in areas with Inferred and Indicated resource to increase level of confidence in the database and upgrade these mineral resources into Indicated and Measured, respectively.
2. Continue implementation of development drilling in areas adjacent to previously drilled areas with significant intercept.
3. Implement reconciliation of resource (block model) vs actual mine production.
4. Improve QA-QC program by inserting field duplicates and blanks as well as implementation of third-party check analysis.
5. Continue implementation of density and moisture determination of core samples.
6. Improve the Drilling Procedure by including the density and moisture determination in the SOP document.
7. Continue compliance to the standard Drilling Procedure.

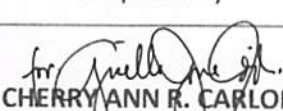

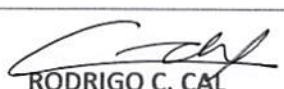
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15.0 APPENDICES

1. Exploration Protocol
Sample Preparation and Laboratory Protocol

	Document Number: MMDC-IMS-GED-PR-004	Integrated Management System Procedure
	Revision Number: ∅	Development Drilling Procedure
	Page Number: 1	Marcventures Mining and Development Corporation

REVISION HISTORY		
<input type="checkbox"/> Enactment <input type="checkbox"/> Revision <input type="checkbox"/> Nullification	Description (s)	Approval by:
July 1, 2018	For Enactment	CRC
Prepared By	Reviewed By	Approved By
 CHERRYANN R. CARLOM Drilling Geologist	 JAYVHEL T. GUZMAN Resource & Dev't. Manager	 RODRIGO C. CAL General Manager/MR
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1.0 OBJECTIVE

The purpose of this procedure is to establish and maintain a systematic flow of drilling operations within previously drilled areas for more optimized productivity and efficiency.

2.0 SCOPE

This flow chart covers the procedure in drill hole proposal and survey, development drilling operations and core logging and sampling.


3.0 DEFINITION OF TERMS

- 3.1 DH – Drilling Hole
- 3.2 DG – Drilling Geologist
- 3.3 DF – Drilling Foreman
- 3.4 GA – Geologic Aide
- 3.5 DT – Drilling Team; composed of one (1) drill operator, one (1) drill sampler and two (2) drill aides.
- 3.6 DO – Drill Operator
- 3.7 DA – Drill Aide
- 3.8 DS – Drill Sampler
- 3.9 SHP – Sample Hauler/Packer
- 3.10 DDR – Daily Drilling Report; includes data such as, but not limited to, the following: date, drill unit, area, hole id, collar elevation, drill run, core length, drill time, rock/soil type, reason for downtime (if any), total meterage drilled, total fuel consumed, total drill time, total downtime, name and signature of drill operator.
- 3.11 CLS – Core Log Sheet; form used in core logging, contains graphic log and physical description observed in the core sample such as but not limited to; color, texture, matrix size, clast to matrix percentage, consistency, weathering, visible minerals and geotechnical properties.
- 3.12 EAF – Equipment Accountability Form; issued upon the withdrawal of equipment and accessories before the commencement of drilling activity. Serves as a record of the released equipment and accessories and the person accountable for the latter.
- 3.13 GWF – Gasoline Withdrawal Form; used internally for the monitoring of gasoline withdrawal and usage.
- 3.14 NQ – size of rods used in the drilling operation; core size extracted is about 47.6mm

4.0 REFERENCE DOCUMENTS

- 4.1 Daily Drilling Report

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- 4.2 Core Log Sheet
- 4.3 Equipment Accountability Form
- 4.4 Gasoline Withdrawal Form
- 4.5 Assay Chain of Custody

5.0 AUTHORITY AND RESPONSIBILITY

5.1 The Drilling Geologist shall be responsible for:

- 5.1.1 Selection of area for potential in-fill drilling.
- 5.1.2 Generation of drill hole location map, extraction of technical coordinates, and submission of the aforementioned to the survey team for actual drill hole location survey.
- 5.1.3 Data verification of the actual surveyed data.
- 5.1.4 Capturing of Core Photographs
- 5.1.5 Core Logging
- 5.1.6 Encoding and inscription of assay results.

5.2 The Instrument Man shall be responsible for:

- 5.2.1 Drill Hole Location Survey
- 5.2.2 Submission of the actual drill hole coordinates to the drilling geologist.

5.3 The Drilling Foreman shall be responsible for:

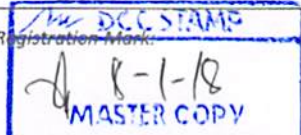
- 5.3.1 Monitoring and issuance of drilling equipment and accessories.
- 5.3.2 Pre-assigning drill hole locations to individual drilling teams for efficient flow of operations.
- 5.3.3 Consolidation and submission of Gasoline Withdrawal Forms.
- 5.3.4 Ensuring the efficient delivery of core samples to the assay laboratory.


5.4 The Drill Operator shall be responsible for:

- 5.4.1 Withdrawal of needed equipment and accessories.
- 5.4.2 Mobilization and machine set-up
- 5.4.3 Engine check-up and conditioning
- 5.4.4 Actual drilling operation
- 5.4.5 Securing all equipment and accessories after every shift.
- 5.4.6 Ensuring that drilled holes and excavated pits are covered properly and that location will be left clean of any wastes.

5.5 The Drill Aide shall be responsible for:

- 5.5.1 Clearing the pathway of any obstruction before mobilization to prevent any injuries.

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- 5.5.2 Withdrawal of gasoline and filling up and submission of Gasoline Withdrawal Form (GWF).
- 5.5.3 Assisting the Drill Operator (DO) during actual drill operations, such as but not limited to; a) setting-up of the machine, b) pulling-up the rod with the core tube and drill bit, c) securing the NQ rod with wrench pipes to avoid plummeting, d) securing of equipment after working hours.

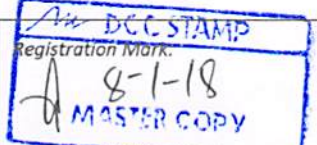
5.6 The Drill Sampler shall be responsible for:

- 5.6.1 Detachment of drill bit from the core tube.
- 5.6.2 Shoving out the core sample using the core pusher and pulling out of sample from the drill bit.
- 5.6.3 Placing the core samples in a clean core box.
- 5.6.4 Measuring the length of the core sample and recording the values in the Daily Drilling Report (DDR).
- 5.6.5 Preparation and placement of core blocks.
- 5.6.6 Cleaning of core tube and drill bit upon the retrieval of core samples.
- 5.6.7 Preparation and submission of DDR.

5.7 The Geologic Aide shall be responsible for the checking of core recovery and assisting the DG during core logging and sampling.

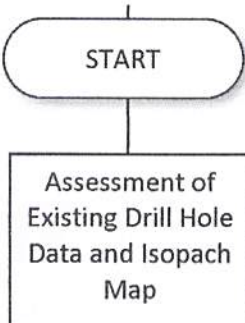
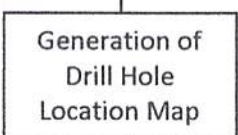
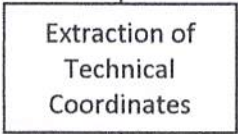
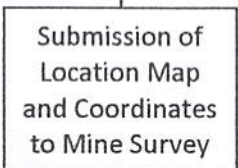


5.8 The Sample Hauler/Packer shall be responsible for:

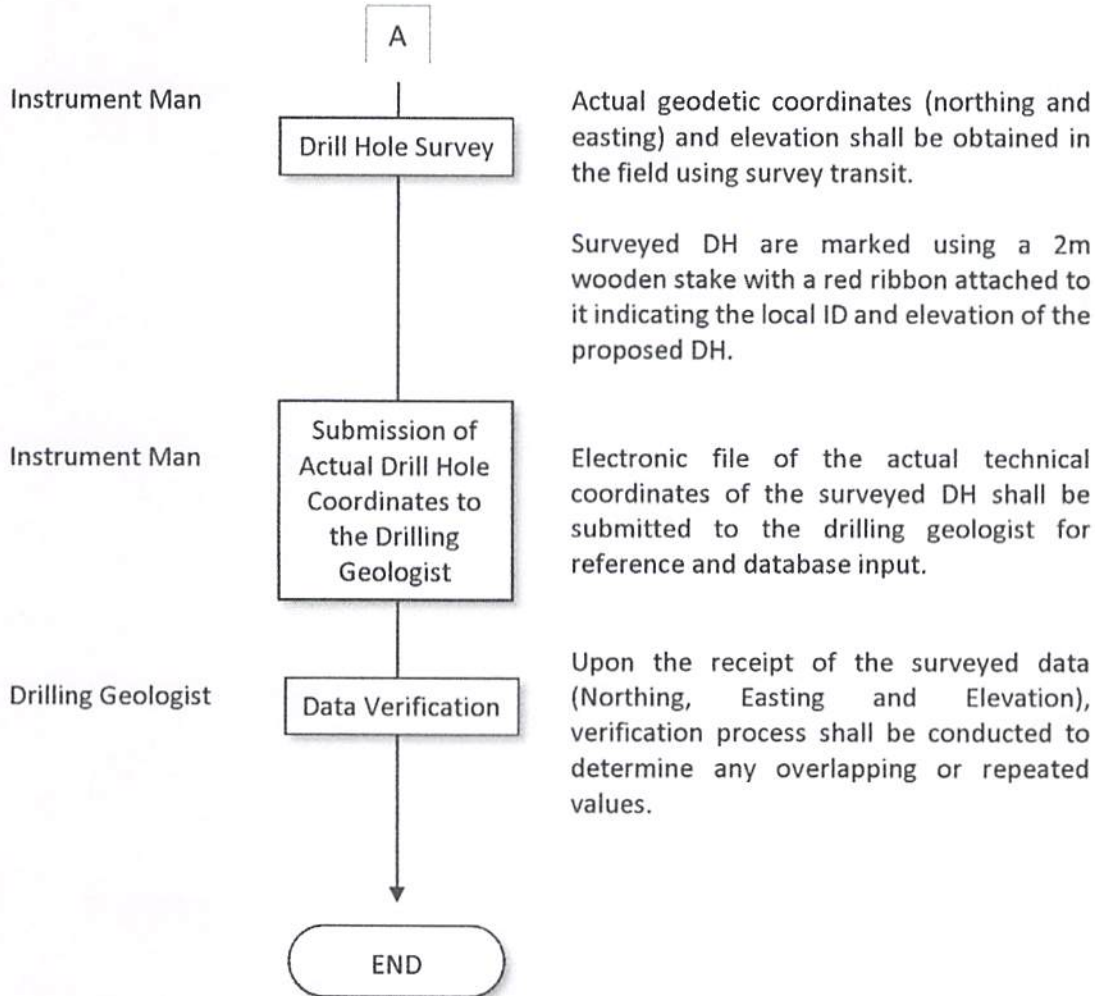
- 5.8.1 Individual placement of the core samples in a clean sample bag and collectively placing it in an empty sack.
- 5.8.2 Delivery of samples to the in-house assay laboratory.

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6.0 PROCEDURE

6.1 Drill Hole Proposal

RESPONSIBLE UNITS	PROCESS FLOW	PROCESS DESCRIPTION	RECORDS
Drilling Geologist		<p>Selection of area for potential in-fill drilling shall be based on existing isopach map and available drill hole (DH) data to delineate possible additional mineral resources and/or upgrade existing inferred and indicated mineral resources to measured resources.</p> <p>Proposed DH should be concentrated within areas having desirable ore intercepts including adjacent areas for possible mineralization.</p>	
Drilling Geologist		<p>Working map displaying the existing and proposed DH is generated using AutoCAD software as reference.</p> <p>Location of proposed DH shall be based on the ore type present. (Refer to Table 1 "Resource Classification for Limonite and Saprolite")</p>	
Drilling Geologist		<p>Local coordinates are extracted based from the drawing file (.dwg) and are then recorded to Excel spreadsheet registering the DH ID and geodetic coordinates (northing and easting).</p>	
Drilling Geologist		<p>Proposed DH and extracted coordinates shall be transmitted to the Survey team for the actual DH survey.</p>	
			
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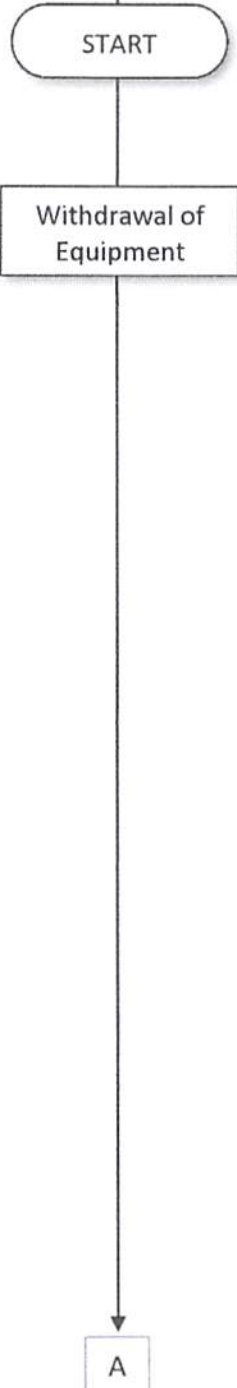


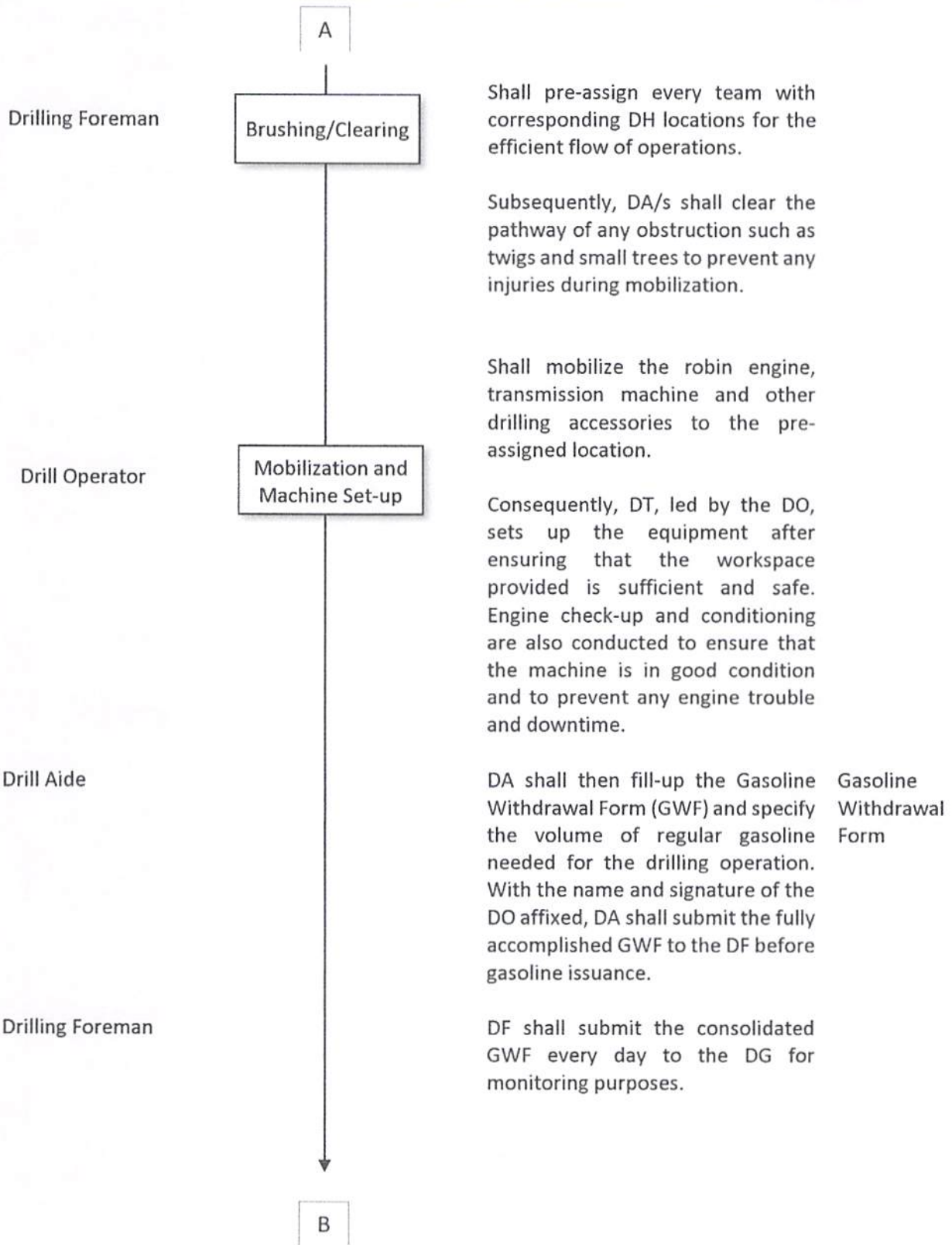
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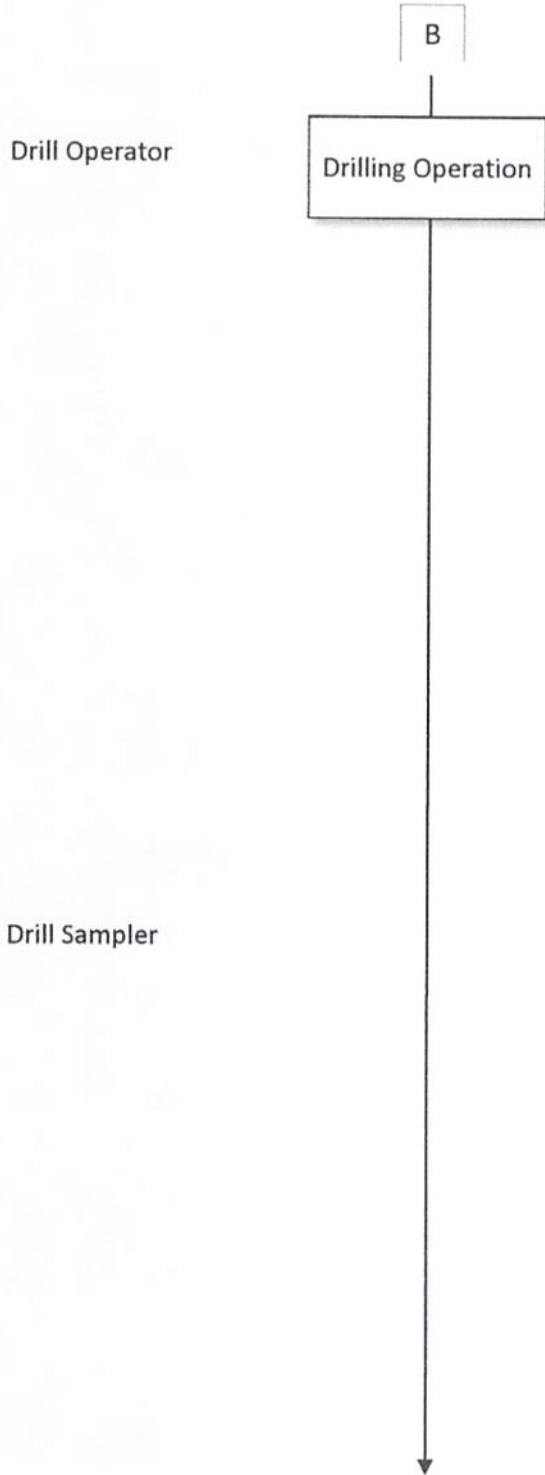
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6.2 Drilling Operation

RESPONSIBLE UNITS	PROCESS FLOW	PROCESS DESCRIPTION	RECORDS
Drill Operator	 <pre> graph TD Start([START]) --> Withdrawal[Withdrawal of Equipment] Withdrawal --> A[A] </pre>	<p>All drilling machines and its accessories are properly stored in the core house storage facility.</p> <p>Upon notification by the Drilling Geologist (DG) of the commencement of the drilling program, the Drilling Foreman (DF) shall classify beforehand the equipment and accessories needed for drilling operation based on the scheduled number of rigs.</p> <p>DF shall then release the equipment and accessories to the Drill Operator (DO) and issue the Equipment Accountability Form (EAF).</p> <p>Upon checking that the equipment and accessories are complete and in good condition, DO shall affix his printed name and signature on the EAF for the proper turn-over of accountabilities.</p> <p>DF shall issue the duplicate copy of the EAF to the DO and shall submit the original copy to the DG for compilation and monitoring.</p>	<p>Equipment Accountability Form</p> <p>Equipment Accountability Form</p>






The DO shall jumpstart the drilling machine and start coring the first interval based on the DH's elevation. Elevations with decimal points greater than 0.5 shall be considered one (1) meter and elevations with decimal points lesser than 0.5 shall be included in the first one (1) meter.

After drilling the first interval, the DO shall temporarily turn-off the engine and unlock the swivel head. Subsequently, the DAs will then pull up the NQ rod with the core tube and drill bit and shall secure the NQ rod with wrench pipes to avoid plummeting. The core tube and drill bit shall then be detached from the NQ rod and shall be placed in a temporary platform for core sample retrieval.

The Drill Sampler (DS) shall then detach the drill bit from the core tube and shall position the latter on the core pusher to shove out the core sample. The DS shall likewise pull out the core sample from the drill bit. The retrieved core samples shall then be placed in the left most slot of a clean core box following a left-to-right orientation for uniformity.

The DS shall then measure the length of the core sample and record the drill run and the core recovery on the Daily Drilling Report (DDR). The DS shall also prepare core blocks to be used for labeling

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the samples according to the drill run.

Upon retrieval of the core samples, the DS shall clean the core tube and the drill bit. The equipment shall again be used for coring the succeeding intervals, connecting NQ rods together as coring becomes deeper.

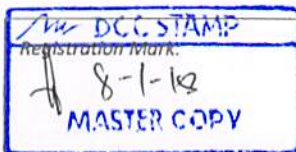
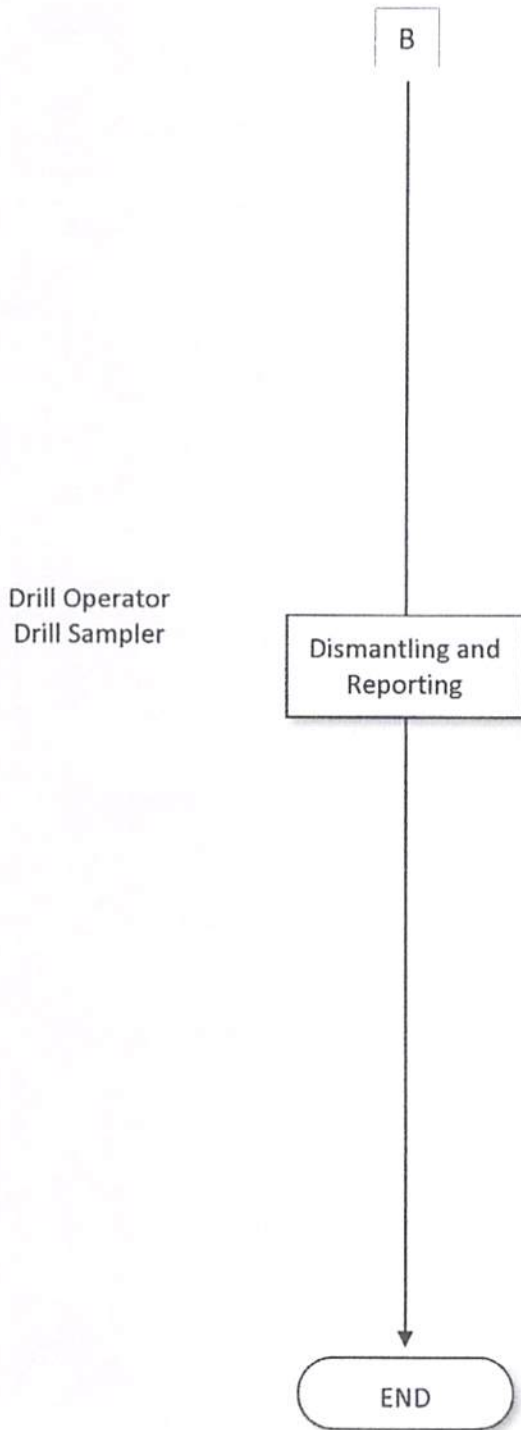
DH is considered drilled and completed (EOH) when the drilling team (DT) was able to drill two (2) meters of bedrock, or upon the advice of the drilling geologist/geologic aide.

At the end of the working shift, the DT will secure all equipment and accessories to avoid damage and losses. If the hole is completed, the DO shall ensure that the DH and excavated pits are covered properly and that location will be left clean of any wastes.

Wooden stake shall be inserted and fitted in the hole, so as to cover it, and shall include general details of the DH such as hole id, collar elevation and year drilled.

Subsequently, the DS prepares the DDR which will be signed by the DO. The fully accomplished DDR shall be submitted to the drilling geologist/geologic aide for monitoring purposes.

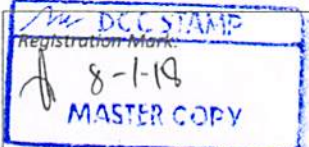
Daily Drilling Report form




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6.3 Core Logging and Sampling

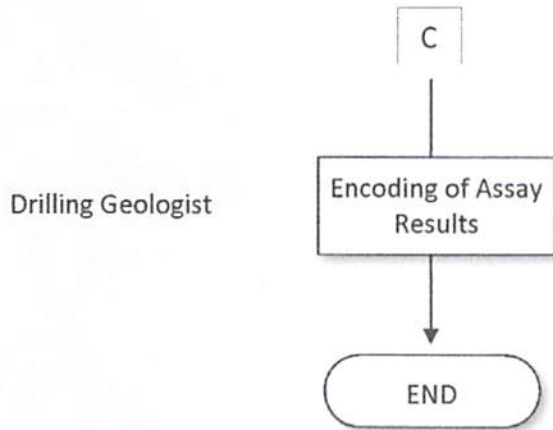
RESPONSIBLE UNITS	PROCESS FLOW	PROCESS DESCRIPTION	RECORDS
	START		
Geologic Aide	Core Checking	<p>Shall fill-up the core log sheet, inscribing the general details of the DH such as the hole id, collar elevation, date started, date completed and etc.</p> <p>The latter will then re-check and measure the core recovery and inscribe the data on the %Rec portion of the Core Log Sheet.</p>	Core Log Sheet Form
Drilling Geologist	Capturing of Core Photographs	Shall take core photographs of each DH for additional reference. This will be downloaded and renamed based on the hole id and shall be stored in the central database.	
Drilling Geologist	Core Logging	Using the CLS, core samples will be graphically logged by the DG as well as describe the physical characteristics observed such as but not limited to; color, texture, matrix size, clast to matrix percentage, consistency, weathering, visible minerals present and geotechnical properties.	Core Log Sheet Form
Sample Hauler/Packer	Sampling	Core samples per drill run shall be individually placed in clean sample bag (16x20) labeled with the collar elevation and drill run. This shall be collectively placed per DH in an empty sack labeled with the hole id and collar elevation.	
Sample Hauler/Packer	Sample Dispatch	SHP supervised by the DF, shall deliver the samples to the in-house	Chain of Custody Form
		Distribu C rk:	<p><i>This document is updated and controlled if it bears the red "CONTROLLED COPY" stamp. Otherwise, please refer to the Document Control Center (DCC) for your updated copy.</i></p>

	Document Number: MMDC-IMS-GED-PR-004	Integrated Management System Procedure
	Revision Number: ∅	Development Drilling Procedure
	Page Number: 12	Marventures Mining and Development Corporation

assay laboratory for analysis.

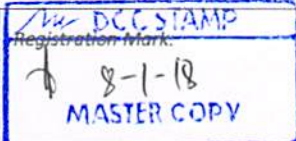
DF shall prepare necessary documents (COC) for sample submission based on Assay Laboratory procedures.

Upon the receipt of the assay results, values shall then be manually inscribed in the core log sheets and then encoded in the excel database for block model generation purposes.



7.0 ATTACHMENTS

- | | | |
|-----|--|-------------------------|
| 7.1 | Table 1 - Resource Classification for Limonite and Saprolite | |
| 7.2 | Equipment Accountability Form | – GED-PR-004-F001 Rev.0 |
| 7.3 | Gasoline Withdrawal Form | – GED-PR-004-F002 Rev.0 |
| 7.4 | Daily Drilling Report Form | – GED-PR-004-F003 Rev.0 |
| 7.5 | Core Log Sheet Form | – GED-PR-004-F004 Rev.0 |

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GEOLOGY AND EXPLORATION DEPARTMENT
Gasoline Withdrawal Form

Date: _____

YBM No: _____

PRODUCT	NO. OF LITERS

Requested By:

Issued By:

Drill Operator

GED-PR-004-F002 Rev.0

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MARVENTURES MINING & DEVT. CORP.
DAILY DRILLING REPORT

DATE _____ AREA _____
DRILL UNIT NO. _____ DH LOCATION : _____
Total Crew _____ MBLOCK _____
Shift _____ NORTH _____
Total Manhours _____ EAST _____
Collar Elev. (m) _____

Drill Run (depth)		Core Length (cm)	Drill Time (mins)	Rock /Soil Type	Reason for Downtime
From	To				

Total Meterage drilled (m.) _____
Total Drill Time (mins.) _____
Total Downtime _____
Total Fuel Consumed (liters) _____
Total Water Consumed (liters) _____

Reported by _____
Drill Operator

GED-PR-004-F003 Rev.0

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PROJECT: _____

CONTRACTOR/RIG NO.: _____

DATE STARTED: _____

DATE COMPLETED: _____

BLOCK: _____

NORTHING: _____

EASTING: _____

COLLAR ELEVATION: _____

SHIFT/TIME: _____
SHIFT/TIME: _____

DRILL RUN FROM TO	CORE LENGTH		GRAPHIC LOG	V/MATERIAL	PHYSICAL DESCRIPTION	SAMPLE ID	ANALYSIS				
	CM	% REC.					%Ni	%Fe	%Al	OTHERS	

LEGEND

L LIMONITE: reddish- yellowish brown, clay sized matrix w/ fine grained texture, compact and sticky consistency, moist and completely weathered, visible minerals: goethite, hematite, manganese oxide and detrital chromite. Soft- moderately hard soil.

ES EARTHY SAPROLITE: yellowish brown, soft sand sized matrix w/ 1-30% mod. hard pebble sized clast, compact friable consistency, moist and highly weathered, visible minerals: goethite, hematite, manganese oxide, detrital chromite, garnierite.

RS ROCKY SAPROLITE: yellowish green- greenish gray, mod. hard sand sized matrix with 30-90% hard pebble sized clast, compact friable consistency, moist and highly weathered, visible minerals: goethite, serpentine minerals, garnierite.

B BEDROCK: greenish gray in color, hard sand sized matrix with >80% hard pebble sized clast, compact, moist and fresh- slightly weathered, serpentine minerals noted along clast surface.

DEPTH (M): _____

PREPARED BY: _____

GEOLOGIC AIDE _____

LOGGED BY: _____


GEOLOGIST/CORE LOG SPECIALIST _____

TOTAL NO. OF SAMPLES: _____

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Table 1. Resource Classification for Limonite and Saprolite

LIMONITE ORE		SAPROLITE ORE	
Inferred Resources	200m grid interval	Inferred Resources	100m grid interval
Indicated Resources	100m grid interval	Indicated Resources	50m grid interval
Measured Resources	50m grid interval	Measured Resources	25m grid interval


 8-1-2018
 M. J. ...



Document Number: MMDC-IMS-GED-PR-002

Integrated Management System Procedure

Revision Number: Ø

Test Pitting Procedure

Page Number: 1

Marcventures Mining and Development Corporation

REVISION HISTORY

<input type="checkbox"/> Enactment <input type="checkbox"/> Revision <input type="checkbox"/> Nullification	Description (s)	Originator
July 1, 2018	Enactment	CRC

Prepared By	Reviewed By	Approved By
 CHERRY ANN R. CARLOM Jr. Geologist	 JAYVHEL T. GUZMAN Resource & Dev't. Manager	 RODRIGO C. CAL General Manager/MR


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	Document Number: MMDC-IMS-GED-PR-002	Integrated Management System Procedure
	Revision Number: ∅	Test Pitting Procedure
	Page Number: 2	
		Marcventures Mining and Development Corporation

1.0 OBJECTIVE

This procedure describes the steps followed during testpitting program.

2.0 SCOPE

This procedure applies to all exploration projects where test pitting is required.

3.0 DEFINITION OF TERMS

- 3.1 TP – Test Pit
- 3.2 LM – Lead Man
- 3.3 TP Helpers – Test Pitting Helpers
- 3.4 TP Crew – Test Pitting Crew

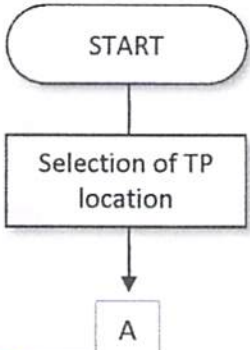
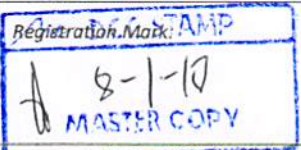
4.0 REFERENCE DOCUMENTS

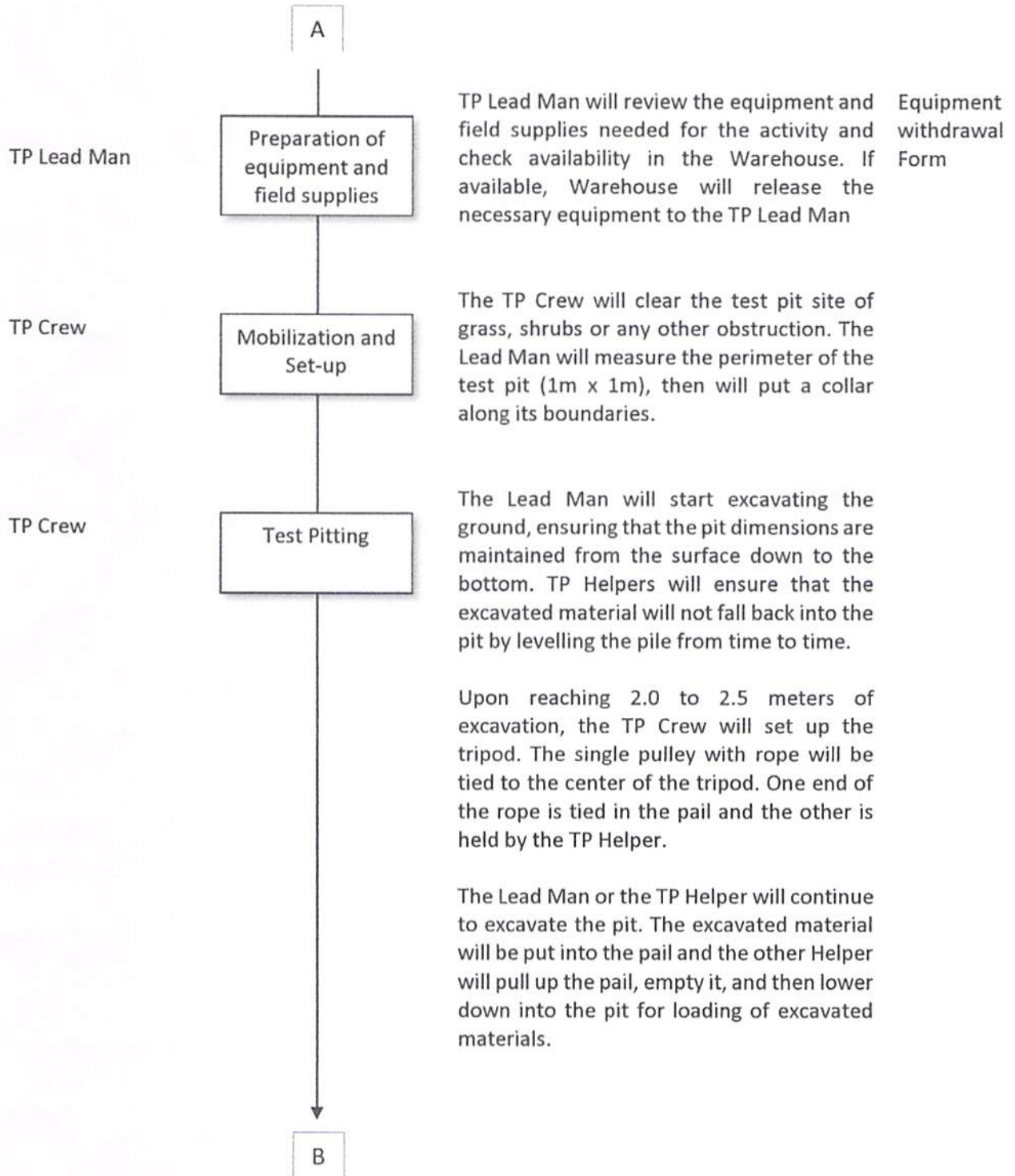
- 4.1 Leadman Logbook

5.0 AUTHORITY AND RESPONSIBILITY

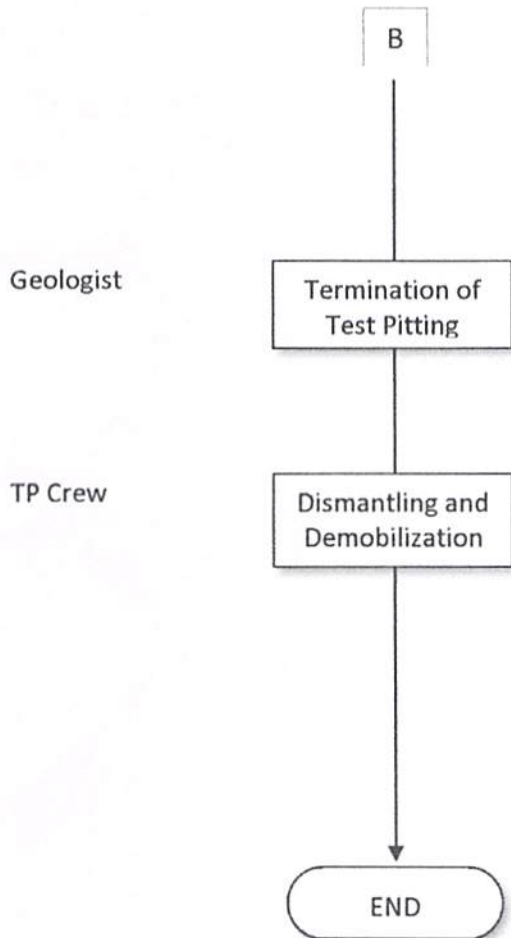
- 5.1 The Geologist chooses the location of the test pit based on analysis of available geologic data and structures
- 5.2 The TP Lead Man shall be responsible for:
 - 5.2.1 Preparation of the equipment/material needed for test pitting.
 - 5.2.2 Supervision of the conduct of test pitting
 - 5.2.3 Ensuring that the test pit is excavated according to standards and stable

6.0 PROCEDURE

RESPONSIBLE UNITS	PROCESS FLOW	PROCESS DESCRIPTION	RECORDS
Geologist		Geologist will choose the location of the test pit based on available geologic data and structures.	Equipment withdrawal Form
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Upon reaching a rock boulder or bedrock which can't be excavated deeper even with baretta or maso, the Lead Man will call the Geologist to confirm if the TP is considered completed or if the TP crew will continue excavation.



Geologist will check if it is still possible to continue TP. A TP is considered complete when rock boulder or bedrock cannot be penetrated deeper.

Upon completion, TP Crew will build a fence surrounding the pit and put a warning sign to prevent any untoward incidents. TP Crew will then dismantle and secure all equipment and either bring them back to the camp for safekeeping or transfer them to the next pit location.


The Lead Man will record the crew's accomplishment for the day in his log book. The Lead Man's logbook will contain names of the crew, time record of the group, TP Number and corresponding description as well as deviations, delays and problems encountered during the test pitting activity.

Lead Man
Logbook

7.0 ATTACHMENTS

7.1 Equipment withdrawal Form – GED-PR-004-F001 Rev.0

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	Document Number: MMDC-IMS-GED-PR-001	Integrated Management System Procedure
	Revision Number: ∅	Data Chain of Custody
	Page No: 2	
		Marcventures Mining and Development Corporation

1.0 OBJECTIVE

The purpose of this procedure is to establish and maintain an effective and systematic procedure in the proper documentation and archiving of data gathered from mapping and sampling activities.

2.0 SCOPE

This procedure applies to all projects where mapping and sampling is required.

3.0 DEFINITION OF TERMS


- 3.1 Hand Specimen (HS) – a fragment of rock with at least one freshly broken surface and small enough to be easily handled for megascopic study.
- 3.2 Data Custodian (DC) – responsible for the safe custody and storage of the data.
- 3.3 Base Maps (BM) – a map having only essential outlines and used for the plotting or presentation of specialized data of various kinds.

4.0 REFERENCE DOCUMENTS

- 4.1 Field Sheets
- 4.2 Base Maps
- 4.3 Request for Analysis Form
- 4.4 Outcrop Photos

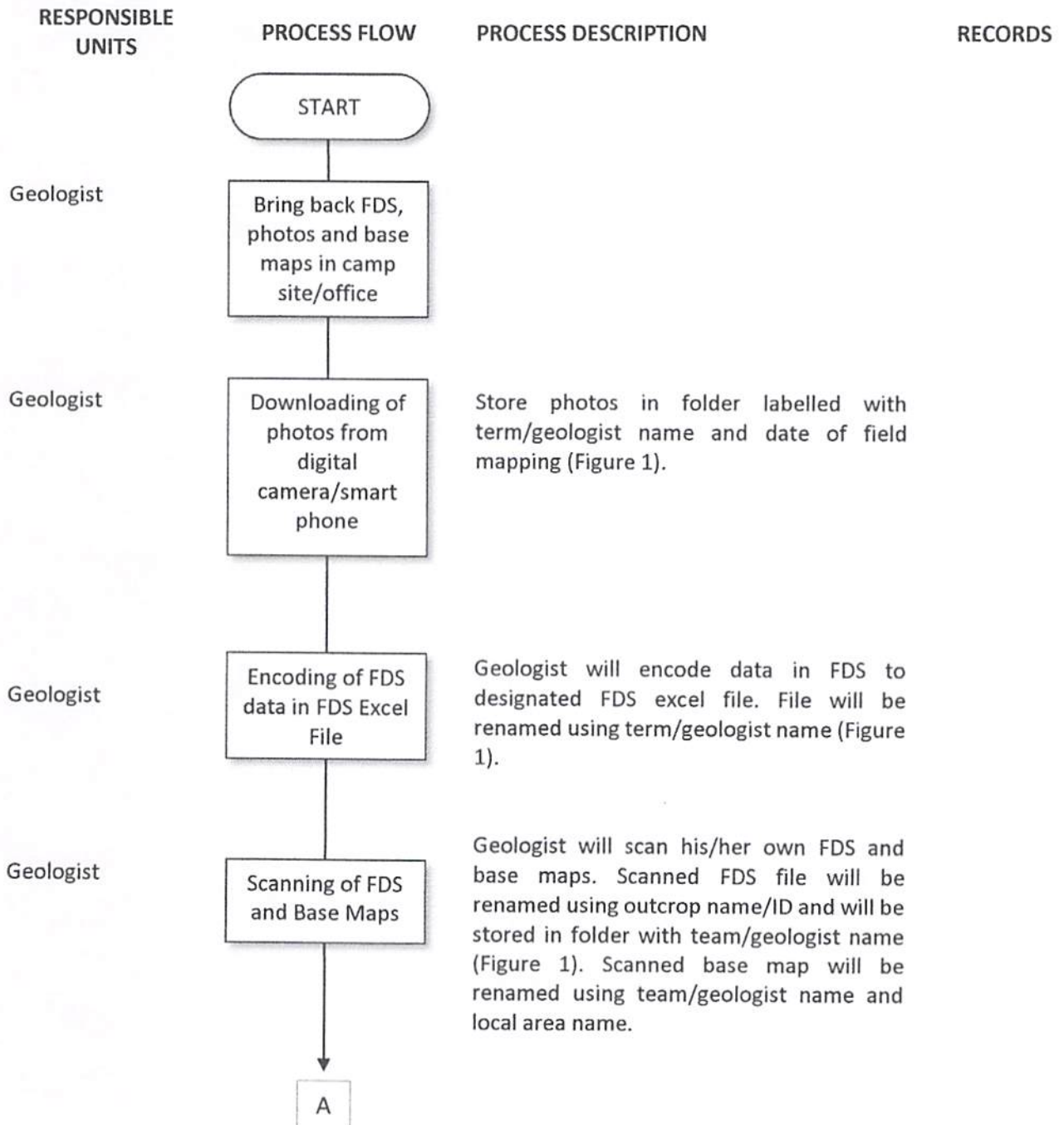
5.0 AUTHORITY AND RESPONSIBILITY

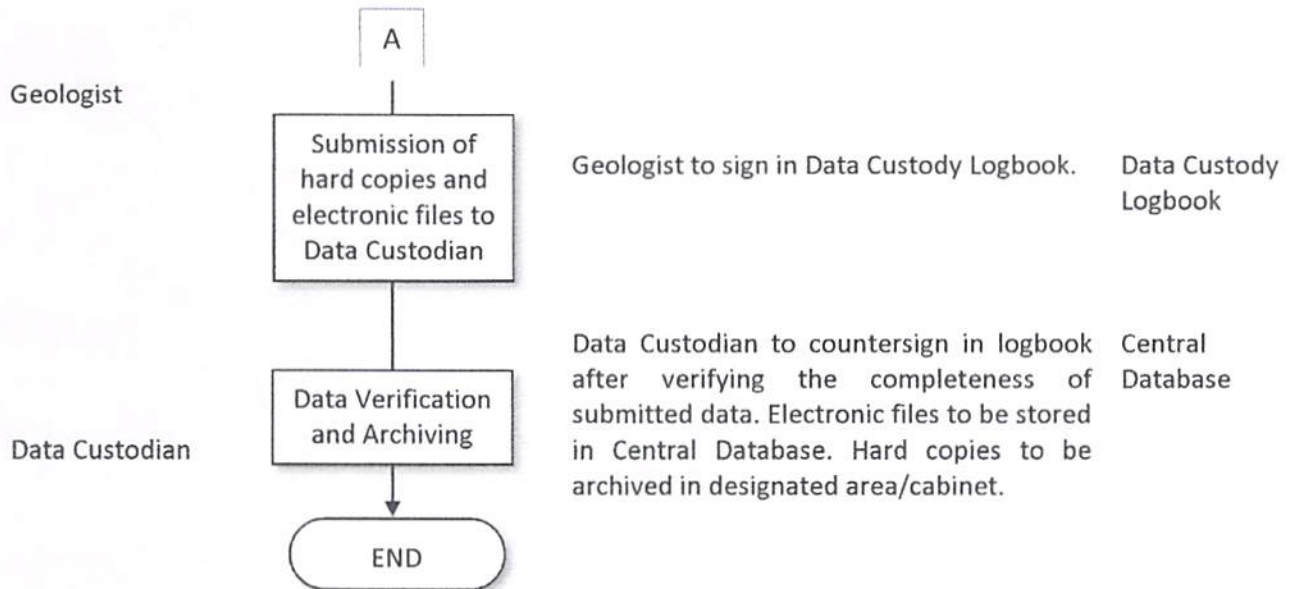
- 5.1 Geologists shall be responsible for:
 - 5.1.1 Conducting mapping and sampling, and bringing back outcrop data (field data sheets, photos and base maps) and rock samples.
 - 5.1.2 Downloading, scanning and encoding field data entries, photos and base map files.
 - 5.1.3 Logging of hand specimen.
- 5.2 The Data Custodian shall be responsible for:
 - 5.2.1 The control and classification of all documents for archiving.
 - 5.2.2 Document retrievals and disposal.

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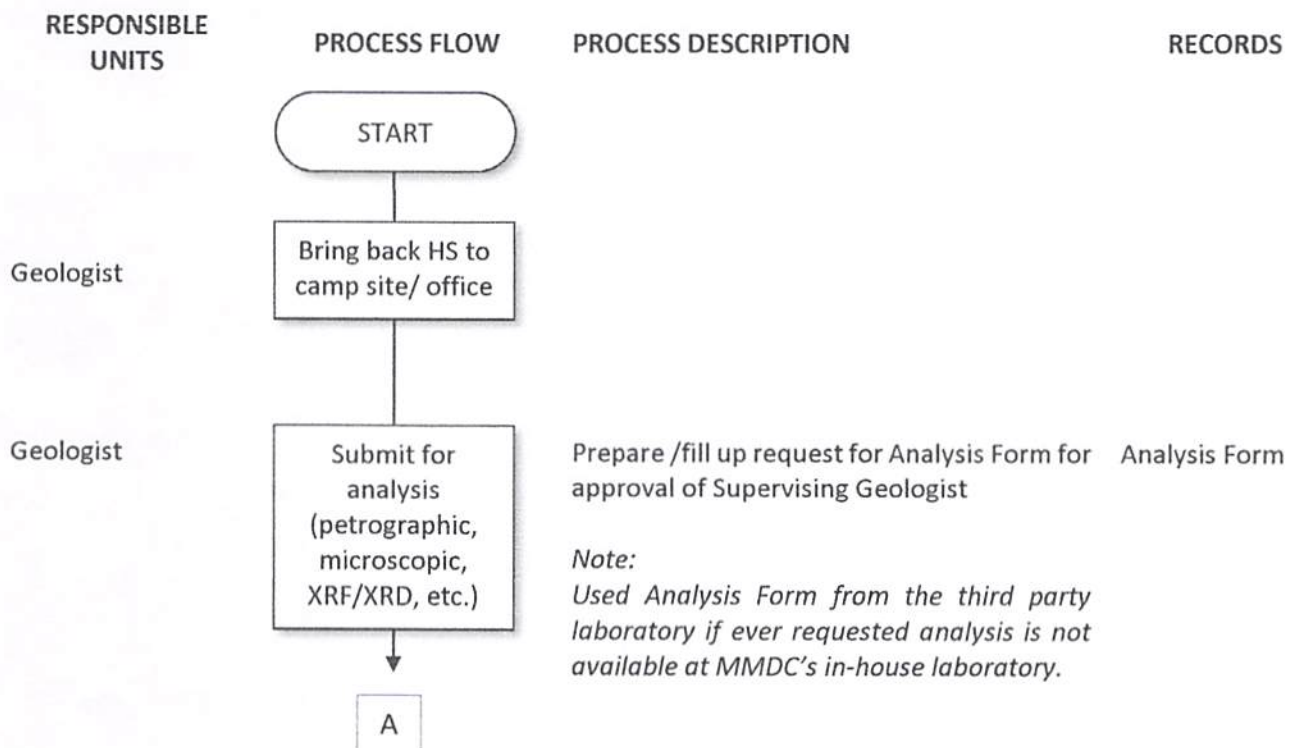
6.0 PROCEDURE

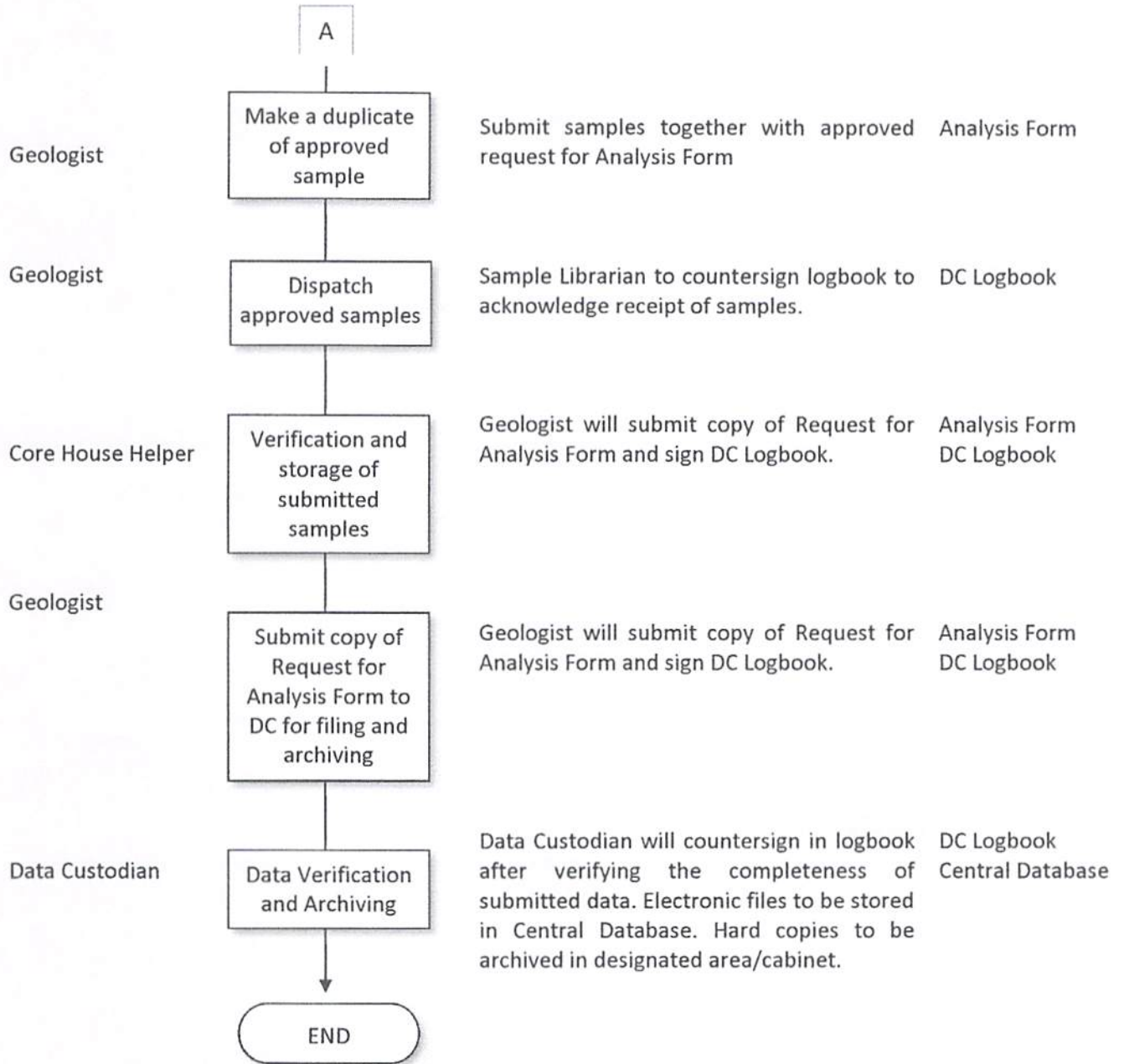
6.1 Filing and storage of Field Data Sheets and Base Maps, Outcrop and Rock Sample Photos



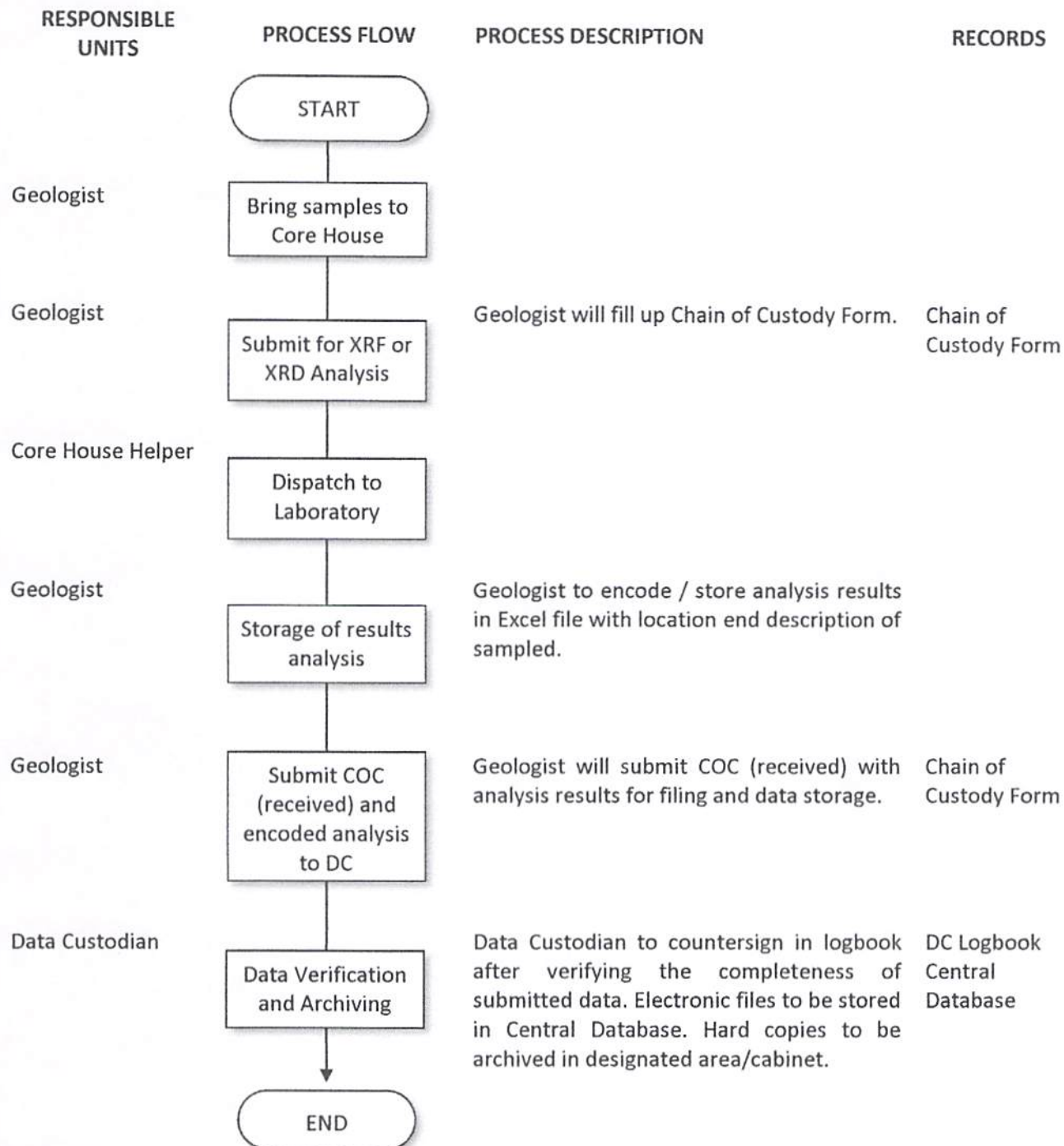


6.2 Filing and storage of Rock Sample (Hand Specimen)





6.3 Filing and storage of Laterite Sample



7.0 ATTACHMENTS

- 7.1 Figure 1 – Sample filename for raw and digital file/folder
- 7.2 Chain of Custody Form – GCM-PR-001-F001 Rev.0

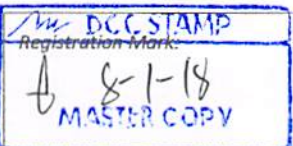
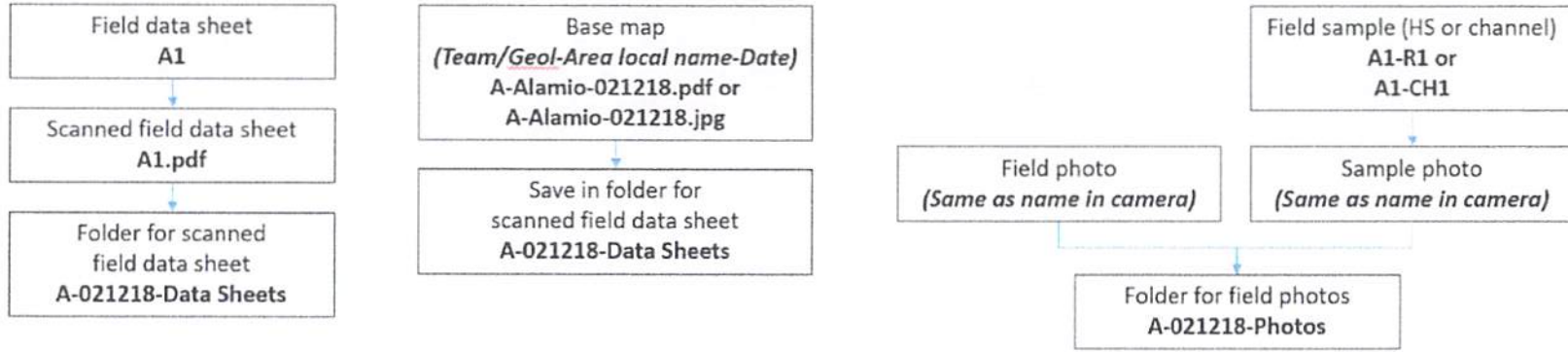
	Distribution Mark:	<p style="text-align: center; font-size: small;">This document is updated and controlled if it bears the <i>red</i> "CONTROLLED COPY" stamp. Otherwise, please refer to the Document Control Center (DCC) for your updated copy.</p>
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Figure 1 – Sample Filename for raw and digital file/folder



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CHAIN OF CUSTODY

To Assay Lab Date/Time Submitted:
From : Date/Time Received:
Dispatch No: Date Received:

Table with columns: Lab Number, Description, Elements Required (Ni, Fe, Al2O3, %H2O), Special Instructions. Includes a shaded column for Assay Lab use only.

Table with columns: Analytical Method, Wet Method, XRF, Disposal & Storage Instructions. Lists methods like Ni, Fe, Co, Al2O3, Etc, Moisture and disposal options like Save Fine Rejects, Save Coarse Rejects, etc.


Total Bags/Sacks: Total Samples:
Total Received:
Condition: Received in good condition / Received in bad condition

NOTE: Shaded Column for Assay Lab use only.

GCM-PR-001-F001 Rev. 0

Delivered by:
Received by:

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	Document Number: MMDC-IMS-GED-PR-003	Integrated Management System Procedure
	Revision Number: ∅	Block Modelling and Resource Estimation
	Page Number: 2	Marcventures Mining and Development Corporation

1.0 OBJECTIVE

This procedure describes the steps followed during Block Modeling and Resource Estimation.

2.0 SCOPE

This procedure applies to all projects where Block Model and Resource Estimation is required by MMDC.

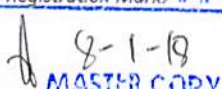
3.0 DEFINITION OF TERMS

- 3.1 Database (DB) - Collection of information that is organized into rows, columns and tables.
- 3.2 Digital terrain model (DTM) - any surface, topography represented as solid model.
- 3.3 3 Dimensional Model (3DM) - solid model representing 3 dimensional objects.
- 3.4 Block model (BM) – 3 dimensional model represented as small boxes of specific size.
- 3.5 Inverse distance square (IDS) - Interpolation method that calculate values based on the distance of the samples surrounding the unknown point.
- 3.6 Nearest neighbors (NN) - Interpolation method that calculate values based on the closest sample to the unknown point.

4.0 REFERENCE DOCUMENTS

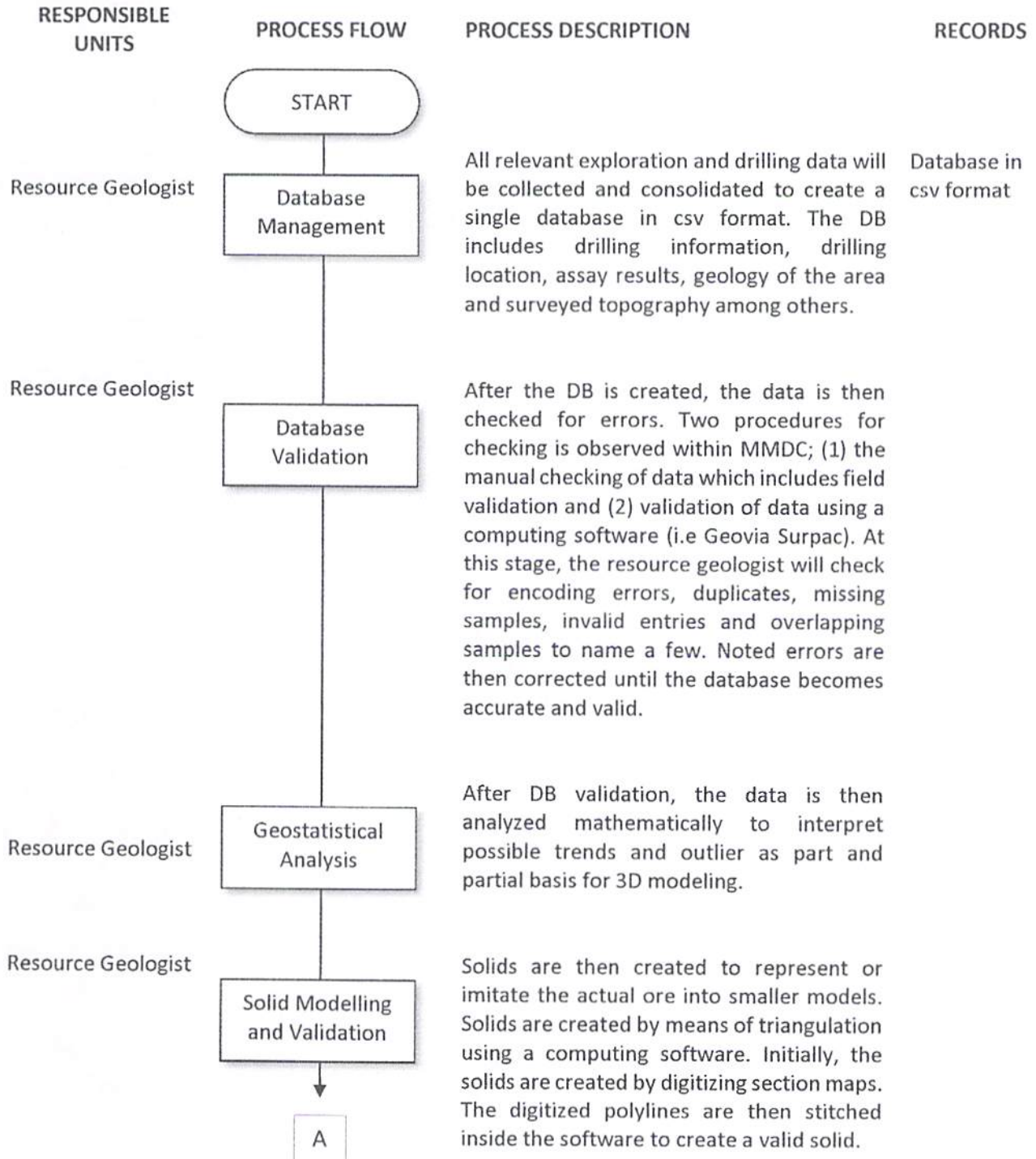
5.0 AUTHORITY AND RESPONSIBILITY

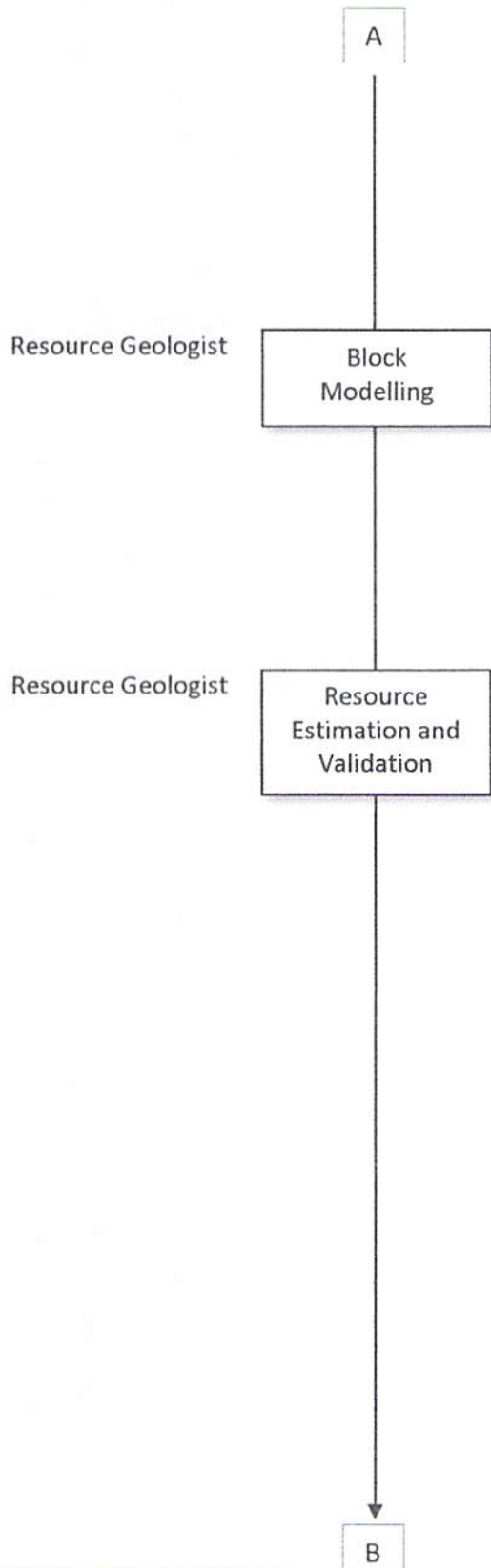
- 5.1 The Resource Geologist shall be responsible for:
 - 5.1.1 Compilation of all necessary data to create robust database.
 - 5.1.2 Load and run the DB in the modeling software (Geovia Surpac) for the second phase of data validation.
 - 5.1.3 Conduct mathematical analysis to check for possible trends and outlier among others.
 - 5.1.4 Create solid model and validate the same in preparation for block modeling.
 - 5.1.5 Establish the parameters for block model.
 - 5.1.6 Conduct resource estimation run using two (2) different methods of estimation.
 - 5.1.7 Perform industry standard validation checks to ensure optimum estimation result.
 - 5.1.8 Report resource estimation figures and submit to the Geology division manager.
 - 5.1.9 Endorse the completed BM to the geology division manager.
- 5.2 The Resource Development Head shall check and forward the completed model to the mine engineering division for reserves estimation.

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6.0 PROCEDURE

6.1 Establishing new document



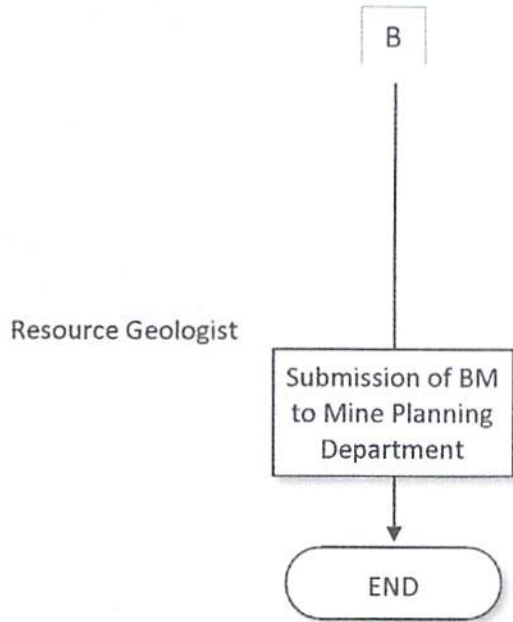


For solids to be used in resource computations, it must be valid. Solids are validated by checking that all triangles are connected, aligned and without a hole. If upon validation, the solid is deemed invalid, errors must be corrected by remodeling.

At this stage, validated solids are then subdivided into smaller blocks of uniform size. MMDC used 25m x 25m x 3m dimension in all its projects. Each block is given attributes of interests like ni%, Fe%, resource category, specific gravity, lithology and other attributes that the company finds interesting. Block Model

During estimation, the created attributes are then filled with values as a result of interpolation. The computing software (Geovia Surpac) will use available data within the database and interpolate towards the nearest known value to compute values of the unknown blocks in the model. MMDC used two different method of estimation; IDS and NN. Inverse Distance interpolation is a deterministic approach assuming closer values are more related than farther values. In the Nearest neighbor method of estimation, the unknown values are filled with known value closes to its location. MMDC uses IDS as its primary estimation method and NN as cross check. Block Model

MMDC validate its block model by using industry accepted resource estimation validation methods. The first validation method is by checking the geostatistical parameters of the input data (DB) as against the output data (estimated values). The statistical "mean" of the input and output data should be close and within 5% difference. The second check is by visually



checking the cross sections of the drillhole as against the block model values, the distribution of grades in the BM should replicate the distribution of grades of the DH and lastly by means of trend analysis in three (3) directions.

When the BM is deemed correct and acceptable, the model will be forwarded to the mine planning division for the reserves computation. Block Model

7.0 ATTACHMENTS

7.1 Figure 1 – Sample csv database

Figure 1 – Sample csv database

a. collar

Hole-ID	Northing	Easting	Elev	EOH
C17 250N 500E	1024303.38	594403.491	322.396	15.4
C17 300N 450E	1024353.97	594353.459	327.082	18.7
C17 300N 500E	1024353.57	594403.398	326.694	11.57
C17 350N 500E	1024402.6	594404.527	329.052	18.79
CAB-03	1024079.22	596562.52	384.524	18
CAB-06	1023979.31	596663.49	406.866	28
CAB-07	1023984.94	597268.63	245	11.4

b. survey

Hole-Id	Depth	Dip	Azim
C17 250N 500E	0	-90	0
C17 300N 450E	0	-90	0
C17 300N 500E	0	-90	0
C17 350N 500E	0	-90	0
CAB-03	0	-90	0
CAB-06	0	-90	0
CAB-07	0	-90	0

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c. assay

Hole-Id	From	To	Ni	Fe	Al
C17 250N 500E	0	1.4	0.77	47.24	6.65
C17 250N 500E	1.4	2.4	0.75	48.5	5.92
C17 250N 500E	2.4	3.4	0.78	48.84	5.6
C17 250N 500E	3.4	4.4	1.29	46.54	5.31
C17 250N 500E	4.4	5.4	1.54	27.14	2.74
C17 250N 500E	5.4	6.4	1.63	13.13	0.56
C17 250N 500E	6.4	7.4	1.72	15.94	0.68

d. lithology

Hole-ID	From	To	Litho
C17 250N 500E	0	1.4	L
C17 250N 500E	1.4	2.4	L
C17 250N 500E	2.4	3.4	L
C17 250N 500E	3.4	4.4	L
C17 250N 500E	4.4	5.4	L
C17 250N 500E	5.4	6.4	S
C17 250N 500E	6.4	7.4	S

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	Document Number: MMDC-IMS-ASY-WI-008	Integrated Management System Procedure
	Revision Number: Ø	Exploration Sample Preparation
	Page Number: 2	Marcventures Mining and Development Corporation

1.0 OBJECTIVE

The purpose of this procedure is to establish a systematic process of exploration sample preparation.

2.0 SCOPE

This schematic procedure is applicable for processing of related geological exploration samples.

3.0 REFERENCE DOCUMENTS

- 3.1 JIS M 8702 Sampling and sample preparation procedures
- 3.2 Assay Laboratory General Operation Procedure – MMDC-IMS-ASY-PR-001
- 3.3 Presses Pellet – EDXRF 7000 Operation and Analysis - MMDC-IMS-ASY-WI -010

4.0 DEFINITION OF TERMS

- 4.1 Exploration sample- is coming from a sequential process of information gathering that assesses the mineral potential of a given area. It starts with an idea or geologic model that identifies lands worthy of further exploration.

5.0 AUTHORITY AND RESPONSIBILITY

5.1 Sample Preparation Supervisor

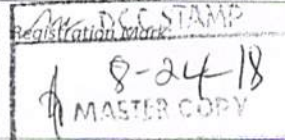
- 5.1.1 Check and received dispatch from Grade Control Department.
- 5.1.2 Check and count each sack delivered.
- 5.1.3 Record and log the dispatch
- 5.1.4 Monitor sample preparation


5.2 Leadman/Foreman

- 5.2.1 Assist in checking and receiving dispatch.
- 5.2.2 Lead and perform sample processing

5.3 Samplers

- 5.3.1 Perform all sample processes as described in the procedure

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	Document Number: MMDC-IMS-ASY-WI-008	Integrated Management System Procedure
	Revision Number: Ø	Exploration Sample Preparation
	Page Number: 3	Marcventures Mining and Development Corporation

6.0 PROCEDURE

6.1 Safety Requirements

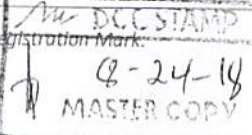
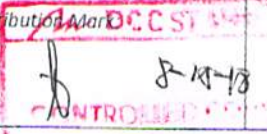
- 6.1.1 Goggles
- 6.1.2 Dust mask
- 6.1.3 Rubberized Gloves
- 6.1.4 Safety Shoes
- 6.1.5 Other Safety matters


1. Clean working environment, good dust extraction and ventilation are essential.
2. Dust produced during crushing, splitting and pulverizing must be extracted by the dust collector
3. Pulverizer should not be opened while it is still running
4. Samples should not be touched by bare hands during crushing while the equipment is still running.
5. Pulveriser bowls and sample pans must be stored properly on certain area and proper housekeeping should be observed at all times.

6.2 Equipment and Materials

- 6.2.1 Pulverizer
- 6.2.2 Jaw Crusher
- 6.2.3 Drying Oven
- 6.2.4 Screen Table
- 6.2.5 Flat bar
- 6.2.6 Top Loading
- 6.2.7 Brush
- 6.2.8 Sample Pan
- 6.2.9 Riffle Splitter
- 6.2.10 Shovel
- 6.2.11 Wheel barrow
- 6.2.12 Steel Cart
- 6.2.13 Scooper and scrapper
- 6.2.14 Quartering steel
- 6.2.15 Spatula
- 6.2.16 Sample Mat
- 6.2.17 Sample Envelope

- 6.3 Received 1 bag of sample with filled-up COC.
- 6.4 After confirming the description of sample proceed to sample preparation by transferring samples to sample pan and dry all samples in an oven for 12 hours @ about 105°C.
- 6.5 After drying the samples crush to 3mm-5mm, split samples to 200grams to 250grams.
- 6.6 Save the coarse reject and return to exploration department.

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6.7 The split samples will be pulverized, collect sample and put in an envelope and submit to Assaylab for analysis (XRF method). Refer to Pressed Pellet – EDXRF 7000 Operation and Analysis - MMDC-IMS-ASY-WI -010. Samples results will be exported to COA for Face Samples, Explo and Pile - ASY-PR-001-F002.Rev.0

6.8 **Sample Disposal**


6.8.1 Save coarse and fine rejects

6.8.2 Contact Exploration department for collection of samples after analysis confirmation.

7.0 **ATTACHMENTS**

- 7.1 Chain of Custody – GCM-PR-001-F001 Rev.0
- 7.2 COA for Face Samples, Explo and Pile – ASY-PR-001-F002 Rev.0

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	Document Number: MMDC-IMS-ASY-PR-003	Integrated Management System Procedure
	Revision Number: ∅	Presses Pellet – EDXRF 7000 Operation and Analysis
	Page Number: 2	Marcventures Mining and Development Corporation

1.0 OBJECTIVE

To serve as guide for laboratory personnel user.

2.0 SCOPE

Working instruction in using the EDXRF 7000 instrument.

3.0 DEFINITION OF TERMS

- 3.1 XRF – is the emission of characteristic "secondary" (or fluorescent) X-rays from a material that has been excited by bombarding with high-energy X-rays or gamma rays.
- 3.2 Pressed pellet – Is a process of compressing the material to a desired pressure depending on the requirements needed to be pressed.
- 3.3 Binder – is usually added to sample for homogeneity, and are usually cellulose type material that do not affect the sample composition.

4.0 REFERENCE DOCUMENTS

- 4.1 <https://www.xos.com/EDXRF>
- 4.2 <https://www.chem.bg.ac.rs>
- 4.3 https://en.wikipedia.org/wiki/X-ray_fluorescence

5.0 AUTHORITY AND RESPONSIBILITY

5.1 Laboratory Manager



- 5.1.1 Arrange supplier/service engineer for annual PMS
- 5.1.2 Purchase requisition of spare parts


5.2 SHIFT CHEMIST/SR. CHEMIST

- 5.2.1 Responsible for operation, maintenance, and troubleshooting of XRF
- 5.2.2 Loading of pressed pellet samples to XRF
- 5.2.3 Follow up pressed pellet samples to be analyze
- 5.2.4 Data exportation
- 5.2.5 Must knowledgeable in emergency power button of XRF
- 5.2.6 Must knowledgeable in XRF application software
- 5.2.7 Assist in tabulating results based on actual results

5.3 QA/QC

- 5.3.1 Checking of Calibration method
- 5.3.2 Checking of CRM/In-house results

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- 5.3.3 Graphical tabulation of CRM results
- 5.3.4 Continuous developing and research of XRF method validation

5.4 Secretary

- 5.4.1 Monthly tabulation of CRM based on actual results.

6.0 PROCEDURE

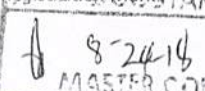

6.1 Safety Requirements

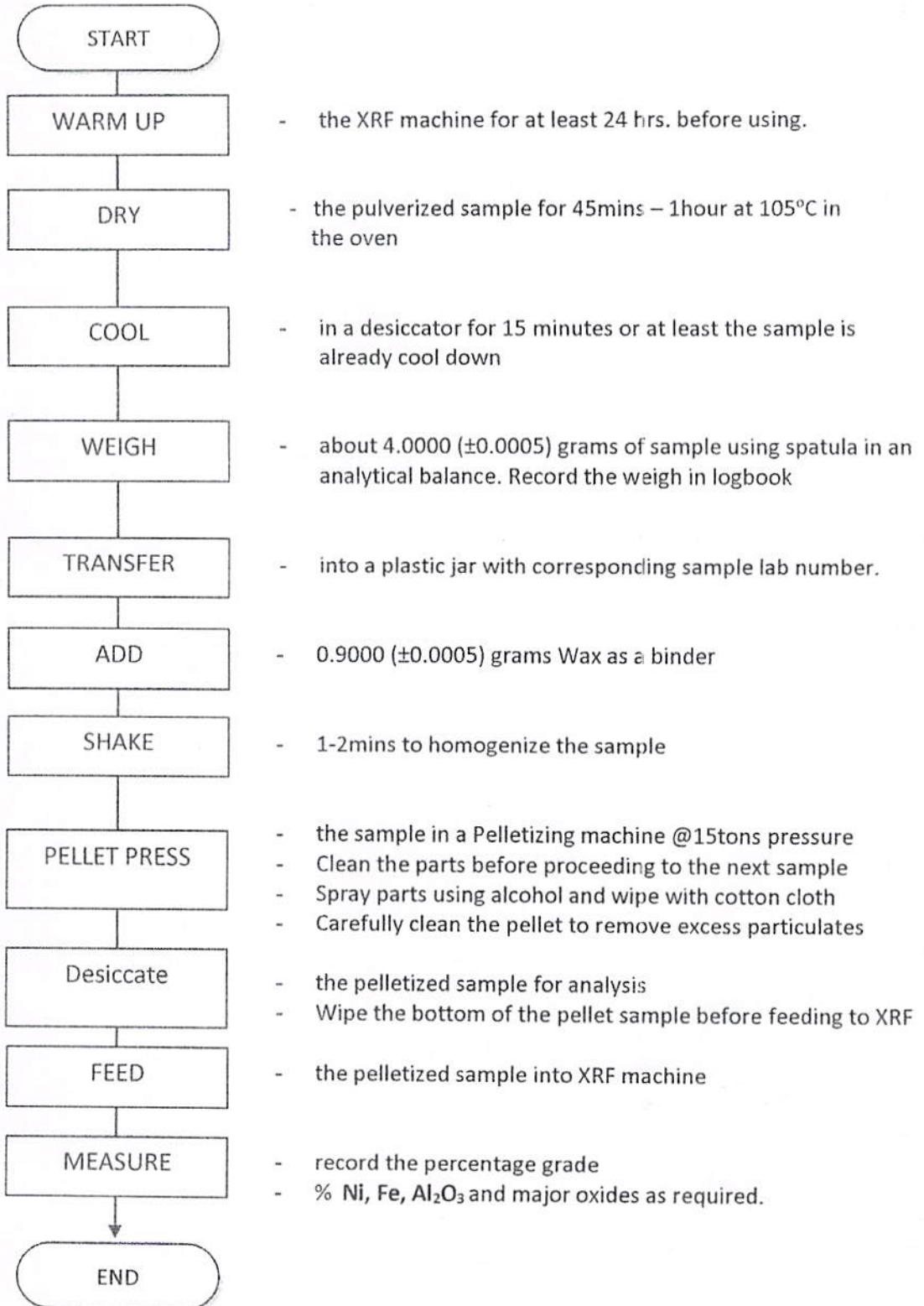
- 6.1.1 Dosimeter
- 6.1.2 Laboratory gown
- 6.1.3 Surgical gloves
- 6.1.4 Dust mask
- 6.1.5 Goggles
- 6.1.6 Other Safety matters
 1. Careful in handling the XRF instrument
 2. Avoid moving the instrument
 3. Check vacuum pump for possible leakage of oil and level
 4. Maintenance check

6.2 Equipment and Materials

- 6.2.1 EDXRF 7000 Shimadzu
- 6.2.2 Standby battery
- 6.2.3 Vacuum set for XRF
- 6.2.4 Analytical Balance
- 6.2.5 Tissue/Linen cloth
- 6.2.6 Spatula
- 6.2.7 Watch glass
- 6.2.8 Plastic jars
- 6.2.9 Pellet Press Machine
- 6.2.10 Alcohol
- 6.2.11 Vacuum pump for dust collection

6.3 Pelletizing Procedure


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	Page Number: 5	Operation and Analysis
		Marcventures Mining and Development Corporation

6.4 XRF Operation

6.4.1 Open the XRF cover



6.4.2 Load the pressed pellet sample with series lab number correspond to turret number of the XRF



6.4.3 Open the PC, choose PCEDX application and Open App

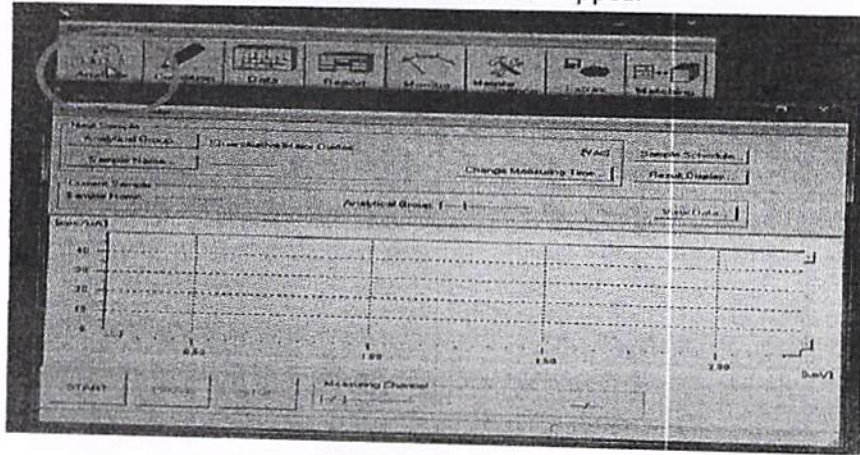


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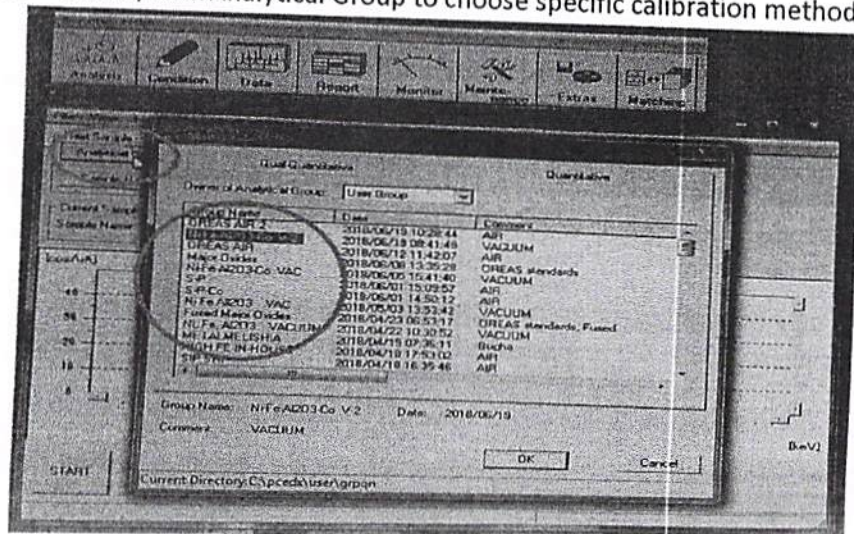
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6.4.4 Click Analysis button and new window will appear

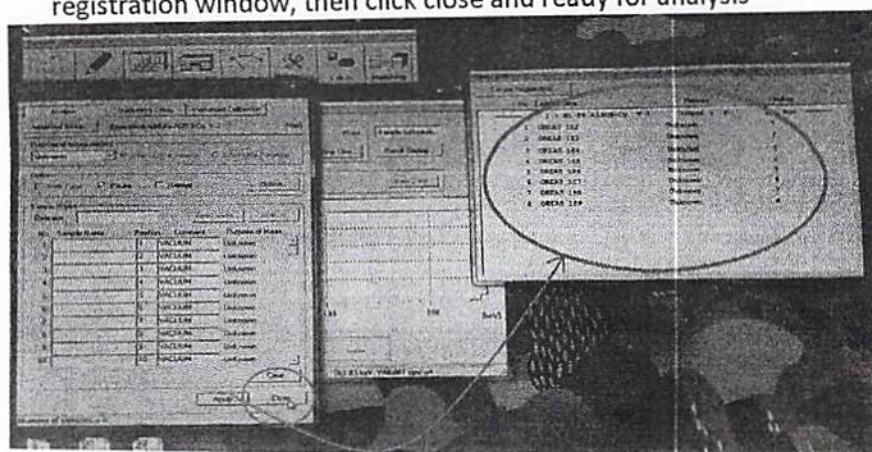


6.4.5 Select/Click Analytical Group to choose specific calibration method

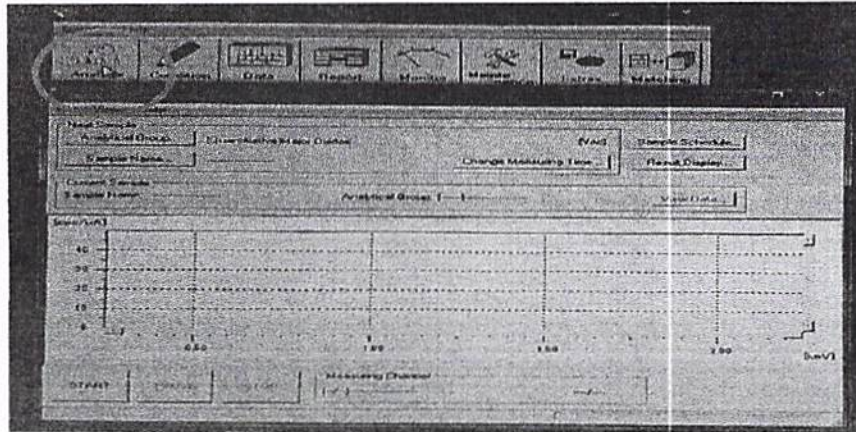


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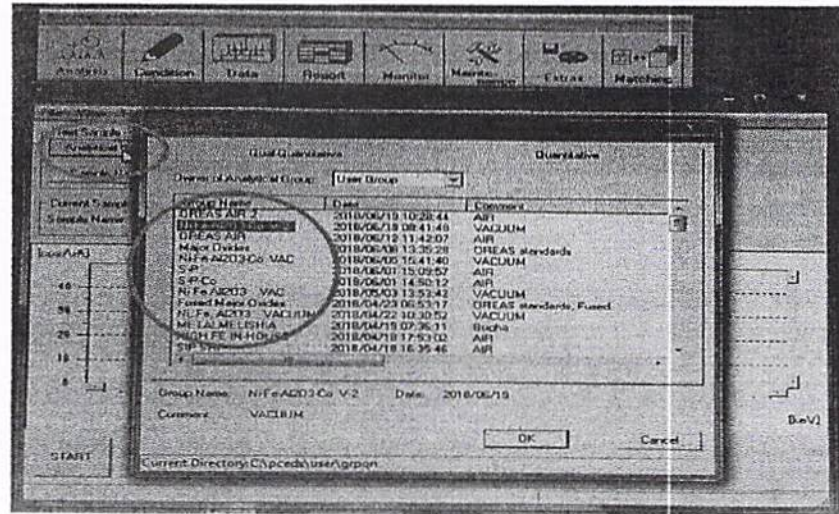
6.4.10 After clicking apply, the sample registration window, then click close and ready for analysis



6.4.4 Click Analysis button and new window will appear



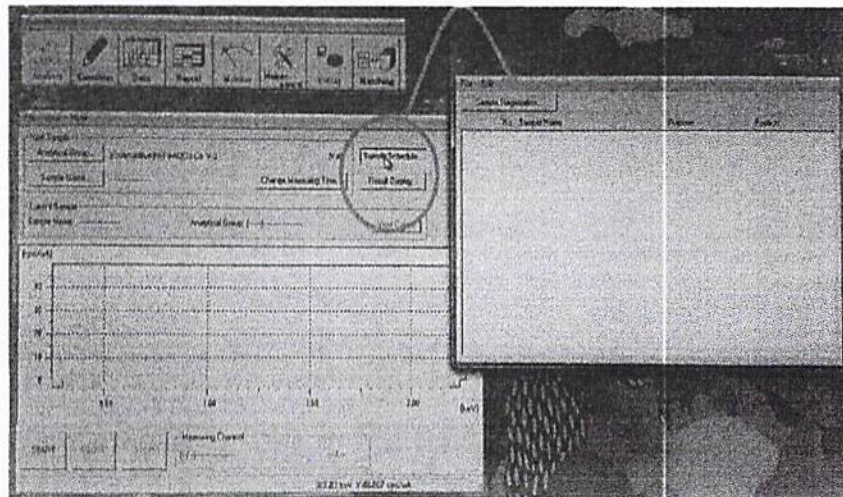
6.4.5 Select/Click Analytical Group to choose specific calibration method



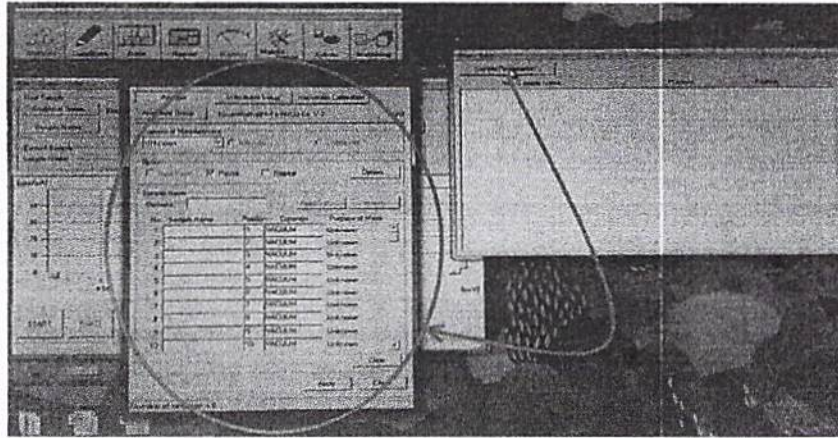
6.4.6 Point and Click calibration method for specific sample



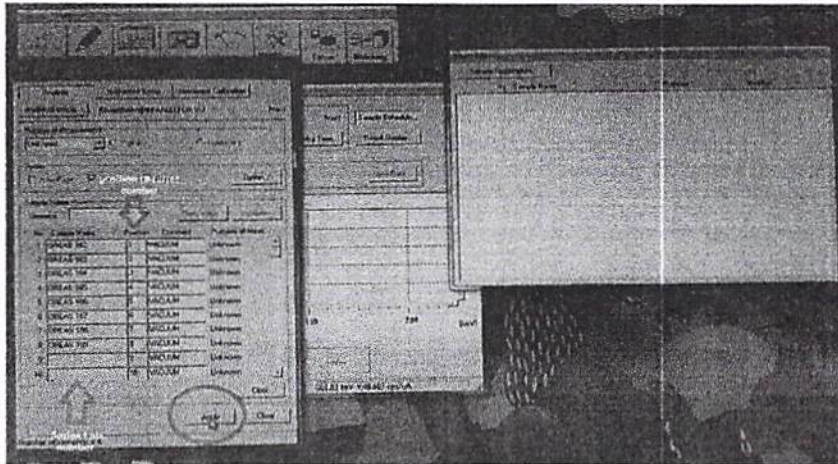
6.4.7 Click Sample Schedule and new window will appear, click again the sample registration



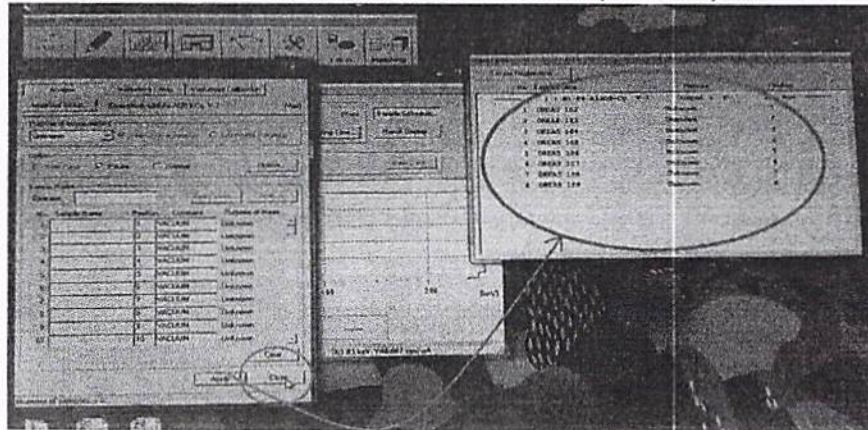
6.4.8 Under Sample Registration new window will appear



6.4.9 Input sequence/series lab number with corresponding number turret of XRF, click apply maximum of 12 sample only




6.4.10 After clicking apply, the sample lab series number will transfer to sample registration window, then click close and ready for analysis



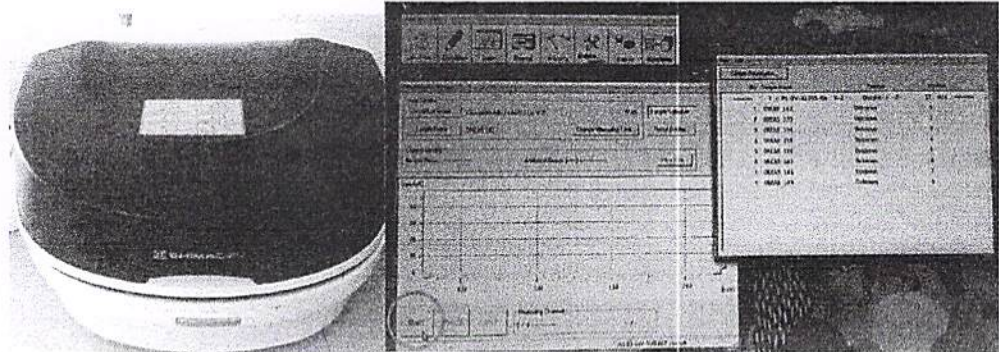
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6.4.11 Close the cover and click start



6.4.12 The color blue lights indicate X-RAY is ON. Wait until analysis is done, blue lights will automatically off. New batch of samples are ready to load repeating steps from 9.2.1 to 9.2.12. Record the data to specific sample form. *Note: do not open the cover when the blue light is on*

6.5 XRF Sample Guidelines for Analysis

6.5.1 Face samples

6.3.1.1 Use calibration method (OREAS AIR 2)

6.3.1.2 Record the data to (ASY-PR-001-F010.Rev.0)

6.5.2 Pile and Exploration Samples

6.3.2.1 Use calibration method (Ni-Fe-Al₂O₃-Co V-2)

6.3.2.2 Record the data to (ASY-PR-001-F010.Rev.0)

6.5.3 Shipment Samples

6.3.3.1 Use calibration method (Ni-Fe-Al₂O₃-Co V-2) and (Major Oxides)

6.3.3.2 Record the data to (ASY-PR-001-F003) for Limonite shipment & (ASY-PR-001- F009) for Saprolite shipment.

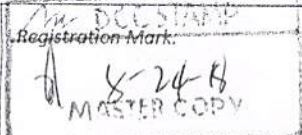
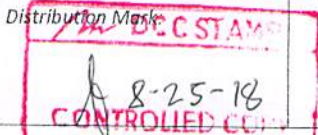
6.4 QA/QC Check


6.4.3 Every lab number that ends with zero must be in duplicate and screen perform test.

6.4.4 Every batch (12 samples max.) must have at least two (2) CRM/In-house QC.

6.4.5 Re-pellet or check for titration if there are discrepancy with the results (ex. If unusual high results, unusual pellet texture, color and thickness)

6.4.6 Re-run the batch of sample if CRM/In-house QC is not within the limit of $\pm 0.03\%$ deviation for Ni and $\pm 1.00\%$ deviation for Iron.

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6.4.7 Re-pellet the whole batch if the duplicate is not within the limit of $\pm 0.03\%$ deviation for Ni and $\pm 1.00\%$ deviation for Iron.

6.4.8 Save sample for 3rd party analysis (monthly basis)

6.5 Sample Disposal and Retention

6.5.3 Save face and pile fine samples for 1month before disposal

6.5.4 Save exploration fine samples and turn over to Exploration Department.

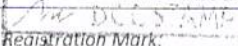
6.5.5 Save shipment quality samples for MGB, Third-party and retention for one year


6.5.6 Dispose shipment sub-lots and assay quality after one month retention.

6.5.7 Packed analyzed pellet samples into polyethylene plastic bag, tightly closed and stapled for disposal.

7.0 ATTACHMENT

- 7.1 Assaylab worksheet – ASY-PR-001-F010 Rev.0
- 7.2 LIMO Shipment worksheet – ASY-PR-001-F008 Rev.0
- 7.3 SAPRO Shipment worksheet – ASY-PR-001- F009 Rev.0


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ASSAYLAB WORKSHEET

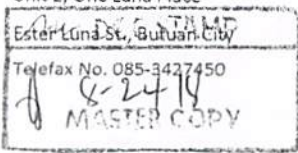
Ref No. _____

Lab Ref Number	Sample Description	wt. of sample	%Ni	%Fe	%Al ₂ O ₃	%Co

ASY-PR-001-F010 Rev.0

Weighed by: _____ Date/Time: _____
 Pellet by: _____ Date/Time: _____
 Analyzed by: _____ Date/Time: _____
 Reviewed by: _____ Date/Time: _____
 Posted by: _____ Date/Time: _____

Main Office: Unit E, One Luna Place, Ester Luna St., Butuan City
 Minesite Office: Sitio Banban, Panikian, Carrizal, Surigao del Norte
 Lalason Office: 4th Floor, Citibank Towers, 8741 Paseo de Roxas, Makati City



Contact No. 02-8368609

Lot Shipment No. :

F=

F=

Sample Description	XRF	XRF	XRF	Sample Description	Vol,ml	Vol,ml	Titration	Sample Description	Vol,ml	Vol,ml	Titration
	%Ni	%Fe	%Al ₂ O ₃		EDTA	EDTA	%Ni		EDTA	EDTA	%Ni
					<i>initial</i>	<i>final</i>			<i>initial</i>	<i>final</i>	
Sub Lot # 1				Sub Lot # 1				Comp A			
Sub Lot # 2				Sub Lot # 2				Comp B			
Sub Lot # 3				Sub Lot # 3				Comp C			
Sub Lot # 4				Sub Lot # 4				Average			
Sub Lot # 5				Sub Lot # 5				OREAS			
Sub Lot # 6				Sub Lot # 6							
Sub Lot # 7				Sub Lot # 7							
Sub Lot # 8				Sub Lot # 8							
Sub Lot # 9				Sub Lot # 9							
Sub Lot # 10				Sub Lot # 10							
Oreas											

ASY-PR-001-F009 Rev. 0

LOT Comp	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF
	%Ni	%Fe	%Al ₂ O ₃	%Co	%MgO	%CaO	%Cr ₂ O ₃	%SiO ₂	%S	%P
Comp A										
Comp b										
Comp c										
Ave										
Oreas										

Lot Shipment No. :

F=

F=

Sample Description	XRF	XRF	XRF	Sample Description	Vol,ml	Vol,ml	Titration	Sample Description	Vol,ml	Vol,ml	Titration
	%Ni	%Fe	%Al ₂ O ₃		EDTA	EDTA	%Ni		EDTA	EDTA	%Ni
					<i>initial</i>	<i>final</i>			<i>initial</i>	<i>final</i>	
Sub Lot # 1				Sub Lot # 1				Comp A			
Sub Lot # 2				Sub Lot # 2				Comp B			
Sub Lot # 3				Sub Lot # 3				Comp C			
Sub Lot # 4				Sub Lot # 4				Average			
Sub Lot # 5				Sub Lot # 5				OREAS			
Sub Lot # 6				Sub Lot # 6							
Sub Lot # 7				Sub Lot # 7							
Sub Lot # 8				Sub Lot # 8							
Sub Lot # 9				Sub Lot # 9							
Sub Lot # 10				Sub Lot # 10							
Oreas											

ASY-PR-001-F009 Rev. 0

LOT Comp	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF	XRF
	%Ni	%Fe	%Al ₂ O ₃	%Co	%MgO	%CaO	%Cr ₂ O ₃	%SiO ₂	%S	%P
Comp A										
Comp b										
Comp c										
Ave										
Oreas										

Lot Shipment No. :

F=

F=

Sample Description	XRF	XRF	XRF	Sample Description	Vol,ml	Vol,ml	Titration	Sample Description	Vol,ml	Vol,ml	Titration
	%Ni	%Fe	%Al ₂ O ₃		EDTA	EDTA	%Ni		EDTA	EDTA	%Ni
					<i>initial</i>	<i>final</i>			<i>initial</i>	<i>final</i>	
Sub Lot # 1				Sub Lot # 1				Comp A			
Sub Lot # 2				Sub Lot # 2				Comp B			
Sub Lot # 3				Sub Lot # 3				Comp C			
Sub Lot # 4				Sub Lot # 4				Average			
Sub Lot # 5				Sub Lot # 5				OREAS			
Sub Lot # 6				Sub Lot # 6							
Sub Lot # 7				Sub Lot # 7							
Sub Lot # 8				Sub Lot # 8							
Sub Lot # 9				Sub Lot # 9							
Sub Lot # 10				Sub Lot # 10							
Oreas											

ASY-PR-001-F009 Rev. 0

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**Technical Report on the Exploration Results and Mineral Resource Estimate of
Alumina Mining Philippines, Inc. (AMPI)
[MPSA 179-2002-VIII-SBMR]
and
Bauxite Resources, Inc. (BARI)
[MPSA 180-2002-VIII-SBMR]
Located in the Municipalities of Paranas, Motiong, San Jose de Buan,
Gandara and San Jorge
Province of Samar**



Photo showing extent of bauxite mineralization in one of the major depressions in Barangay Lawaan, Municipality of Paranas (Wright).

Prepared by: **J.T. Guzman, H.T. Villano, R.L. Tan, J.M. Mendez**
Geologists, Marcventures Mining and Development Corporation

Reviewed and Certified by:
T. D. Malihan
Registered Professional Geologist, Reg. No. 0387
Competent Person (CP) Accreditation No. 07-08-06
*Exploration Results and Mineral Resource Estimation, PMRC/GSP
Porphyry Copper-Gold, Epithermal Gold, Nickel Laterite, Chromite and Iron-
Copper-Gold Skarn Deposits Exploration*

Prepared for: **Marcventures Holdings, Inc.**
4th Floor Citibank Centre, Paseo de Roxas
Makati City, Philippines

CERTIFICATION AND CONSENT OF CP FOR TECHNICAL REPORT

This Report entitled “**Technical Report on the Exploration Results and Mineral Resource Estimate of Alumina Mining Philippines, Inc. (“AMPI”) covered by MPSA 179-2002-VIII (SBMR) and Bauxite Resources, Inc. (“BARI”) covered by MPSA 180-2002-VIII (SBMR)**”, both of which are located within the municipalities of Motiong, San Jose de Buan and Paranas in the Province of Samar, a part of Samar Island in Eastern Visayas (Region VIII), was prepared by Jayvhel T. Guzman, Herbert T. Villano, Ralph Rey L. Tan, and Jelan M. Mendez, geologists of Marcventures Mining and Development Corporation (“MMDC”) for purposes of making a disclosure to the Philippine Stock Exchange (PSE) and Securities Exchange Commission (SEC) for the acquisition by Marcventures Holdings Inc. (“MHI”) of these mineral properties and also to support the company’s application for Declaration of Mining Project Feasibility (DMPF) with the Mines and Geosciences Bureau (MGB) that could lead to the development and exploitation of the bauxite deposits delineated within the MPSA areas from past exploration campaigns. MMDC is a wholly-owned subsidiary of MHI.

Earlier operators declared resources estimated from AMPI and BARI. The MMDC Technical Team however, opted to make its own estimates of the resource and embarked in checking and verifying the exploration methodologies used by these operators for purposes of validating the database used in the resource estimation. Using the same exploration database provided by Asia Pilot Mining, the MMDC Team employed Inverse Distance Weighting (IDW) method in the new resource estimation. **For AMPI, the Team came out with some 41.7Mwmt of combined Measured and Indicated resource with grades averaging 40% Al₂O₃ with 14.5% SiO₂. For BARI, the resource came out at 31.5Mwmt averaging 43.8% Al₂O₃ and 7.98% SiO₂.** This is equivalent to a total Measured and Indicated Resource of some 73.2Mwmt with grades averaging 41.66% Al₂O₃ and 11.69% SiO₂.

The resource figures were further checked by conventional Polygon method of resource estimation with AMPI coming out with 47.3Mwmt of resource but limited the classification to Indicated category which came out higher by about 5.6M compared to the IDW-derived figure. The grades however, came very close to each other (40% vs. 40.8% Al₂O₃ and 14.5% vs. 13.16% SiO₂.) For BARI, the Polygon method-derived resource was 35.1Mwmt, some 3.6Mwmt higher than the IDW-derived resource but the average grade came out also very close to each other (44.08% vs. 43.8% Al₂O₃ and 7.67% vs 7.98% SiO₂).

Inferred resources of AMPI and BARI were also estimated using IDW wherein some 17.3Mwmt was estimated for AMPI with grades averaging 38.96% Al₂O₃ and 16.59% SiO₂ while about 28.4Mwmt was estimated for BARI at 43.75% Al₂O₃ and 8.09% SiO₂. Additional drilling and test pitting works need to be done to upgrade these Inferred resources to Measured and Indicated resources. Assuming that 25% of these Inferred resources will be upgraded to Measured and Indicated resources once the additional drilling and test pitting works are completed, this will translate to additional Measured and Indicated resources of some 11.4Mwmt at 41.94% Al₂O₃ and 11.30% SiO₂. **The projected total Measured and Indicated resources will now be 84.6Mwmt averaging 41.70% Al₂O₃ and 11.64% SiO₂.**

The undersigned, in his capacity as Competent Person (CP) for Geology, accredited by the Geological Society of the Philippines (GSP) and guided by the Philippine Mineral Reporting Code (PMRC), was engaged by the MMDC Management through its President and CEO, Engr. Arsenio K. Sebial, Jr., to review and if warranted, certify the resource estimates made by the MMDC Technical Team. It is this CP’s opinion that the resource verification methodologies, resource estimation methods used along with professional opinions, interpretation and conclusions made by the MMDC exploration Team as documented in this report and reviewed by this CP appears to have been done in accordance with geo-scientific principles and practice and accepted industry standards. The findings, conclusion and

recommendations arrived at by the Technical Team are therefore deemed to be valid and in order.

Consequently, the Mineral Resources Inventory stated in this report may be considered accurate and reliable and even conservative by this CP as the database used by the MMDC Team in the resource estimation has been adequately checked, verified and validated.

SIGNED: June 2017

For Marcventures Mining and Development Corporation

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EXECUTIVE SUMMARY

Introduction

Aluminum Mining Philippines Inc. (“AMPI”) and **Bauxite Resources, Inc. (“BARI”)** are two bauxite projects covered by Mineral Production Sharing Agreements denominated as **MPSA 179-2002-VIII (SBMR)** and **MPSA 180-2002-VIII (SBMR)**, respectively, located in Samar Province in the island of Samar in Eastern Visayas, Philippines. The AMPI MPSA covers 6,694.05 hectares while BARI MPSA covers 5,435.00 hectares. The ownership of the two MPSAs is held by **Asia Pilot Mining Philippines Corporation (Asia Pilot Mining)**. The bauxite deposits were developed in a predominantly limestone terrain in broad valley floors flanked by low lying limestone hills with typical karst topographic features. The aluminum mineral deposits are comprised predominantly of aluminum mineral gibbsite ($\text{Al}(\text{OH})_3$), with lesser amount of boehmite (AlOOH) and alumogothite (FeAlOOH). The bauxite deposits appear to have been trapped and concentrated in numerous sinkholes of various shapes and sizes developed in the limestone bedrock through long periods of lateritic tropical weathering and erosions of portions of the limestone and other alumina-rich sedimentary units interbedded with it in the reducing environmental conditions existing in these sink holes.

History of the Discovery of Bauxite Deposits in Samar Island and the Exploration Methodologies Employed by Various Companies that Evaluated the Bauxite Potential of the AMPI and BARI Tenement Areas of Asia Pilot Mining Philippines Corporation

From 1974 to 1976, the Mines and Geosciences Bureau (“MGB”) conducted geological surveys on the mineral potential of Samar Island. One of the notable results of this regional mineral survey was the delineation of extensive bauxite deposits in Western Samar Province. In 1977, the island of Samar was declared a Bauxite Mineral Reservation by then President Ferdinand E. Marcos by virtue of Proclamation No. 1615. In 1979, MGB came out with an estimated 132Mmt of bauxite resource with grades ranging from 27 to 43% Al_2O_3 .

In the mid-1970s, Alusuisse conducted preliminary auger drilling and test pitting on sinkholes in the BARI property, mainly in the southern half of the tenement. A global estimation of the potential indicated that 38Mt, of which 9Mmt was “Exportable grade”, 21Mmt “Refinery Grade” and 8Mmt was “Low Grade” Alusuisse only studied about half of the sinkholes found in BARI. By extension to the other sinkholes on the mineral property, Alusuisse estimated a potential bauxite deposit of about 79Mmt. The estimation methods used was presumed to be possibly polygonal.

In late June to early July 2003, Earthcare Geologist & Affiliates (“Earthcare”), a local geological consulting company based in Tacloban City, undertook a seven days geological reconnaissance in the AMPI and BARI tenement areas. The Earthcare team took samples from test pits in the AMPI project area which were assayed at the commercial SGS laboratory in Manila. Earthcare also chip sampled an outcrop in the BARI project area and also took samples from some of the existing shallow drillholes. Earthcare came out with a ‘Potential Ore Estimate’ for the BARI property amounting

to 100Mmt, and for AMPI area 38Mmt.

Pacific Aluminum Holding, Ltd. ("PAHL") and China Non-Ferrous Metals Corporation ("CNMC") conducted exploration in AMPI and BARI areas in 2004. Test pitting and auger drilling were employed by CNMC to verify and assess the resource potential in both project areas. A total of 93 pits and 336 auger holes were completed in 2004 with 31 pits in AMPI and 62 pits in BARI; 258 holes with a total length of 3,502 in AMPI and 108 holes totaling 1,162 m in BARI. A report compiling the results of the geological verification was prepared by CNMC in 2004.

In 2005, Phil Jankowski, a Competent Person from SRK Consulting in Australia, estimated a total of resource of 51.8 Million tonnes of bauxite at 43.9% Al₂O₃ and 2.2% SiO₂ for the AMPI and BARI bauxite project based on the results of CNMC's exploration activities. Volume of each sinkhole was estimated using Surpac. The bulk density of 1.7 g/cm³ from the measurements of test pit spoil was applied to calculate the tonnage. Cut-off grade used was not mentioned in the report. The estimated resource is further broken down as follows; Indicated Resource of 39.16 Million tonnes at 43.5% Al₂O₃ and 2.2% SiO₂, and Inferred Resource of 12.64 Million tonnes at 44.9% Al₂O₃ and 1.9% SiO₂.

A May 2007 SRK report prepared also by Mr. Jankowski disclosed a total of 12.1 Million tonnes of Indicated bauxite resources in AMPI at 39.83% Al₂O₃ and 13.76% SiO₂. Additional 1.8 Million tonnes Inferred resource at 35.66% Al₂O₃ and 15.17% SiO₂ was also reported. This is based on data supplied to SRK which, after editing, consisted of records for 2,335 collars and 9,115 assays. Sinkhole outline and topography were also provided for the creation of three-dimensional wireframe models. An average density of 1.6 t/m³ was applied which is based on the mean of 962 density measurements acquired by PAMPC.

In 2006 – 2008, PAHL conducted a more detailed exploration program on the two projects employing auger drilling at a grid of 100 m x 100 m. This was followed by in-fill holes in selected areas at 50m in between the 100 x 100m grid, locally making the grid at 50 x 50 m.

The PAHL exploration data was further verified by Asia Pilot Mining in 2013-2014 and the data was included in the integrated database.

More recently, in a resource report signed by SRK Principal Consultant Yiefei Jia dated December 2016, SRK Consulting China Ltd. disclosed that it has estimated the JORC Code-compliant Mineral Resources for AMPI and BARI at a cut-off grade of 28% Al₂O₃, with consideration of available alumina and reactive SiO₂. A total of 35 Mwmt, Measured and Indicated Resources, were estimated in AMPI at 41% Al₂O₃ while a total of 82 Mwmt of Measured and Indicated Resources were estimated for BARI at 42% Al₂O₃. It has been also noted that the silica content in BARI is about 6% which is much lower than that in AMPI at about 11%.

Period	Proponent	Area Coverage	Exploration Activity	Results / Resource Estimate
1979	Mines and Geosciences Bureau	Samar	<ul style="list-style-type: none"> Geological survey targeting gold, copper and magnesium as well as confirming presence of extensive bauxite deposits 	<ul style="list-style-type: none"> 131.6M t of bauxite as 'mineable ore reserve' at grades ranging from 27% to 43% Al₂O₃*
Mid '70s	Alusuisse	BARI	<ul style="list-style-type: none"> Preliminary auger drilling and test pitting on sinkholes at the southern half of the property 	<ul style="list-style-type: none"> 38M t 'positive reserve' equivalent to 9M t 'exportable grade', 21M t 'refinery grade' and 8M t as 'low grade' projected a total potential reserve of 79M t in BARI*
2003	Earthcare Geologists and Affiliates	AMPI and BARI	<ul style="list-style-type: none"> chip sampling and test pitting; samples were submitted to SGS laboratory in Manila 	<ul style="list-style-type: none"> AMPI = 38.3M t 'potential ore estimate' BARI = 100.0M t 'potential ore estimate'
2004	China Non-Ferrous Metals Corporation	AMPI and BARI	<ul style="list-style-type: none"> AMPI = 31 test pits, 259 auger holes equivalent to 3,242.68m BARI = 62 test pits, 113 auger holes equivalent to 906.26m 	<ul style="list-style-type: none"> 39.16M t Total AMPI and BARI Indicated resource at 43.5% Al₂O₃ and 2.2% SiO₂ 12.64M t Total AMPI and BARI Indicated resource at 44.9% Al₂O₃ and 1.9% SiO₂
2005-2008	Pacific Aluminium Holdings Limited	AMPI	<ul style="list-style-type: none"> 2,335 drill holes 9,115 sample analysis 962 density measurements = 1.6 t/m³ 	<ul style="list-style-type: none"> 12.1M t Indicated resource at 39.83% Al₂O₃ and 13.76% SiO₂ 1.8M t Inferred resource at 35.66% Al₂O₃ and 15.17% SiO₂
2013-2015	Asia Pilot Mining Philippines/ SRK China	AMPI	<ul style="list-style-type: none"> 306 test pits 2,863 auger holes 	<ul style="list-style-type: none"> 35.0M t Measured and Indicated resource at 41.0% Al₂O₃ and 11.3% SiO₂ 4.5M t Inferred resource at 40.8% Al₂O₃ and 12.9% SiO₂
		BARI	<ul style="list-style-type: none"> 535 test pits 3,295 auger holes 	<ul style="list-style-type: none"> 82.6M t Measured and Indicated resource at 42.7% Al₂O₃ and 5.6% SiO₂ 75.1M t Inferred resource at 41.2% Al₂O₃ and 5.5% SiO₂
2017	Marcventures Mining and Development Corp.	AMPI	<ul style="list-style-type: none"> 2,862 drill holes and test pits 16,015.91 meters 8,616 samples 	<ul style="list-style-type: none"> 41.7 t Measured and Indicated resource at 40.06% Al₂O₃ and 14.50% SiO₂ 17.3M t Inferred resource at 38.96% Al₂O₃ and 16.59% SiO₂
		BARI	<ul style="list-style-type: none"> 3,295 drill holes and test pits 13,457.14 meters 6,971 samples 	<ul style="list-style-type: none"> 31.5M t Measured and Indicated resource at 43.78% Al₂O₃ and 7.96% SiO₂ 28.4M t Inferred resource at 43.75% Al₂O₃ and 8.09% SiO₂

*not acceptable to JORC-compliant documents

MMDC's Verification and Validation Program

Marcventures Mining and Development Corp. (MMDC), as a wholly-owned subsidiary of Marcventures Holdings, Inc. (MHI), conducted due diligence over the AMPI contract area from January 9 to February 10, 2017. The activity's objective was to verify the validity of the exploration methodology and integrity of the database as well as the parameters (density and moisture) that was used in the resource estimation done by

SRK as contracted by Asia Pilot. Unfortunately, due diligence in BARI did not push through due to security issues. However, verification of the AMPI dataset can somewhat verify the integrity of the BARI dataset considering that the same exploration work programs were historically conducted in AMPI and BARI.

The MMDC Exploration Team was able to finish 11 cored drill holes with depths ranging from 6.00 to 22.00 meters and combined depth of 151.50 meters. The holes were twinned with holes drilled earlier by Asia Pilot Mining (AMPI holes) which ranged in depth from 7.4 meters to 22.00 meters. The two set of twinned holes (MMDC and AMPI) are not necessarily of the same depths for each twin. Total number of samples collected was 219 which were assayed for Al_2O_3 , SiO_2 , Fe, MgO and Cr_2O_3 using XRF. A total of six (6) test pits were also completed but at depth of exactly four (4) meters each totalling 24 meters. A total of 36 samples were collected from the test pit and also assayed of the same mineral compound as the cored holes. The Team also conducted procedures in the field to determine the specific gravity of bauxite as well as its swell factor as part of QA/QC in the resource estimation.

On correlation between the twinned holes, scatter plots illustrates the close correlation between the twin hole data thereby confirming, more or less, the validity and integrity of the assay data that were used in the resource estimations of AMPI and BARI resources.

MMDC's Resource Estimates for AMPI and BARI

Having been convinced on the integrity of the project's database from the results of its field verification works, MMDC opted to make its own estimates of the AMPI and BARI resources. The mineral resource estimation made use of the database that was provided by Asia Pilot to MMDC from exploration campaigns conducted from 2004 to 2014. The database consisted of collar, survey, assay and geology data of 8,616 samples from 2,862 drill holes and test pits of AMPI and 6,971 samples from 3,295 drill holes and test pits of BARI from 2004 to 2014.

Two methods were used to estimate the mineral resources, namely: Inverse Distance Weighting (IDW) and Conventional Polygon Method. The polygon method served to double check the resource figures derived from IDW.

Block modelling and resource estimation by way of Inverse Distance Weighting (IDW) was done using a combination of Microlynx and Surpac Version 6.7 software. IDW is a type of deterministic method for multivariate interpolation with a known scattered set of points. The assigned values to unknown points are calculated with a weighted average of the values available at the known points.

Microlynx was used to create the top and bottom surfaces of the resource model as well as the boundaries or resource extent. Construction of geological solids and block model, and interpolation of metal grades were done in Surpac 6.7. Microsoft excel was used to tabulate the resulting mineral resource estimates.

Tabulated below are the summary of Measured and Indicated Mineral Resources of AMPI and BARI project areas estimated using IDW. At a cut-off grade of 28% Al_2O_3 , AMPI contains 41.7 Million tonnes of Measured and Indicated Mineral Resource at an

average grade of 40.06% Al₂O₃ and 14.50% SiO₂. BARI contains about 31.5 Million tonnes of Measured and Indicated Mineral Resource at an average grade of 43.78% Al₂O₃ and 7.96% SiO₂. This is equivalent to a total Measured and Indicated Resource of some 73.2Mwmt with grades averaging 41.66% Al₂O₃ and 11.69% SiO₂.

Inferred resources of AMPI and BARI were also estimated using IDW wherein some 17.3Mwmt was estimated for AMPI with grades averaging 38.96% Al₂O₃ and 16.59% SiO₂ while about 28.4Mwmt was estimated for BARI at 43.75% Al₂O₃ and 8.09% SiO₂. Additional drilling and test pitting works need to be done to upgrade these Inferred resources to Measured and Indicated resources. Assuming that 25% of these Inferred resources will be upgraded to Measured and Indicated resources once the additional drilling and test pitting works are completed, this will translate to additional Measured and Indicated resources of some 11.4Mwmt at 41.94% Al₂O₃ and 11.30% SiO₂. The projected total Measured and Indicated resources will now be 84.6Mwmt averaging 41.70% Al₂O₃ and 11.64% SiO₂.

Summary of AMPI Mineral Resources estimated by Inverse Distance Weighting.

<i>AMPI_Measured and Indicated Resource</i>							
<i>Cut-off grade</i>	<i>Volume</i>	<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
> 50% Al2O3	155,000	249,000	50.67	2.29	22.13	1.26	40.21
45-50% Al2O3	3,763,000	6,021,000	47.09	4.29	10.98	2.36	19.95
40-45% Al2O3	10,460,000	16,737,000	42.17	10.6	3.98	5.83	7.23
35-40% Al2O3	7,643,000	12,229,000	37.87	17.21	2.2	9.47	4.00
28-35% Al2O3	4,048,000	6,477,000	31.83	29.44	1.08	16.19	1.97
	26,069,000	41,713,000	40.06	14.5	2.76	7.98	5.02

<i>AMPI_Inferred Resource</i>							
<i>Cut-off grade</i>	<i>Volume</i>	<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
> 50% Al2O3	17,000	27,000	50.73	2.45	20.71	1.35	37.58
45-50% Al2O3	1,700,000	2,720,000	46.83	4.04	11.59	2.22	21.09
40-45% Al2O3	3,412,000	5,460,000	42.31	10.33	4.1	5.68	7.45
35-40% Al2O3	2,778,000	4,444,000	37.57	18.16	2.07	9.99	3.76
28-35% Al2O3	2,890,000	4,624,000	31.64	29.94	1.06	16.47	1.92
	10,797,000	17,275,000	38.96	16.59	2.35	9.12	4.27

Summary of BARI Mineral Resources estimated by Inverse Distance Weighting.

<i>BARI_Measured and Indicated Resource</i>							
<i>Cut-off grade</i>	<i>Volume</i>	<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
> 50% Al2O3	1,572,000	2,516,000	51.72	1.45	35.67	0.80	64.65
45-50% Al2O3	7,062,000	11,299,000	47.33	3.11	15.22	1.71	27.68
40-45% Al2O3	6,815,000	10,904,000	42.64	8.92	4.78	4.91	8.68
35-40% Al2O3	3,227,000	5,163,000	37.98	14.91	2.55	8.20	4.63
28-35% Al2O3	992,000	1,587,000	32.69	23.58	1.38	13.68	2.39
	19,668,000	31,469,000	43.78	7.96	5.5	4.38	10.0

<i>Cut-off grade</i>	<i>Volume</i>	<i>BARI_Inferred Resource</i>					
		<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
> 50% Al2O3	1,341,000	2,145,000	51.9	1.39	37.39	0.76	68.29
45-50% Al2O3	6,711,000	10,738,000	47.28	3.31	14.28	1.82	25.98
40-45% Al2O3	5,822,000	9,315,000	42.76	8.71	4.91	4.81	8.89
35-40% Al2O3	2,754,000	4,407,000	37.87	15.32	2.47	8.43	4.49
28-35% Al2O3	1,145,000	1,831,000	32.69	23.4	1.4	12.87	2.54
	17,773,000	28,436,000	43.75	8.09	5.41	4.45	9.83

Total AMPI and BARI Mineral Resources estimated by Inverse Distance Weighting.

<i>Cut-off grade</i>	<i>Volume</i>	<i>AMPI and BARI Total Measured and Indicated Resource</i>					
		<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
> 50% Al2O3	1,727,000	2,765,000	51.63	1.53	33.75	0.84	61.46
45-50% Al2O3	10,825,000	17,320,000	47.25	3.52	13.42	1.94	24.36
40-45% Al2O3	17,275,000	27,641,000	42.36	9.94	4.26	5.47	7.74
35-40% Al2O3	10,870,000	17,392,000	37.9	16.53	2.29	9.09	4.17
28-35% Al2O3	5,040,000	8,064,000	32.0	28.29	1.31	15.56	2.06
	45,737,000	73,182,000	41.66	11.69	3.56	6.43	6.48

<i>Cut-off grade</i>	<i>Volume</i>	<i>AMPI and BARI Total Inferred Resource</i>					
		<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
> 50% Al2O3	1,358,000	2,172,000	51.89	1.4	37.06	0.77	67.39
45-50% Al2O3	8,411,000	13,458,000	47.19	3.46	13.64	1.90	24.84
40-45% Al2O3	9,234,000	14,775,000	42.59	9.31	4.57	5.12	8.32
35-40% Al2O3	5,532,000	8,851,000	37.72	16.75	2.25	9.21	4.10
28-35% Al2O3	4,035,000	6,455,000	31.94	28.08	1.14	15.44	2.07
	28,570,000	45,711,000	41.94	11.3	3.71	6.22	6.74

***Total Silica (SiO2) – XRF analysis of random bauxite samples from the properties demonstrated that Reactive Silica is about 55-60% of the Total Silica, therefore Reactive Silica is about 6.42-7.04%**

****Reactive Silica (RxSiO2) – estimated to be from 55 to 60% of the Total Silica, is tabulated in column 7 for the various Al2O3 cut-off grades and the corresponding ration of Alumina/Reactive Silica (Al/RxSi) shown in Column 8. The inclusion of these columns in the Resource table is considered relevant in the Technical Report as the reactive silica to a certain concentration, could affect the economics of the metallurgical treatment of the bauxite ore. The estimated reactive silica percentages used in these estimates which are based on historical data, appear largely favorable in terms of its ratio with Al2O3, however, this might need further checking.**

In the conventional polygon method, each drill hole is assigned a polygon that represents the extent of the area of influence of the drill hole. It is assumed that everywhere within the polygon, the thickness and grade of the resource material is uniform and, more or less, the same as the resource material of the drill hole enclosed by the polygon. Calculations and reporting of the resources were manually done using Microsoft Excel.

Conventional polygon method was done with the assumption that all drill hole and test pit data are regularly spaced at 50-meter interval. The volume of each block is the product of the area of influence, in this case 2,500 sq. m., and the combined thickness of samples that fall within the set cut-off grades. To determine the equivalent Wet Metric Tonnage (WMT), the total in-situ volume is multiplied by the density value of 1.6 g/cm³. Based on these parameters and assumptions, resource estimates for AMPI and BARI using polygon method yielded the following Indicated Resources.

Summary of AMPI Indicated Resources estimated using conventional polygon method.

AMPI MEASURED + INDICATED MINERAL RESOURCE ESTIMATE								
Ore Class	Cut-off Grade	BCM	WMT	%Al ₂ O ₃	%SiO ₂	Al/Si	%H ₂ O	DMT
Bx1	> 50 Al ₂ O ₃	421,000	673,000	50.74	2.01	28.58	30.00	471,100
Bx2	45-50 Al ₂ O ₃	4,447,000	7,115,000	46.96	4.18	12.70	30.00	4,980,500
Bx3	40-45 Al ₂ O ₃ , ≤ 8 SiO ₂	13,017,000	20,827,000	42.26	10.33	4.63	30.00	14,578,900
Bx4a	35-40 Al ₂ O ₃ , ≤ 7 SiO ₂	397,000	635,000	38.57	8.18	5.34	30.00	444,500
Bx4b	35-40 Al ₂ O ₃ , > 7 SiO ₂	8,210,000	13,137,000	37.79	18.04	2.37	30.00	9,195,900
Bx5a	28-35 Al ₂ O ₃ , ≤ 6 SiO ₂	67,000	106,000	32.86	10.11	3.68	30.00	74,200
Bx5b	28-35 Al ₂ O ₄ , > 6 SiO ₂	3,003,000	4,805,000	32.40	27.62	1.33	30.00	3,363,500
Total/Ave.		29,562,000	47,298,000	40.78	13.16	3.51		20,475,000

Summary of BARI Indicated Resources estimated using conventional polygon method.

BARI MEASURED + INDICATED MINERAL RESOURCE ESTIMATE								
Ore Class	Cut-off Grade	BCM	WMT	%Al ₂ O ₃	%SiO ₂	Al/Si	%H ₂ O	DMT
Bx1	> 50 Al ₂ O ₃	2,840,000	4,544,000	52.13	1.36	43.25	30.00	3,180,800
Bx2	45-50 Al ₂ O ₃	8,244,000	13,190,400	47.40	2.89	18.57	30.00	9,233,280
Bx3	40-45 Al ₂ O ₃	5,629,000	9,006,400	42.57	8.73	5.52	30.00	6,304,480
Bx4a	37-40 Al ₂ O ₃ , ≤ 7 SiO ₂	506,000	809,600	38.89	6.74	6.54	30.00	566,720
Bx4b	37-40 Al ₂ O ₃ , > 7 SiO ₂	2,117,000	3,387,200	38.54	15.47	2.82	30.00	2,371,040
Bx5a	28-37 Al ₂ O ₃ , ≤ 6 SiO ₂	543,000	868,800	34.47	10.53	3.71	30.00	608,160
Bx5b	28-37 Al ₂ O ₄ , > 6 SiO ₂	2,085,000	3,336,000	33.42	23.95	1.58	30.00	2,335,200
Total/Ave.		21,964,000	35,142,400	44.08	7.68	6.50		19,285,280

It will be noted that although the resources estimated using polygon method is generally higher in tonnage than the resources estimated using IDW, the resulting grades of the two resources are quite close and considered within acceptable range from one another.

The resource estimates of the MMDC Technical Team differs with that of SRK China in the December 2016 report of CP Dr. Yiefei Jia in both tonnages and grades. In MMDC's Report, total resource estimated for AMPI was 41.7M tonnes of Measured and Indicated category with an average grade of 40.06% Al₂O₃ and 14.50% SiO₂, and BARI containing 31.5M tonnes of Measured and Indicated category with an average grade of 43.78% Al₂O₃ and 7.96% SiO₂ or a total Measured and Indicated Resource for the two tenements of some 73.2Mwmt with grades averaging 41.66% Al₂O₃ and 11.69% SiO₂. SRK, in its December 2016 Report, on the other hand came out, at the same cut-off grade of 28% Al₂O₃, with AMPI containing 35.0M tonnes of Measured and Indicated Resource with an average grade of 41.0% Al₂O₃ and 4.5M tonnes of Inferred Mineral Resource with an average grade of 40.8% Al₂O₃. For BARI, a total of 82.6M tonnes of Measured and Indicated Resource with an average grade

of 42.7% Al₂O₃ and 75.1M tonnes of Inferred Resource with an average grade of 41.2% Al₂O₃ were estimated.

Comparing the various figures, the AMPI Measured and Indicated resource estimated by MMDC would appear larger by 6.7M tonnes compared to SRK China (41.7 vs 35.0 M) while in grade, MMDC is 0.96% Al₂O₃ lower compared to SRK China (40.06 vs 41.0% Al₂O₃). For BARI, the tonnage variance is more significant with MMDC coming out with 31.5M tonnes as against SRK China's 82.6M tonnes of Measured and Indicated Resource or a difference of 51.1M tonnes. For the grades, MMDC came out with 43.78% Al₂O₃ while SRK China declared an average grade of 42.7%Al₂O₃, a difference of 1.08%.

The variances in the estimates, particularly for the tonnages, may be due to the different methods used in the resource estimation. MMDC used the Inverse Distance Weighing (IDW) complimented by conventional Polygon Method as a check while SRK China employed Leapfrog, CAD and Surpac Version 6.3. The wide variance in tonnage, particularly in BARI may be explained by what we may considered over projection of the test pit and auger assay data influence used. SRK China projected the influence of the hole assays to a maximum of 100 meters while MMDC limited its projection to 50 meters only. In the case of AMPI, where MMDC came out with a slightly bigger tonnage, this could be explained by the use of additional data that SRK did not use in its estimate. Regarding the grade variances, these may be due to the methods of determining the assays employed by the two Teams, i.e., the method of compositing the assays used in the estimation.

It should be noted, however, that in as far as the grades are concerned, the variances are not considered very significant. It will be noted also that both MMDC and SRK China came out with close favorable percent SiO₂ in BARI. Dr. Yiefei Jia, also noted that the estimates for BARI, particularly, needs further refining if additional exploration data becomes available. The MMDC figures in tonnages and grades, could be considered conservative and more reliable.

As an additional upside for the project, the MMDC Team has determined the swell factor of the bauxite materials by actual field testing during the recent verification/validation fieldworks which was 1.25. This translates to 91.5Mwmt or an additional 18.3Mwmt from the 73.2Mwmt resource estimated for AMPI and BARI by the MMDC Technical Team.

1.1 Purpose and Compliance with PMRC

The undersigned Competent Person (CP) was commissioned by Engr. Arsenio K. Sebial, Jr., President and CEO of Marcventures Mining and Development Corporation (MMDC), to review and certify this technical report prepared by MMDC's Geological Exploration Division (GED) Team on the exploration results and mineral resource estimation of Alumina Mining Philippines, Inc. (AMPI) and Bauxite Resources, Inc. (BARI) located within the Municipalities of Paranas (formerly Wright), Motiong, San Jorge, Gandara and San Jose de Buan, Province of Samar. The two properties are owned by Asia Pilot Mining Philippines Corporation. MMDC is a wholly-owned subsidiary of Marcventures Holdings, Inc. (MHI).

This report was prepared in compliance with the Philippine Mineral Reporting Code (PMRC) and follows the most recent template for reporting of exploration results and mineral resources of lateritic mineral deposit to support the public disclosure of exploration activities, particularly, core drilling and test pitting undertaken within the two tenement areas from 2004 to 2014.

This report also complies with the requirements of the Mines and Geosciences Bureau (MGB) in the development of a mining project.

1.2 Scope of Work

The report provides a detailed summary of the results of the exploration activities carried over the AMPI and BARI Bauxite Project (AMPI) from 2004 to 2014. The mineral resource model prepared by the MMDC Exploration Team considers 8,616 samples from 2,862 drill holes and test pits of AMPI from 2004 to 2014 and 6,971 samples from 3,295 drill holes and test pits of BARI from the same period.

1.3 Data Verification and Field Visits

The undersigned CP depended primarily to the information given by the technical personnel of the Exploration Team of MMDC derived from previous technical reports and additional data obtained from earlier exploration works. Included in this report are the consolidated data from geological interpretation and data gathered during MMDC's field verification.

The database provided by Asia Pilot to MMDC for the resource estimation was verified and validated by the MMDC Exploration Team through geologic mapping and sub-surface sampling that was done from January 2017 to February 2017. This Competent Person (CP) in turn conducted a field visit in the area to check the due diligence activity that was done by the MMDC Exploration Team. Based on these activities, the database provided by Asia Pilot has been determined to be sufficiently reliable to support mineral resource estimation.

1.4 Technical Report Preparation Team

The members of the MMDC Exploration Team are Geologists Jayvhel T. Guzman, Head of the Geological Exploration Division (GED), Herbert T. Villano, Chief Geologist and Ralph Rey L. Tan and Jelan M. Mendez, Ms. Guzman, Mr. Villano and Mr. Tan are licensed geologists and are active members of the Geological Society of the Philippines.

Asia Pilot was represented by its Corporate Secretary, Mr. Steven M. Herrera, who provided the historical information, previous reports, maps and assay results to the MMDC Exploration Team.

2. RELIANCE ON OTHER EXPERTS

This Competent Person (CP) relied mainly on this report prepared by Geologists Jayvhel T. Guzman and Herbert T. Villano, who are licensed Geologists but are not CPs. Geologists Guzman and Villano are both employed by MMDC and have provided technical guidance to MMDC Exploration Team since 2013 and 2015, respectively. They are experienced persons in the nickel laterite style of mineralization which is basically the same as lateritic style of bauxite mineralization.

The Exploration Team of MMDC managed the conduct of the field verification activities over the AMPI Bauxite Project from January 2017 to February 2017. This included geologic mapping and test pitting as well as twin hole drilling. Mr. Herbert T. Villano acted as the Team Leader of the MMDC Exploration Team which included Geologists Ralph Rey L. Tan and Jelan M. Mendez as well as Mapping Specialist Ronito T. Martinez.

3. TENEMENT AND MINERAL RIGHTS

3.1 Description of mineral rights

Alumina Mining Philippines, Inc. (AMPI) holds the Mineral Production Sharing Agreement (MPSA) denominated as MPSA No. 179-2002-VIII which covers 6,694.05 hectares in the Municipalities of Paranas (formerly Wright), Motiong and San Jose de Buan, Province of Samar. Bauxite Resources, Inc. (BARI) holds the Mineral Production Sharing Agreement MPSA No. 180-2002-VIII covering 5,435.00 hectares in the Municipalities of Gandara, San Jose de Buan, Matuguinao and San Jorge, Province of Samar. Both MPSAs were approved in December 5, 2002, valid for 25 years and renewable for another 25 years. Technical description of the two MPSAs are presented in Table 3-1.

Table 3-1. Technical description of AMPI and BARI MPSAs.

Alumina Mining Philippines, Inc. (AMPI) MPSA 179-2002-VIII-SBMR Area = 6,694.05 hectares			Bauxite Resources, Inc. (BARI) MPSA 180-2002-VIII-SBMR Area = 5,435 hectares		
corner	longitude	latitude	corner	longitude	latitude
1	125° 06' 00"	11° 57' 00"	1	124° 59' 00"	12° 08' 00"
2	125° 06' 00"	11° 52' 00"	2	124° 59' 00"	12° 02' 30"
3	125° 02' 00"	11° 52' 00"	3	124° 56' 00"	12° 02' 30"
4	125° 02' 00"	11° 57' 00"	4	124° 56' 00"	12° 08' 00"



Figure 3-1. Location map of Alumina Mining Philippines, Inc. (AMPI) and Bauxite Resources, Inc. (BARI) MPSAs.

3.2 History of mineral rights

Samar Island is known to host bauxite deposits after geologic works made during the early '60s and '70s by the government and private entities proved the occurrence of these deposits in the island. On February 4, 1977, then President Ferdinand Marcos promulgated Proclamation No. 1615 creating the Samar Island Bauxite Reservation (SBMR). Some of the Samar Island bauxite deposits were earmarked for an aluminium smelter proposed by Reynolds Aluminum Corporation. However, for some reasons, Reynolds later abandoned the project and withdrew from the Philippines.

The mineral reservation covers a total 220,791 hectares consisting of three parcels; from Batag Island off the northeastern coast of Northern Samar down south to Hinabangan in what used to be known as Western Samar (now simply called Samar Province) and extending to Guian in Eastern Samar further south (Figure 3-2). Being the only known significant deposit of aluminium 'ores' in the Philippines, these areas are considered strategic and vital for the State. Previous studies made by the Mines and Geosciences Bureau estimated the geologic reserves of SBMR at 242 Million tonnes with an average grade of 40.80% Al₂O₃.

On May 2, 2002, Aluminum Mining Philippines, Inc. (AMPI) and Bauxite Resources Incorporation (BARI) filed mining applications at the Mines and Geosciences Bureau covering portions of the Municipalities of Gandara, San Jorge, San Jose de Buan, Motion and Paranas. The applications were approved on December 5, 2002 as MPSA 179-2002-VIII and MPSA 180-2002-VIII.

On August 13, 2003, Presidential Proclamation No. 442 was declared covering a sizeable portion of Samar Island into the Samar Island Natural Park (SINP) which overlapped some portions of the SBMR. Portions of AMPI and BARI are also covered by the declaration, however, considering the MPSAs were approved before the proclamation, prior rights of AMPI and BARI should be respected.

On June 27, 2005, a Memorandum of Agreement was signed between the AMPI-BARI party and the Hongkong-based holding company, Pacific Aluminum Holding Limited (PAHL) and its affiliates. This announced PAHL's interest to undertake and invest in the mineral exploration, development and utilization of the bauxite deposits within the contract areas. The succeeding year, detailed exploration work and validation of previous exploratory works were conducted by the exploration group of PAHL, Pacific Aluminum Philippines Corporation (PAMPC).

Since 2014, Asia Pilot Mining Philippines, Corp. ("Asia Pilot Mining") holds 100% interest of AMPI and BARI.

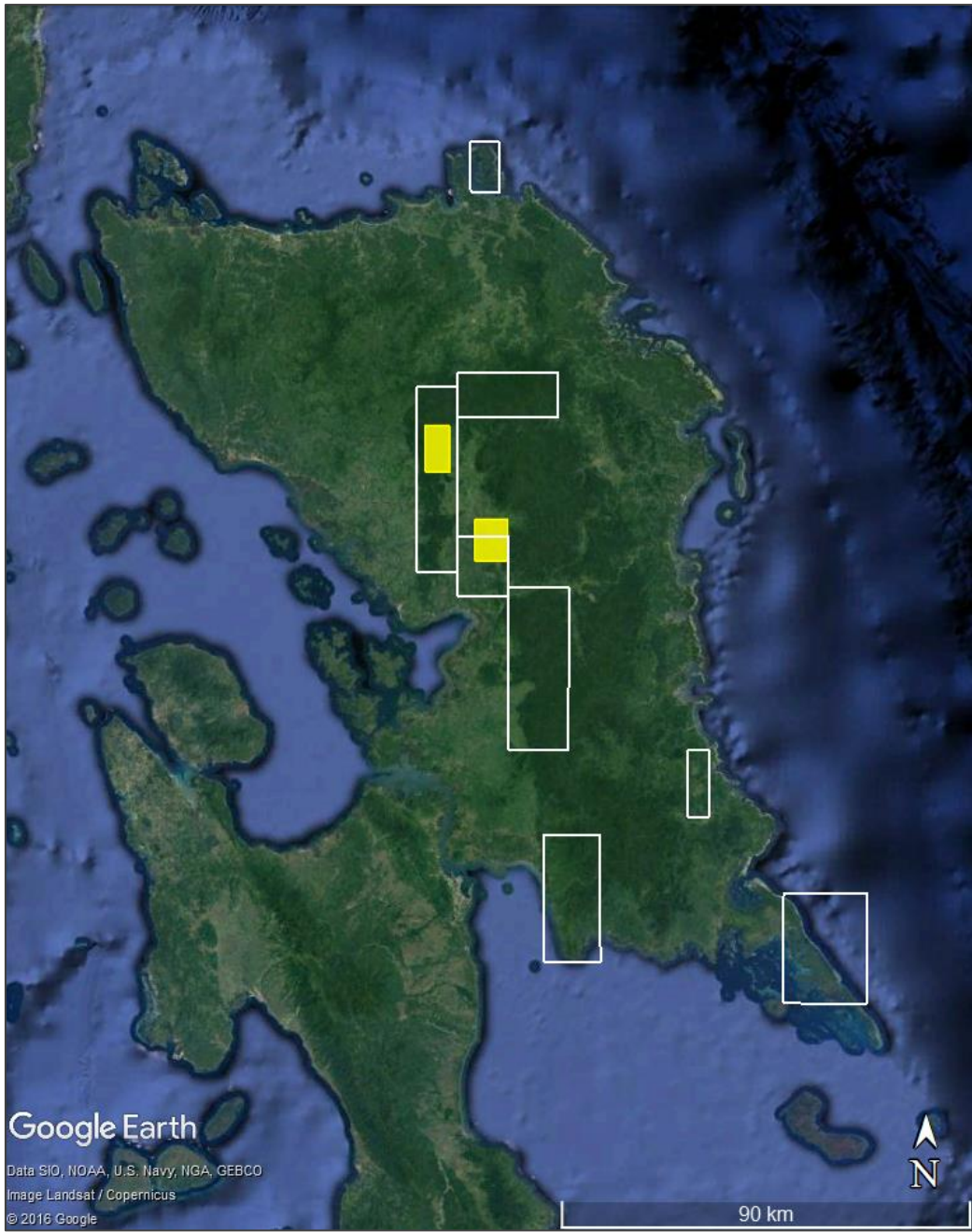


Figure 3-2. Map showing the outline of Samar Bauxite Mineral Reservation (white) with location of AMPI and BARI tenement area (yellow).

4. GEOGRAPHIC FEATURES

4.1 Location and accessibility

The AMPI and BARI project areas are located in the Province of Samar (formerly known as Western Samar) in Eastern Visayas (Region VIII) in the Philippines.

The AMPI contract area which is located within the municipalities of Motiong, San Jose de Buan and Paranas, is approximately 25 kilometers east-northeast of Catbalogan City (Figure 4-1). The BARI contract area on the other hand, is within the municipalities of Gandara, San Jose de Buan and Paranas and is approximately 35 kilometers north-northeast of Catbalogan City, the provincial capital of Samar Province. Catbalogan has major regional infrastructures that include a port and an airport. However, at present, the airport is not operational..

AMPI contract area can be reached from Tacloban City via 1.5-2 hours land travel along Maharlika (AH26) Highway going to the direction of Catbalogan City. From the junction of Buray at the Municipality of Paranas, turn right using the Taft-Paranas Road, then turn left at Loquilocon to the provincial road going to San Jose de Buan. Barangay Concepcion, which holds most of the sinkholes in AMPI, is about 12 kilometers from the junction of Loquilocon.

The BARI contract area which is about 15 kilometers northwest of Barangay Concepcion, can be reached from the town proper of San Jose de Buan. Through a 3-hour walk from the town proper, one can reach Barangay Galutan which is at the southern end of BARI area. From there, access to bauxite-bearing BARI sinkholes is by foot paths and unformed tracks.

4.2 Topography, physiography, drainage and vegetation

Samar Island is described to have moderate relief comprising of alluvial filled basins with higher limestone ridges and hills surrounding them. From coast to coast, the mountain ranges are generally characterized to be low but mostly rugged and steep. The highest mountain peaks follows a curved line that traverses predominantly north-south from the northwest coast bordering Samar Sea and passing through the center portion of the island, going to the south coast of Lauan Bay.

AMPI area has moderate relief with elevation ranging from 100 to 200 masl, the higher limestone ridges and hills surrounding the basins reach maximum height of 464 masl. The alluvial basins are generally arable with rice, corn, banana and coconut crops. The limestone ridges are covered by dense tropical rainforest.

Although having moderate relief, BARI area is higher in elevation than AMPI with elevation ranging from 200 masl in the south to a maximum of 693 masl in the north.

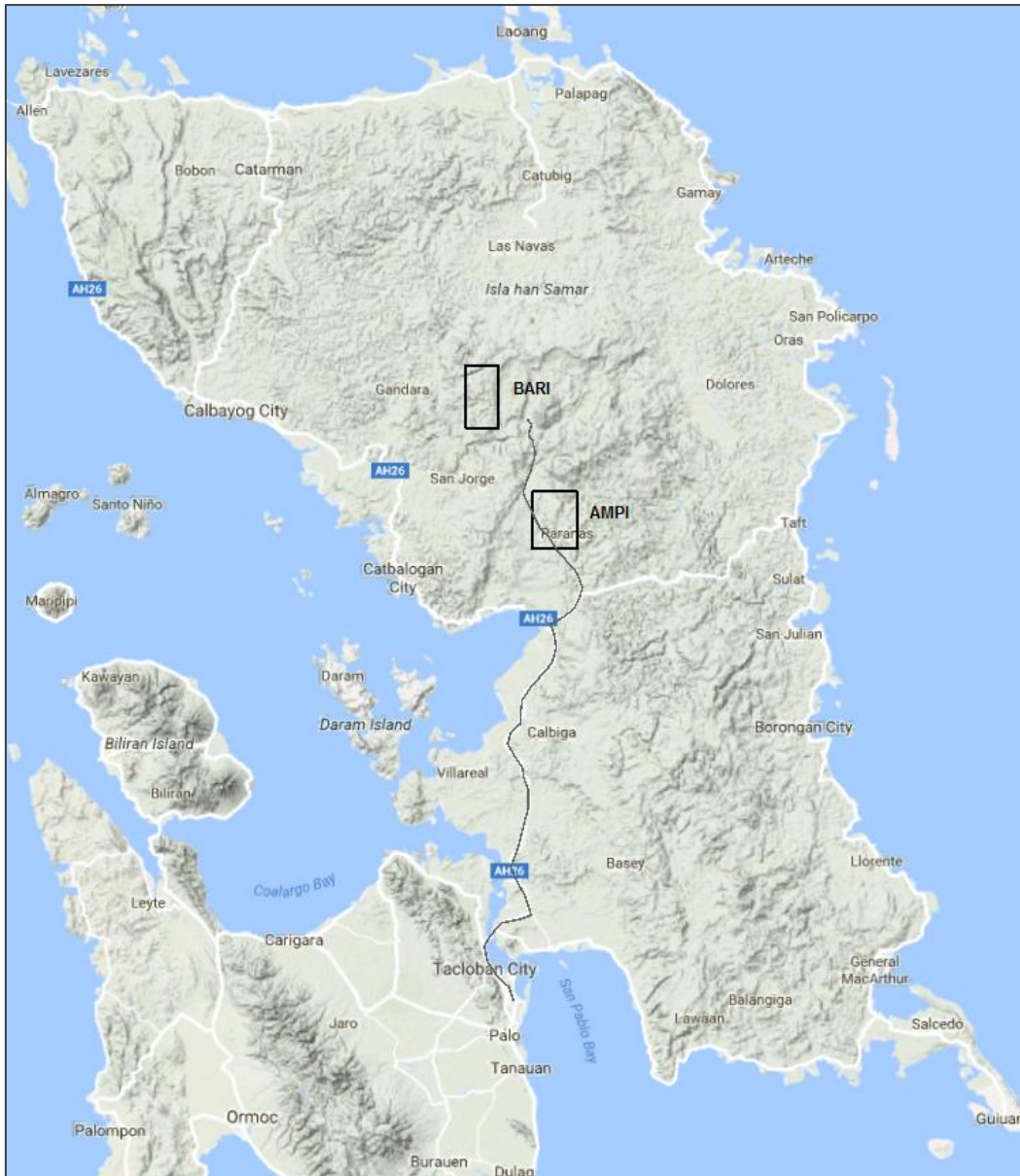


Figure 4-1. Road network from Tacloban City going to AMPI and BARI tenement areas.

4.3 Climate

The project area falls into two types of climate, the Type II and Type IV based on the Modified Coronas Classification climate map of the Philippines (Figure 4-2).

Type II climate indicates no dry season with a very pronounced maximum rain period from December to February or the northeast monsoon (Amihan). Minimum monthly rainfall occurs during the period from March to May and no single dry month. The western part of the project areas are affected by Type IV in which rainfall is more or less evenly distributed throughout the year and resembles with Type II since it has no dry season.

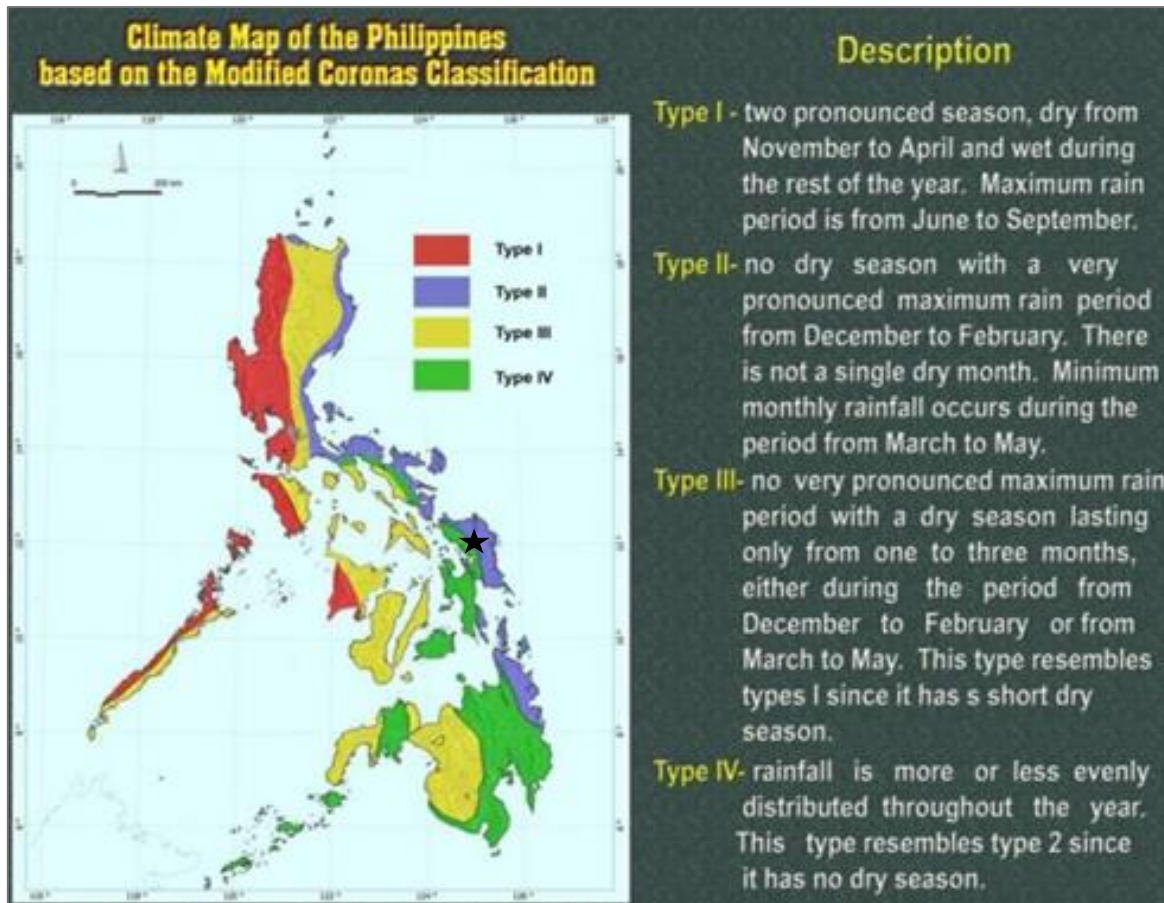


Figure 4-2. Climate map of the Philippines based on Modified Coronas Classification.

4.4 Local Resources

Communities inside the AMPI project area are generally relying on farming for their livelihood, planting crops such as corn, cassava, peanut, rice, ginger and coconut. Some locals engage in producing charcoal briquettes, and manual limestone quarrying for income.

5. PREVIOUS WORK

5.1 Mines and Geosciences Bureau

Between 1974 and 1976, the Mines and Geosciences Bureau (MGB) conducted a geological survey in Samar, targeting gold, copper and magnesium as well as confirming the presence of extensive bauxite deposits.

In 1979, MGB estimated a total of 131.6 Million tonnes of bauxite as 'mineable ore reserve' at grades ranging from 27% to 43% Al_2O_3 ; of which 544 Thousand tonnes was in the AMPI project area. The estimate is not JORC or PMRC compliant in the manner that it is stated but it can be taken as a guide to future exploration potential in the region.

5.2 Alusuisse

Alusuisse, a Swiss industrial group founded as Aluminium Industrie Aktien in 1898 in Zurich, Switzerland, conducted preliminary auger drilling and test pitting on sinkholes in the southern half of BARI property in the mid '70s. The group estimated a 'positive reserve' of 38 Million tonnes, of which 9 Million tonnes was 'exportable grade', 21 Million as 'refinery grade' and 8 Million as 'low grade' (Table 3-2). By extension to the other sinkholes in the property, Alusuisse estimated a potential of 79 Million tonnes of bauxite in BARI.

Considering that there are no full record of the data used in the estimates, neither the 38 Million tonnes estimate nor the 79 Million tonnes potential can be reported in JORC or PMRC standard.

5.3 Earthcare Geologists & Affiliates

A Filipino geological consulting company based in Tacloban City, Earthcare Geologist & Affiliates, undertook a seven-day geological reconnaissance of the AMPI and BARI properties in June and July, 2003. Samples were collected from test pits in AMPI and were sent to SGS laboratory in Manila for analysis. Chip samples were also taken from an outcrop in BARI and likewise were submitted for analysis. Maps were produced showing the potential karstic sinkholes in the two project areas.

The group came up with a 'potential ore estimate' using the maps produced during geologic mapping. The area of the karstic sinkholes was manually measured on 1:40,000 plan maps. The measured area is then multiplied to an assumed depth of 10 meters and assumed density of 1.3 t/m³. The 'potential ore estimate' for BARI was around 100 Million tonnes, and for AMPI to be around 38 Million tonnes.

Same as the previous resource estimates, the estimation of Earthcare does not meet JORC or PMRC standard and could not be released publicly.

5.4 China Non-Ferrous Metals Corporation

China Non-Ferrous Metals Corporation (CNMC), as engaged by Pacific Aluminium Holdings Limited (PAHL), conducted exploration in AMPI and BARI areas from June to November 2004. Test pitting and auger drilling were employed by the company to verify and assess the resource potential of the two areas.

A total of 93 test pits and 336 auger holes were completed by CNMC during its exploration activity on 2004. This is equivalent to 31 test pits in AMPI and 62 test pits in BARI. A total of 259 auger holes with an aggregate depth of 3,242.68 meters were drilled in AMPI while a total of 113 holes equivalent to 906.26 meters were completed in BARI. Average drilling depth in AMPI is 12.52 meters and 8.02 meters for BARI.

In 2005, Phil Jankowski, a Competent Person from SRK Consulting in Australia, estimated a total of resource of 51.8 Million tonnes of bauxite at 43.9% Al₂O₃ and 2.2% SiO₂ for the AMPI and BARI bauxite project based on the results of CNMC's exploration activities. Volume of each sinkhole was estimated using Surpac. The bulk density of 1.7 g/cm³ from the measurements of test pit spoil was applied to calculate

the tonnage. Cut-off grade used was not mentioned in the report. The estimated resource is further broken down as follows; Indicated Resource of 39.16 Million tonnes at 43.5% Al₂O₃ and 2.2% SiO₂, and Inferred Resource of 12.64 Million tonnes at 44.9% Al₂O₃ and 1.9% SiO₂.

On a positive note, Mr. Jankowski stated that there could be as much as an extra 80 Million tonnes of bauxite ore in AMPI and BARI, based on the concept of extending the results of their estimation to other parts of the project areas not studied during CNMC's exploration activities.

5.5 Pacific Aluminium Holdings Limited

Bulk of the data that was used by MMDC in its resource estimation of AMPI and BARI is from the exploration work program that was implemented by Pacific Aluminium Holdings Limited (PAHL) from 2005 to 2008. PAHL, a Hongkong-based holding company commenced its exploration activities through its Philippine subsidiary, Pacific Aluminum Mining Philippines Corporation (PAMPC).

On April 2006, another report from SRK's Consultant, Phil Jankowski, inspected the work program and verified its suitability for use in estimating the resources and reserves to the standards required by the JORC Code. Overall, the auger drilling and sampling program of PAHL was deemed well designed and well implemented.



Figure 5-1. a) simple 20-centimeter long auger bit used by CNMC in its auger drilling activities, b) drillers retrieving the auger rods, c) samplers bagging the 2-meter composite sample, d) sample CNMC Checker's Daily Report.

A May 2007 SRK report prepared also by Mr. Jankowski disclosed a total of 12.1 Million tonnes of Indicated bauxite resources in AMPI at 39.83% Al₂O₃ and 13.76% SiO₂. Additional 1.8 Million tonnes Inferred resource at 35.66% Al₂O₃ and 15.17% SiO₂ was also reported. This is based on data supplied to SRK which, after editing, consisted of records for 2,335 collars and 9,115 assays. Sinkhole outline and topography were also provided for the creation of three-dimensional wireframe models. An average density of 1.6 t/m³ was applied which is based on the mean of 962 density measurements acquired by PAMPC.

However, no similar report for BARI was provided to MMDC during its due diligence.

5.6 Asia Pilot Mining Philippines Corp./SRK China

Since November 2012, Asia Pilot Mining Philippines, Corp. has 100% stake equity of AMPI and BARI tenements and has contracted SRK China to prepare an exploration and resource report for these tenements.

Commissioned by SRK China, Philippine Xinbaoyuan Mining Corporation (Xinbaoyuan) led the bauxite exploration of AMPI and BARI in 2013 and 2014 specifically the 1:10,000 geological sketch survey, control point measurement and validation of sinkholes in the project. Verification and in-fill drilling and sampling was conducted, the results of which were also audited by SRK and found to be sufficiently reliable to interpret and support the mineral resource estimation.



Figure 5-2. In-fill auger drilling and sample drying done by Xinbaoyuan as contracted by Asia Pilot.

In a resource report signed by SRK China Principal Consultant Yiefei Jia effective December 2016, SRK China disclosed that it has estimated the JORC Code-compliant Mineral Resources for AMPI and BARI at a cut-off grade of 28% Al₂O₃, with consideration of available alumina and reactive SiO₂. A total of 35 Million tonnes Measured and Indicated Resources were estimated in AMPI at 41% Al₂O₃ while a total of 82 Million tonnes of Measured and Indicated Resources were estimated for BARI at 42% Al₂O₃. It has been also noted that the silica content in BARI is about 6% which is much lower than that in AMPI at about 11%.

Table 5-1. Summary of previous geologic activities and results in AMPI and BARI.

Period	Proponent	Area Coverage	Exploration Activity	Results / Resource Estimate
1979	Mines and Geosciences Bureau	Samar	<ul style="list-style-type: none"> Geological survey targeting gold, copper and magnesium as well as confirming presence of extensive bauxite deposits 	<ul style="list-style-type: none"> 131.6M t of bauxite as 'mineable ore reserve' at grades ranging from 27% to 43% Al₂O₃*
Mid '70s	Alusuisse	BARI	<ul style="list-style-type: none"> Preliminary auger drilling and test pitting on sinkholes at the southern half of the property 	<ul style="list-style-type: none"> 38M t 'positive reserve' equivalent to 9M t 'exportable grade', 21M t 'refinery grade' and 8M t as 'low grade' projected a total potential reserve of 79M t in BARI*

2003	Earthcare Geologists and Affiliates	AMPI and BARI	<ul style="list-style-type: none"> chip sampling and test pitting; samples were submitted to SGS laboratory in Manila 	<ul style="list-style-type: none"> AMPI = 38.3M t 'potential ore estimate' BARI = 100.0M t 'potential ore estimate'
2004	China Non-Ferrous Metals Corporation	AMPI and BARI	<ul style="list-style-type: none"> AMPI = 31 test pits, 259 auger holes equivalent to 3,242.68m BARI = 62 test pits, 113 auger holes equivalent to 906.26m 	<ul style="list-style-type: none"> 39.16M t Total AMPI and BARI Indicated resource at 43.5% Al₂O₃ and 2.2% SiO₂ 12.64M t Total AMPI and BARI Indicated resource at 44.9% Al₂O₃ and 1.9% SiO₂
2005-2008	Pacific Aluminium Holdings Limited	AMPI	<ul style="list-style-type: none"> 2,335 drill holes 9,115 sample analysis 962 density measurements = 1.6 t/m³ 	<ul style="list-style-type: none"> 12.1M t Indicated resource at 39.83% Al₂O₃ and 13.76% SiO₂ 1.8M t Inferred resource at 35.66% Al₂O₃ and 15.17% SiO₂
2013-2015	Asia Pilot Mining Philippines/ SRK China	AMPI	<ul style="list-style-type: none"> 306 test pits 2,863 auger holes 	<ul style="list-style-type: none"> 35.0M t Measured and Indicated resource at 41.0% Al₂O₃ and 11.3% SiO₂ 4.5M t Inferred resource at 40.8% Al₂O₃ and 12.9% SiO₂
		BARI	<ul style="list-style-type: none"> 535 test pits 3,295 auger holes 	<ul style="list-style-type: none"> 82.6M t Measured and Indicated resource at 42.7% Al₂O₃ and 5.6% SiO₂ 75.1M t Inferred resource at 41.2% Al₂O₃ and 5.5% SiO₂
2017	Marcventures Mining and Development Corp.	AMPI	<ul style="list-style-type: none"> 2,862 drill holes and test pits 16,015.91 meters 8,616 samples 	<ul style="list-style-type: none"> 41.7 t Measured and Indicated resource at 40.06% Al₂O₃ and 14.50% SiO₂ 17.3M t Inferred resource at 38.96% Al₂O₃ and 16.59% SiO₂
		BARI	<ul style="list-style-type: none"> 3,295 drill holes and test pits 13,457.14 meters 6,971 samples 	<ul style="list-style-type: none"> 31.5M t Measured and Indicated resource at 43.78% Al₂O₃ and 7.96% SiO₂ 28.4M t Inferred resource at 43.75% Al₂O₃ and 8.09% SiO₂

6. HISTORY OF PRODUCTION

AMPI and BARI properties are still under exploration and development stages. So far, there are no recorded mineral production in the area.

7. REGIONAL GEOLOGY

7.1 Regional Geologic Setting

The Samar basin presents stratigraphic characteristics similar to those of the Visayan Sea Basin. Here, Upper Oligocene to Lower Miocene volcanoclastics unconformably overlies a mixed basement of ophiolites and metamorphic rocks. The Middle Miocene interval is represented by a widespread deformed limestone formation which presently covers almost 25% of Samar Island (Garcia and Mercado, 1981). This limestone body is unconformably overlain by Upper Miocene to Pleistocene shales and carbonates. The basin axis is generally oriented north to south.

7.2 Regional Structures

The Island of Samar lies in the eastern periphery of the Visayas region. It is located together with Leyte, within the immediate vicinity of the Philippine rift zone and the Philippine deep, two major geologic structures greatly influencing the geology of the Philippine Archipelago. The main tectonic line of the Philippine rift zone, a strike-slip fault system, extends through the entire length of the island of Leyte, with its splays and submarine trench where an oceanic plate plunges westward under a sialic block Island and continues downward to the eastern coast of Mindanao.

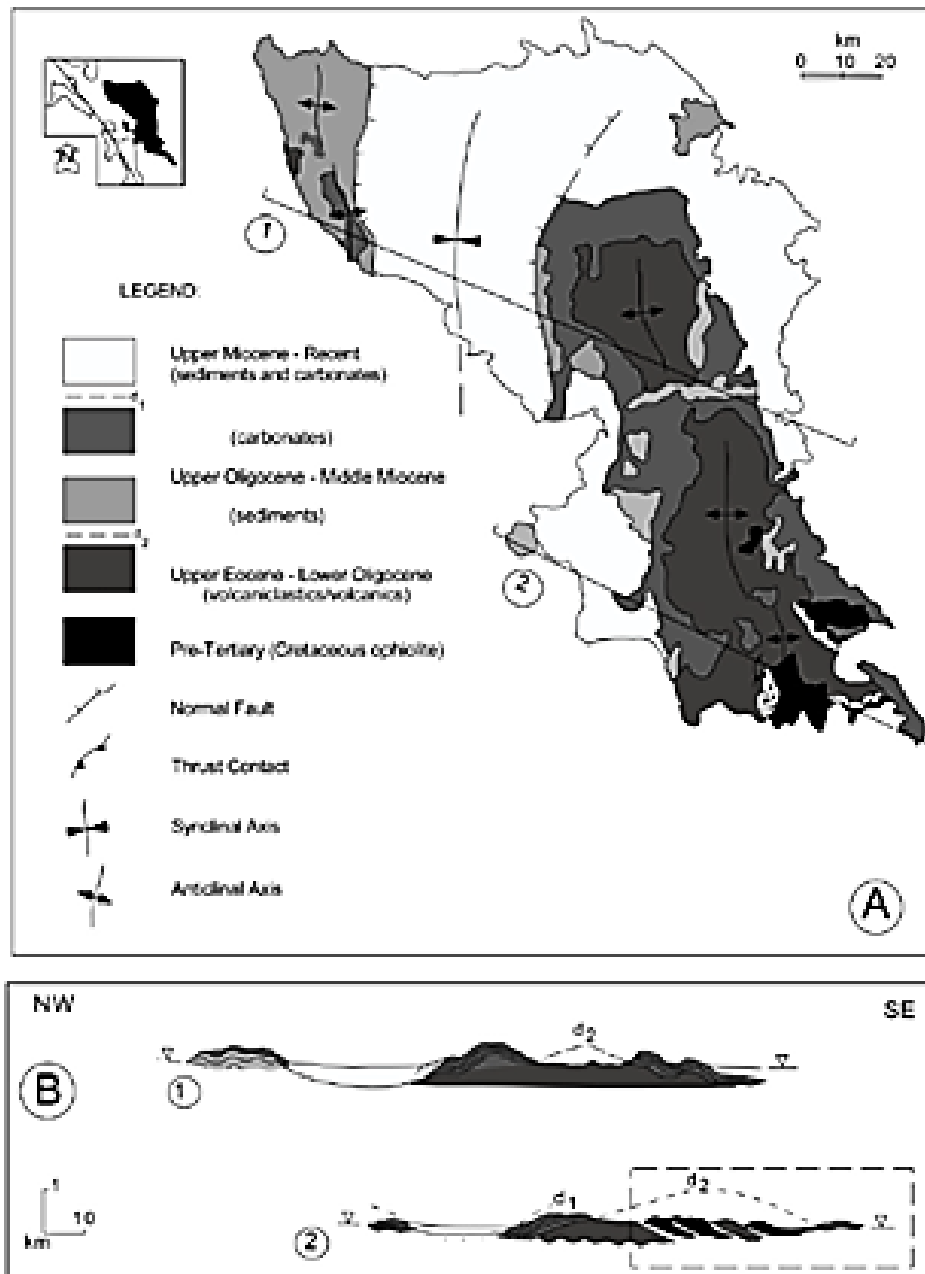


Figure 7-1. Regional geologic map of Samar Island (Aurelio et al.).

8. MINERAL PROPERTY GEOLOGY

Geological Mapping of sinkholes and lithological formations was conducted by walking through the contract area and thru megascopic identification of rock fragments and bedrock encountered during drilling. Interpretation of topographic map and satellite images were also used for identification of sinkholes and structures. Drill cores were logged, and interpreted by the geologist based on megascopic identification and description of color, texture and mineralogical composition. Previous drill holes were also considered especially for identification of sinkhole and depression.

The karstic limestone of the Lower Miocene Daram Formation surrounds and hosts the reddish-brown to yellow-brown bauxite deposit in AMPI and BARI tenement area. Sinkholes and solution channels afforded good accumulation sites of bauxite. The deposit occurs as a discontinuous, surface mantle or lenses invariably on the karsts. Northeast-southwest trending secondary structures were prominently identified inside the AMPI contract area.

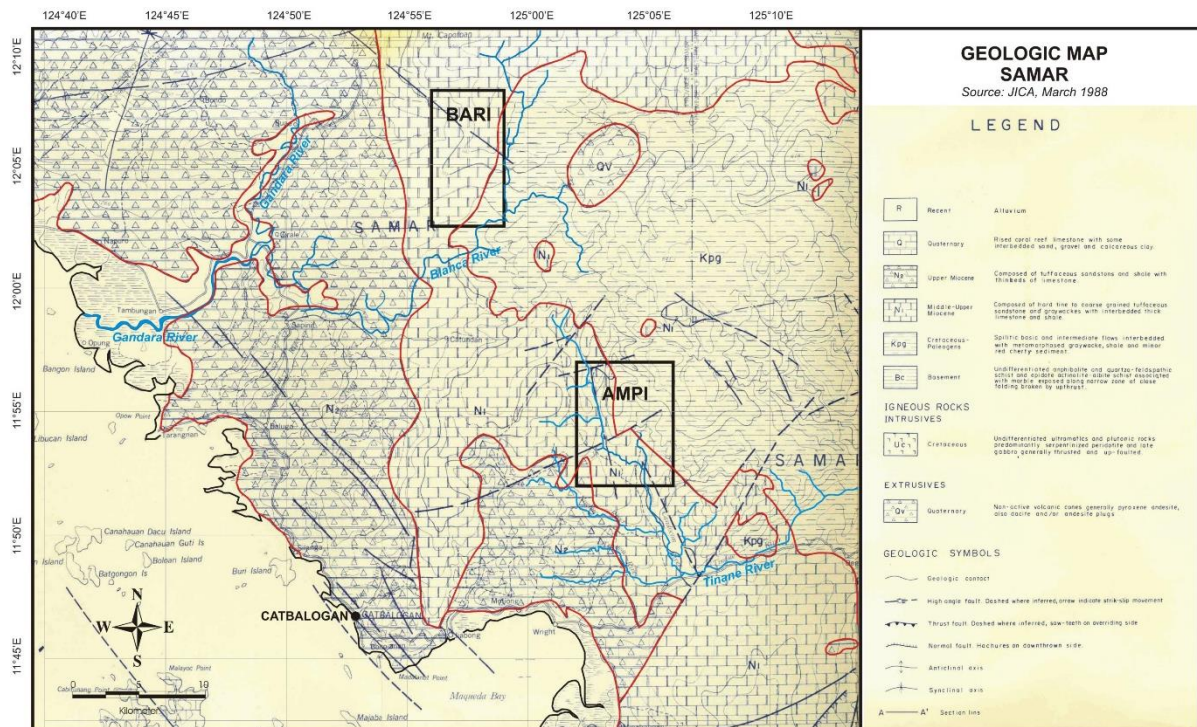


Figure 8-1. Geologic map of AMPI and BARI showing that most of the two project areas are underlain by limestone which provided sinkholes and dissolution channels as good accumulation sites of bauxite.

9. MINERALIZATION IN THE MINERAL PROPERTY

9.1 Overview of mineralization

Bauxite forms from a wide variety of alumina-bearing rocks which has undergone relatively long period of lateritic weathering. It ideally forms in tropical or sub-tropical climatic conditions with abundant rainfall and luxuriant vegetation. Location must be well-drained environment and above the phreatic water table. The bauxite deposits

occurring in Samar are derived from the erosion, transportation and sedimentation of pre-existing lateritic soils and weathered alumina-rich rocks, re-deposited in a gradually subsiding basin. Changes from oxidizing-acidic to reducing-alkaline pH probably caused dissolution of silica and precipitation of hydrous aluminum oxides (Garcia et al., 1981).

9.2 Style of mineralization

The bauxite deposits in AMPI and BARI are developed in karstic sinkholes in a predominantly limestone terrain. The topography of the base limestone underneath the alluvial/colluvial/elluvial deposits that include the bauxite can be assumed to be irregular.

The bauxite profile is interpreted as consisting of four (4) layers or zones, namely: Top soil, Nodular Zone, Clay Zone and Bedrock (Figure 7). It has been observed that Al_2O_3 decreases while SiO_2 increases with increasing depth. This is consistent with the previously stated characteristic of bauxite wherein hydrous aluminum oxides are precipitated in a reducing-alkaline pH environment while silica is dissolved and therefore leached by groundwater.

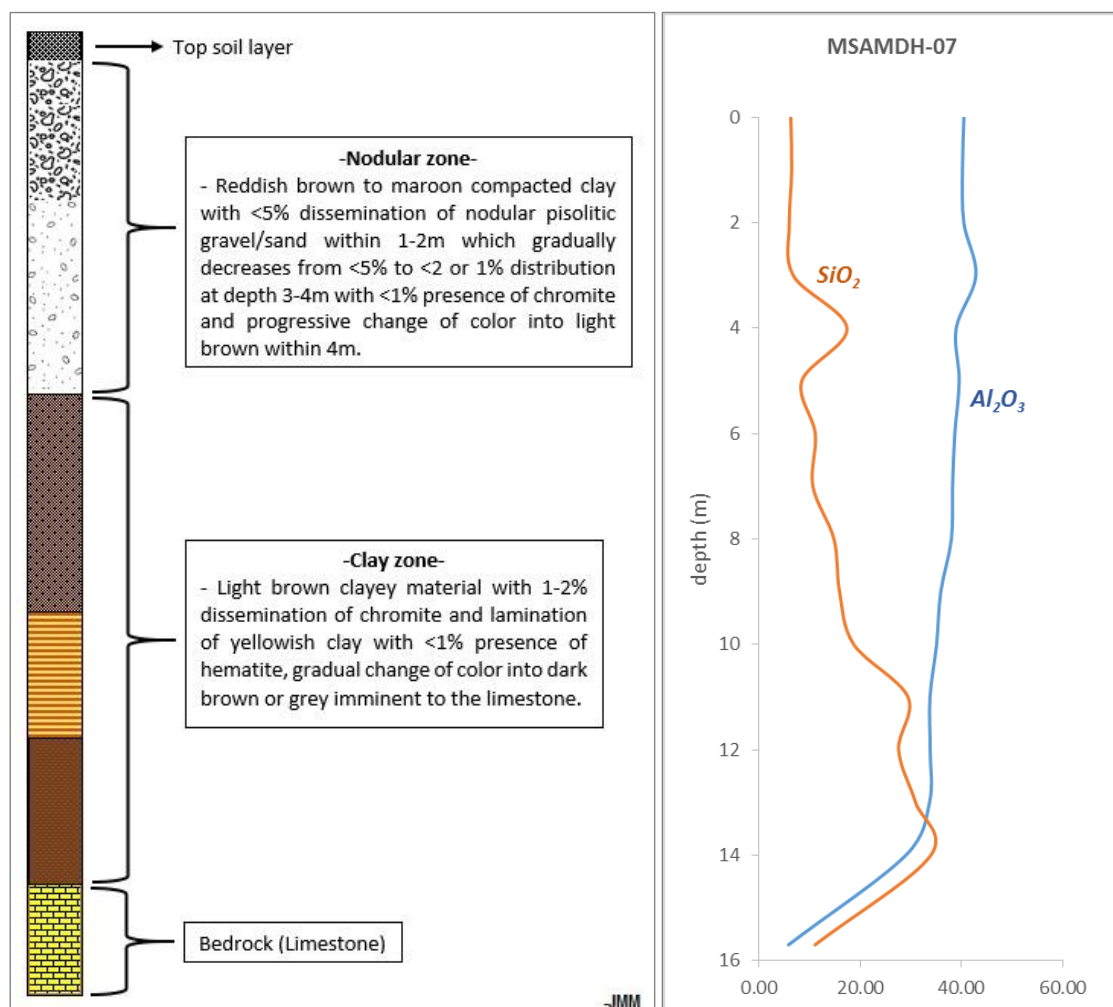


Figure 9-1. (Left) Bauxite laterite profile as interpreted from drill core samples. (Right) Al_2O_3 and SiO_2 assay values of drill core sample (MSAMDH-07) plotted against depth in meters.

Three (3) samples were submitted to the National Institute of Geological Sciences in the University of the Philippines for X-ray Diffraction (XRD) and handheld X-ray Fluorescence (XRF) for mineral identification and semi-quantitative chemical analysis. Table 9-1 shows the summary of bulk element composition of the samples. The semi-quantitative data obtained from handheld XRF analyser provided relative concentration of elements in the samples but does not provide accurate concentration of elements. Figure 9-2 to 9-4 present the XRD pattern of the samples submitted wherein the relative intensity of each identified minerals are indicated. The summary of minerals identified in the submitted samples is shown listed alphabetically in Table 9-2.

Table 9-1. Summary of bulk element composition obtained from handheld XRF.

Analyte	Chemical element	SAM 100 (wt. %)	SAM 316 (wt. %)	SAM 354 (wt. %)
LE	Light elements	46.70	49.20	51.30
Al	Aluminum	27.50	23.70	19.50
Fe	Iron	18.80	17.80	18.60
Mg	Magnesium	3.93	3.61	3.07
Ti	Titanium	1.05	0.93	0.94
P	Phosphorus	1.00	0.61	0.29
Si	Silicon	0.47	3.53	5.91
Mn	Manganese	0.36	0.47	0.13
Sr	Strontium	0.09	0.04	0.02
Cr	Chromium	0.04	0.06	0.06
Zr	Zirconium	0.03	0.02	0.02
V	Vanadium	0.03	0.03	0.04
Zn	Zinc	0.02	0.02	0.01
Y	Yttrium	0.02	0.01	<0.01
Ni	Nickel	0.02	0.03	0.02
Cu	Copper	0.01	0.02	0.01
Ta	Tantalum	0.01	0.01	0.01
Pb	Lead	0.01	<0.01	<0.01
Sn	Tin	0.01		

Table 9-2. Mineral phases identified in the samples with chemical formula.

Mineral	Chemical Formula
Anatase	TiO ₂
Boehmite	γ-AlO(OH)
Gibbsite	Al(OH) ₃
Goethite	α-FeO(OH)
Hematite	Fe ₂ O ₃
Kaolinite Group	Al ₂ Si ₂ O ₅ (OH) ₄
Magnetite	Fe ²⁺ Fe ³⁺ ₂ O ₄
Quartz	SiO ₂

Based on these results, the minerals in the bauxite ore are predominantly gibbsite and boehmite, with minor goethite, hematite and magnetite mixed with aluminium mineral referred to as alumogeothite. Accessory anatase, kaolinite and quartz were also

identified. Correlating these to the XRF analysis results of these samples, it would seem that the presence of kaolinite and quartz causes the increase of SiO₂ in the bauxite.

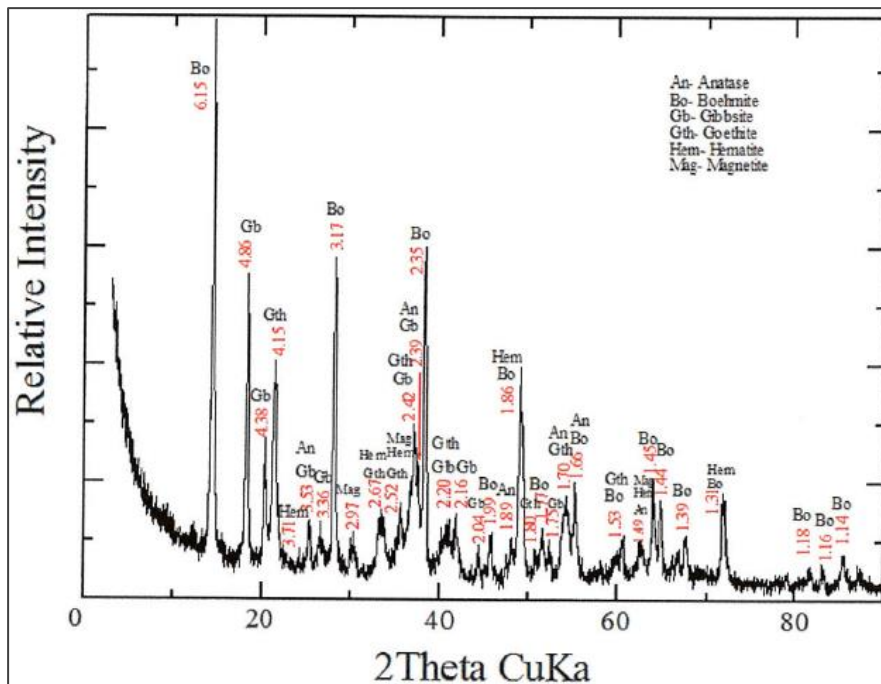


Figure 9-2. XRD pattern of SAM 100 sample. XRF analysis result of this sample is 51.14% Al₂O₃ and 0.01% SiO₂.

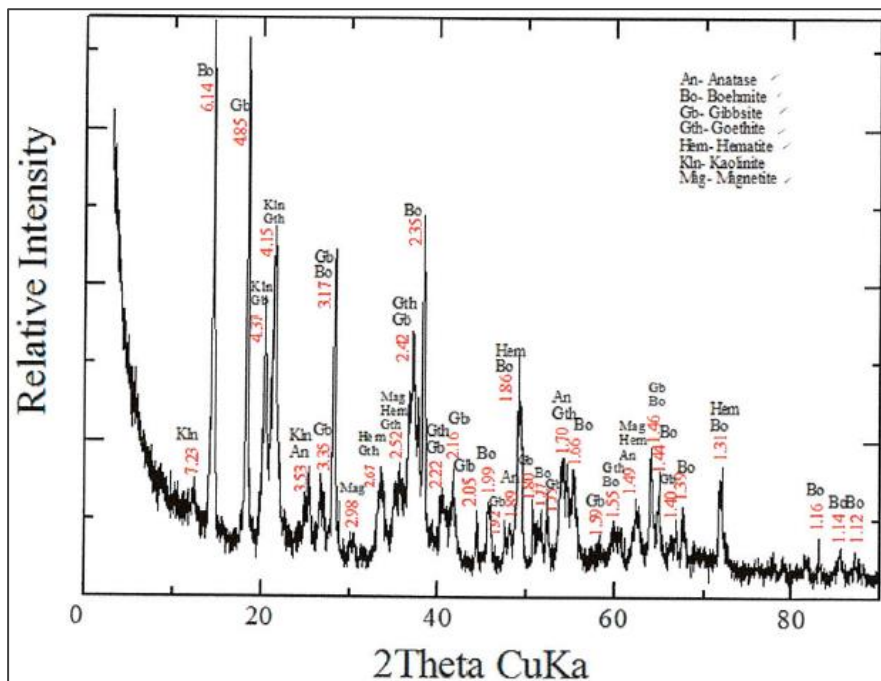


Figure 9-3. XRD pattern of SAM 316 sample. XRF analysis result of this sample is 45.7% Al₂O₃ and 7.34% SiO₂.

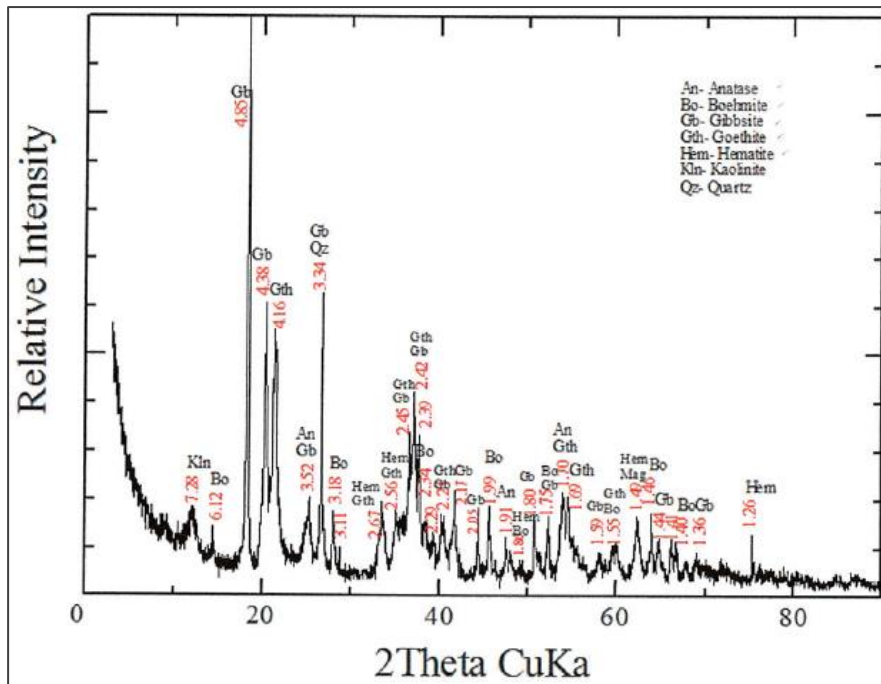


Figure 9-4. XRD pattern of SAM 354 sample. XRF analysis result of this sample is 39.17% Al₂O₃ and 10.82% SiO₂.

10. EXPLORATION

A field validation was conducted by the MMDC Exploration Team over the AMPI contract area from January 9 to February 10, 2017. The activity's objective is to verify the validity of the exploration methodology and integrity of the database as well as the parameters (density and moisture) that was used in the resource estimation done by SRK as contracted by Asia Pilot. Unfortunately, due diligence in BARI did not push through due to security issues. However, verification of the AMPI dataset can somewhat verify the integrity of the BARI dataset considering that the same exploration work programs were historically conducted in AMPI and BARI.

The MMDC Exploration Team was led by Chief Geologist Herbert T. Villano and included Geologists Ralph Rey L. Tan and Jelan M. Mendez and Mapping Specialist Ronito T. Martinez.

10.1 Drilling and Test Pitting

One (1) unit of YBM-YHP (YBM9) man-portable drilling machine with BQ size and tungsten carbide bits was used during the field validation and verification. Twin drill holes were located near location of previous drill holes within identified sinkhole and depression inside four (4) Barangays, namely: Brgy. Paco, Canliguis (Jose Roño), Conception and Lawaan I. Handheld GPS was used for locating proposed twin drill holes. Mobilization of drill machine was through manual hauling or by using carts pulled by carabao.

A total of 11 twin drill holes and 6 test pits were completed during the due diligence activity aggregating to a total of 175.50 meters and 24 meters, respectively (Table 10-1 and 10-2). The twin drill holes basically confirms the depth and vertical extent of the

bauxite material within the tenement considering that the mechanized drill unit used in the activity was able to penetrate down to the bedrock material (Table 10-3). It also validates the existence of holes drilled during previous exploration campaigns.

Table 10-1. Summary of drill holes completed during the due diligence activity.

Hole ID	Date Started	Date Finished	Northing	Easting	Elev. (m)	Depth (m)	No. of samples
MSAMDH-01	1/14/2017	1/15/2017	11°53'21.6"	125°03'20.3"	111	10.10	16
MSAMDH-02	1/16/2017	1/17/2017	11°53'25.5"	125°03'15.2"	126	15.35	24
MSAMDH-03	1/18/2017	1/18/2017	11°53'50.6"	125°02'41.8"	177	7.00	11
MSAMDH-04	1/19/2017	1/20/2017	11°54'26.4"	125°02'28.7"	144	12.00	18
MSAMDH-05	1/21/2017	1/23/2017	11°54'24.6"	125°02'46.6"	117	16.95	25
MSAMDH-06	1/24/2017	1/26/2017	11°53'50.1"	125°02'21.5"	195	17.15	26
MSAMDH-07	1/27/2017	1/29/2017	11°55'16.7"	125°02'11.5"	142	15.90	23
MSAMDH-08	1/30/2017	1/31/2017	11°52'20.2"	125°03'17.3"	124	21.35	26
MSAMDH-09	2/1/2017	2/1/2017	11°52'26.7"	125°03'17.4"	132	6.00	6
MSAMDH-10	2/2/2017	2/4/2017	11°53'07.9"	125°03'26.8"	121	22.00	33
MSAMDH-11	2/5/2017	2/5/2017	11°52'14.7"	125°04'16.1"	94	7.70	11
Total						151.50	219

Table 10-2. Summary of test pits completed during the due diligence activity.

Test Pit ID	Northing	Easting	Elev. (m)	Depth (m)	No. of samples
MTP-01	11°53'25.6"	125°03'15.2"	126	4.00	6
MTP-02	11°53'50.1"	125°02'41.7"	177	4.00	6
MTP-03	11°54'30.5"	125°02'13.1"		4.00	6
MTP-04	11°54'24.7"	125°02'46.8"	117	4.00	6
MTP-05	11°54'26.2"	125°02'28.9"	144	4.00	6
MTP-06	11°55'16.8"	125°02'11.5"	142	4.00	6
Total				24.00	36

Table 10-3. Comparison of MMDC vs AMPI historical drill hole depth.

MMDC		Asia Pilot (AMPI)		Remarks
Hole ID	Depth (m)	Hole ID	Depth (m)	
MSAMDH-01	10.10	A5REC43	7.40	4.9m NW of AMPI DH
MSAMDH-02	15.35	A5REC27	12.20	12.2m SE of AMPI DH
MSAMDH-03	7.00	CANLIG29 A	11.50	22.7m east of AMPI DH
MSAMDH-04	12.00	CANLIG9 G24	17.30	4.4m NE of AMPI DH
MSAMDH-05	16.95	CANLIG13 C	15.80	10.2m SW of AMPI DH
MSAMDH-06	17.15	CANLIG2 G4	17.60	10.6m SW of AMPI DH
MSAMDH-07	16.90	A6REC1 G12	22.00	13.5m NW of AMPI DH
MSAMDH-08	21.35	A5GH25	16.55	0.12m south of AMPI DH
MSAMDH-09	6.00	A5GH21	4.00	0.05m SE of AMPI DH
MSAMDH-10	22.00	A5NE5	14.20	16.2m north of AMPI DH
MSAMDH-11	7.70	LAW32	10.70	0.70m SE of AMPI DH

10.2 Sampling Methodology

After drilling, core samples were retrieved from the core tube using core pusher then placed in a core box for core photography and logging (Figure 10-1). Once the geologist completes core logging, samples are cut into two along its length. One half of the core is transferred to a plastic sample bag as 1-meter samples while the other half is sampled at a nominal 2-meter interval (Figure 10-2). This is to be able to directly make a comparison between the previous drill hole and the twin drill hole, considering that the previous drill holes were also sampled at 2-meter intervals.



Figure 10-1. a) Mobilization of drill machine and accessories by manual hauling and at times using carabaos, b) actual drilling using YBM-YHP drilling machine, c) samples retrieval using core pusher.

Same as the drill holes, 1-meter and 2-meter samples were collected from each test pits. All samples were labelled with serial numbers (Figure 10-3). The equivalent drill hole/test pit ID and sample interval of each were recorded and encoded into a sample database.



Figure 10-2. a) Transfer of sample from PVC pipe to core box, b) core logging of MMDC Geologists at field, c) transfer of samples from core box to plastic sample bags.



Figure 10-3. a) Actual digging of test pit by local, b) sampling along wall of the test pit by MMDC geologist, c) samples collected from the test pit.

Samples were delivered from the field to the MMDC Exploration Base Camp located at Brgy. Concepcion, Municipality of Panaras for field sample preparation. Weather permitting, sun drying was done to reduce the moisture of each sample thereby also reducing its weight (Figure 10-4). After drying, samples were crushed manually then mixed to ensure homogeneity. Coning and quartering method of sample reduction was done to further minimize the amount of samples that will have to be transported from the field to the assay laboratory of MMDC located at Brgy. Panikian, Municipality of Carrascal, Surigao del Sur.



Figure 10-4. a) Sample sun drying, b) manual crushing of samples, c) coning and quartering, d) packing of samples in sacks.

10.3 Specific Gravity, Moisture and Swell Factor Measurement

Specific Gravity (SG) determination was done using samples collected from the test pits. A 20cm x 10cm x 10cm sample was collected every 1-meter interval from the test pit wall (Figure 10-5). Samples were immediately wrapped with plastic cover to prevent escape of moisture and material disintegration during transportation. Weight measurement was done using digital weighing scale of MMDC assay laboratory. SG was computed by dividing the measured weight by the volume of the material (2,000 cm³).



Figure 10-5. a) Samples were collected along the side of the test at 1 meter interval, b) sample was cut carefully to the desired dimension, c). sample sealed in plastic sample bag was weighed using digital scale at MMDC assay laboratory.

After weighing, the SG samples were oven dried for 16 hours at 105°C, then weighed again after every 2 hours of oven drying until weight becomes constant. Percent moisture content of samples was then computed by dividing the weight of sample after oven drying by the weight of sample before drying, then multiplying by 100.

Swell factor (SF) of bauxite material was also conducted during the due diligence. Material was collected from the cleared ground within 10cm x 10cm hole and transferred to a fabricated wooden box measuring 10cm x 10cm 10cm until full (Figure 10-6). The depth of the hole was then recorded and used to calculate the in-situ volume of the material. To compact the material, the box was lifted 10cm from the ground then dropped. The height from the top lid of the box down to the surface of the compacted material was measured then subtracted from the original height (10cm) to determine the new height of the material. The loose volume was then computed by multiplying the area of the box by the new height of the material. SF is the loose volume of the material divided by the in-situ volume of the material.

The process of lifting and dropping the box was repeated three (3) times. The resulting SF of each trials were then averaged to get the average SF of the material.



Figure 10-6. a) material was collected from a 10cm x 10cm hole and transferred to fabricated wooden box measuring 10cm x 10cm x 10cm until full, b) wooden box was lifted 10cm from the ground and dropped for compaction.

The specific gravity of the bauxite deposit inside the contract area as calculated from the results of the SG determination activity is 1.69 while moisture averages 28.74% (Table 10-4). This calculated SG coincides with the 1.6 SG that SRK computed and used in the resource estimation. However, SRK did not provide exact calculated moisture content but instead used about 30% moisture. Swell factor computed is 1.25 (Table 10-5) yet additional swell factor determination needs to be conducted since sample was taken from one location only.

Table 10-4. Results of specific gravity and moisture determination.

TP ID	From	To	Volume (cu.m.)	Weight (kg)	Weight (ton)	Specific Gravity	% Moisture
MTP-02	0.20	2.20	0.002	2.6474	0.0026	1.324	28.57
	1.20	2.20	0.002	3.1907	0.0032	1.595	29.08
	2.20	3.20	0.002	3.566	0.0036	1.783	28.34
	3.20	4.00	0.002	3.8026	0.0038	1.901	28.04
MTP-04	0.20	2.20	0.002	2.8813	0.0029	1.441	30.56
	1.20	2.20	0.002	3.5068	0.0035	1.753	29.42
	2.20	3.20	0.002	3.6287	0.0036	1.814	28.20
	3.20	4.00	0.002	3.8628	0.0039	1.931	27.74
Average						1.693	28.74

Table 10-5. Results of swell factor determination.

TP_ID	Volume _{in-situ}	Volume _{loose}	Swell Factor	
MTP-02	680	1000	1.47	
	drop 1	680	850	1.25
	drop 2	680	800	1.18
	drop 3	680	750	1.10
Average			1.25	

10.4 Sample Analysis

A total of 216 split core samples and 36 test pits samples were collected and transported to MMDC assay laboratory in Carrascal, Surigao del Sur for sample preparation and analysis.

At the MMDC assay laboratory, samples are received in the Sample Preparation section to undergo sample preparation. The sample is manually crushed on steel plate using sledge hammer and quartered using wooden ply board. Half of the sample is placed into a metal tray and the other half is returned into the plastic sample bag to be stored as coarse duplicate. To dry the samples, metal trays containing the samples are placed into the oven and heated at 105°C for 8 hours or more if needed (Figure 10-7).



Figure 10-7. a) MMDC Sample Preparation Facility in Carrascal, Surigao del Sur, b) steel plates installed on the floor of the Sample Preparation Facility, c) electric oven used for drying samples.

Sample is then passed through a crush to crush “lumps” that were formed while drying the sample. A riffle splitter is used to divide the sample into two parts. One part is retained and stored as coarse reject that can be used for check analysis in the future. The other part is pulverized to 150 mesh where about 10 gram sample is taken for analysis.



Figure 10-8. a) Crusher used for size reduction, b) pulverizer used to further reduce the size of the sample after splitting, c) X-Ray Fluorescence (XRF) Spectrometer at MMDC laboratory.

Pulverized sample or the pulp samples is prepared as raw ore pellet to be analysed for Al_2O_3 , SiO_2 , Fe, MgO, Cr_2O_3 using X-Ray Fluorescence (XRF) Spectrometer (Figure 10-8).

10.5 Data Verification and QAQC

Of the elements that were analysed for, Al_2O_3 and SiO_2 are of most interest primarily because Al_2O_3 bears the aluminum and SiO_2 affects the amount of energy that is needed during processing of bauxite. Higher SiO_2 required higher energy to process the ore thereby diminishing the ore price.

The scatter plot and histogram in Figure 10-9 and 10-10 present the range of Al_2O_3 and SiO_2 assay values yielded from the samples. The scatter plot indicates that both drilling and test pitting activity intercepted high alumina-low silica bauxite material. This is manifested by the clustering of alumina values around 40 to 55 percent Al_2O_3 and

less than 10 percent SiO₂. Considering that test pits are only 4-meter deep, Al₂O₃ and SiO₂ assay values of test pit samples were concentrated in the high alumina-low silica range only, and did not intercept lower grade bauxite and bedrock which occurs below 4 meter depth.

Table 10-6. MMDC due diligence drill hole and test pit assay values statistics.

	DH_Al ₂ O ₃	DH_SiO ₂	TP_Al ₂ O ₃	TP_SiO ₂
N of cases	216	216	36	36
Sum	8,415.50	2,767.87	1,599.63	148.02
Minimum	0.79	0.01	40.63	0.01
Maximum	50.56	50.02	51.14	11.60
Range	49.77	50.01	10.51	11.59
Median	40.42	11.13	44.44	3.34
Arithmetic Mean	38.96	12.81	44.43	4.11
Standard deviation	9.07	8.95	3.27	3.87
Mode	37.50	0.01	#N/A	0.01
Variance	82.22	80.07	10.66	14.95
Coefficient of variation	0.23	0.70	0.07	0.94

The Al₂O₃ histogram of MMDC drill hole samples is bell-shaped distribution skewed to the left which indicates high frequency of samples with high alumina value. The spikes at lower alumina values denote intercepted bedrock (limestone) samples. Al₂O₃ histogram of test pit samples shows peaks at 42 to 54 percent alumina only. This denotes that the test pits were only able to penetrate the shallower high-alumina bauxite material and that no bedrock were intercepted. The SiO₂ histogram of both drill hole and test pit samples show skewness to the right which indicates generally low silica values of the samples.

Figure 10-11 shows the Al₂O₃ vs SiO₂ scatter plot of MMDC vs. AMPI samples which shows similar trend between the two data sets. Both intercepted high alumina-low silica bauxite material. The data sets also conforms to general characteristic of bauxite such that with increasing depth, alumina decreases and silica increases.

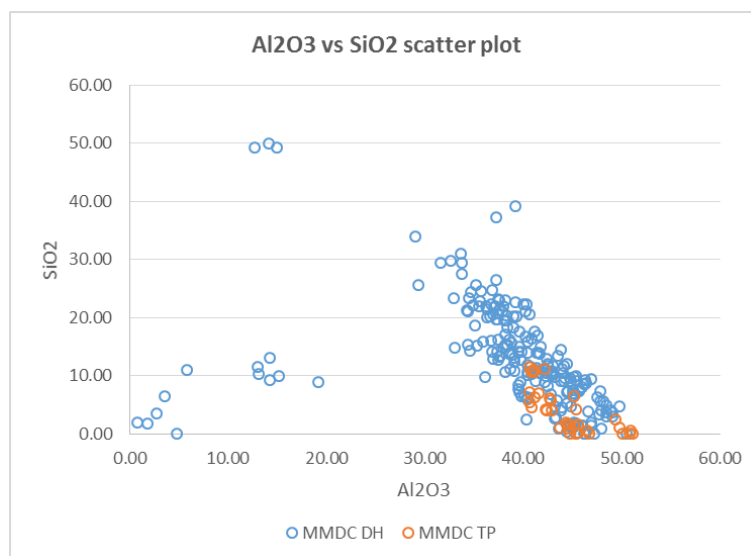


Figure 10-9. Al₂O₃ and SiO₂ scatter plot of MMDC drill hole (DH) and test pit (TP) samples from AMPI.

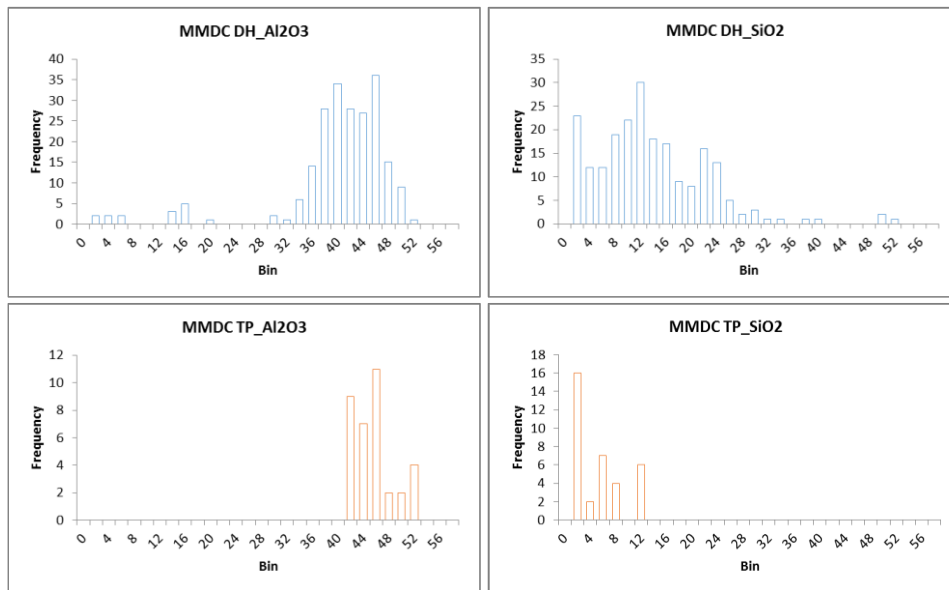


Figure 10-10. (Top) Al_2O_3 and SiO_2 histogram of MMDC drill hole (DH) samples. (Bottom) Al_2O_3 and SiO_2 histogram of test pit (TP) samples.

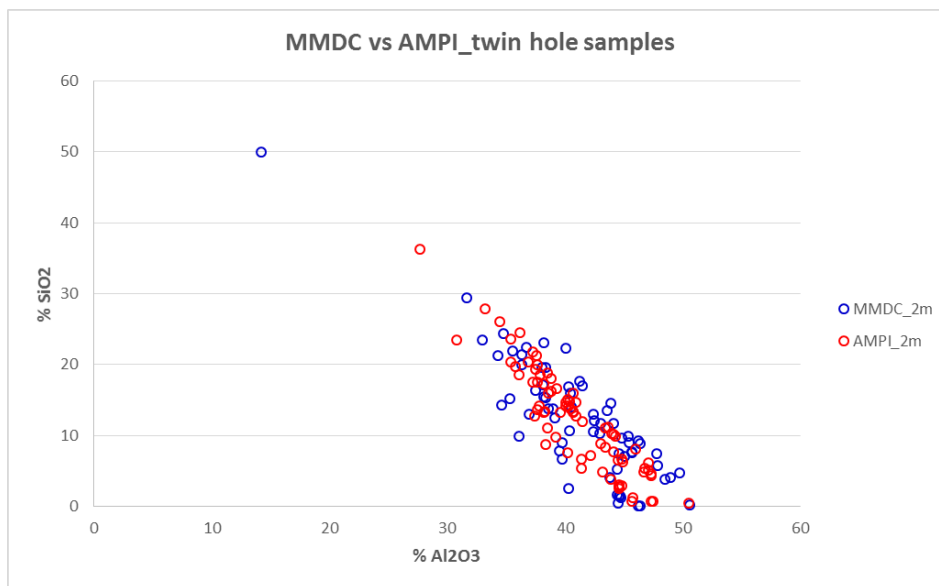


Figure 10-11. Scatter plot of Al_2O_3 vs SiO_2 of MMDC and AMPI samples.

Quality assurance and quality control (QAQC) program was implemented to ensure accuracy and precision of field sampling, sample preparation and analysis of the due diligence samples. Field duplicates and blanks were inserted on a regular interval of 1 every 10 samples. Check samples were also submitted to Intertek for inter-laboratory checking. However, assay results from Intertek are still pending as of time of report writing.

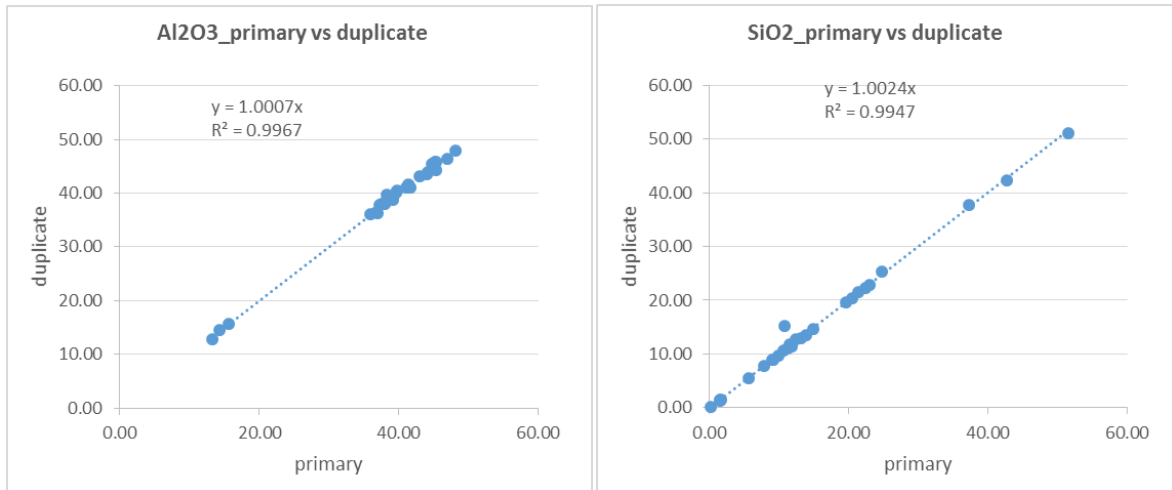


Figure 10-12. Correlation graph of Al₂O₃ and SiO₂ values of MMDC drill holes and test pits.

Based on the correlation coefficient, R², 0.9967 for Al₂O₃ and 0.9947 for SiO₂ of the primary and duplicate samples, the accuracy and precision of the field sample preparation as well as sampling and analysis methodology can be established (Figure 10-12).

Inter-laboratory checking was also done to check the accuracy and precision of MMDC assay laboratory in terms of bauxite ore analysis. Ten (10) random samples were submitted to Intertek for XRF analysis. The methods used for the comparison of the MMDC and Intertek analysis results are the X/Y scatter plot with regression line and the Mean Percent Relative Difference (MPRD).

Table 10-7. Results of ten (10) samples submitted to Intertek for inter-laboratory checking.

	MMDC		Intertek	
	% Al ₂ O ₃	% SiO ₂	Al ₂ O ₃	SiO ₂
Samar 110	43.73	1.1	44.49	2.39
Samar 138	50.56	0.14	46.65	1.25
Samar 168	46.97	2.04	45.68	2.89
Samar 192	13.01	11.53	13.89	8.59
Samar 223	44.69	1.44	44.1	2.8
Samar 248	48.5	3.75	46.89	5.02
Samar 274	39.54	7.78	40.82	8.04
Samar 301	38.15	17.1	38.59	16.1
Samar 329	42.97	10.33	44.34	11.04
Samar 355	38.66	16.32	39.12	14.86

In the scatter plot, the MMDC assay is plotted on X-axis and the Intertek assay on Y-axis to look for a correlation between the data sets. The correlation coefficient (R²) gives the measure of the strength of the linear association between the two data sets. A perfectly correlated data will have a correlation coefficient of 1.

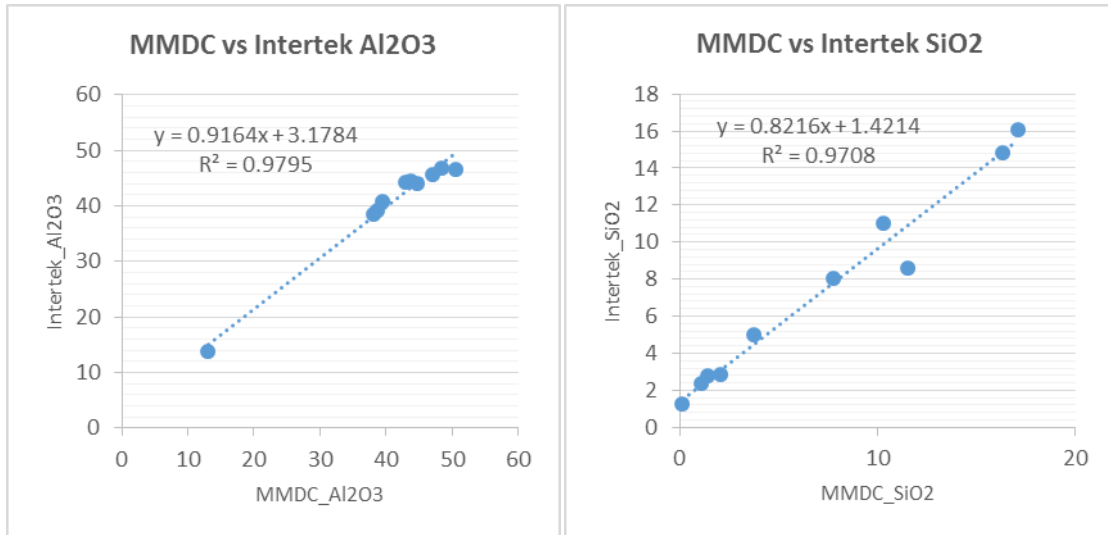


Figure 10-13. MMDC vs Intertek Al₂O₃ and SiO₂ scatter plot.

As shown in Figure 10-13 above, Al₂O₃ and SiO₂ have correlation coefficient nearing 1, thereby denoting very good correlation between the MMDC and Intertek assays.

In MPRD, it is assumed that each analysis run (MMDC and Intertek) has its own errors and that these errors are equally distributed between each analysis. The mean of the assays (or average) is treated as the reference value or “true” value and deviations from the reference value is expressed as a percentage of the mean.

$$\text{MPRD} = \frac{(\text{assay}_{\text{original}} - \text{assay}_{\text{duplicate}})}{(\text{assay}_{\text{original}} + \text{assay}_{\text{duplicate}}) / 2} \times 100$$

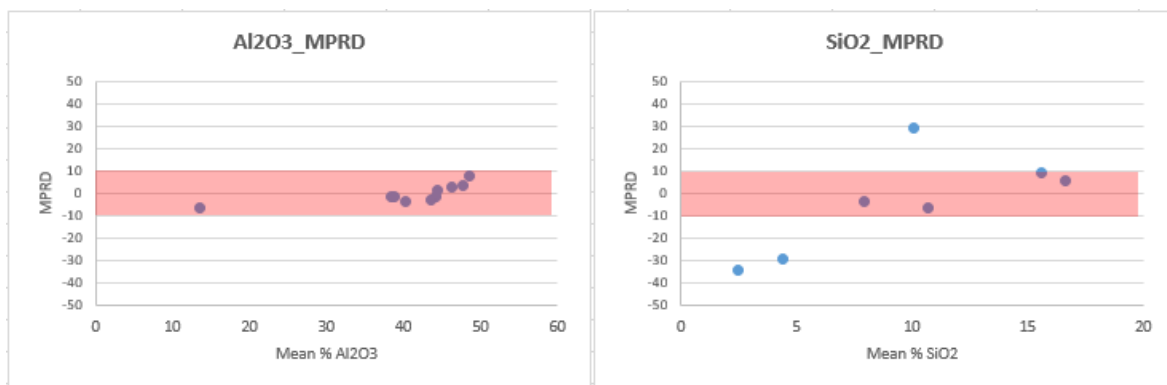


Figure 10-14. MPRD plot of MMDC and Intertek Al₂O₃ and SiO₂ assay results.

A symmetrical pattern around zero MPRD means there is nil bias. If pattern is not symmetrical, this means there might be bias during field sampling, sample preparation or analysis. Note that the Al₂O₃ MPRD plot shown above has poor symmetry for low and high Al₂O₃ values. However, all the samples are within ±10% MPRD and therefore can be concluded to have insignificant bias. In contrast, the SiO₂ MPRD plot shows asymmetrical plot and 3 points outside the ±10% MPRD which indicates that there might be bias with the SiO₂ analysis of MMDC or Intertek. There is more likely to be

bias in MMDC's analysis for SiO₂ considering that the assay laboratory of MMDC is calibrated for nickel ore analysis and that there is only limited calibration points for bauxite ore analysis in MMDC.

Considering all of these, it may be concluded that the results of the due diligence done by MMDC is acceptable and it can support the verification and integration of the resource database that was provided by Asia Pilot for the preparation of this resource report.

11. MINERAL RESOURCES ESTIMATE

11.1 General Statement and Resource Summary

The mineral resource estimation for AMPI and BARI utilized the drilling and test pitting database that was provided to MMDC Exploration Team by Asia Pilot through its representative Mr. Steven Herrera. The historical database included exploration results of the PAMPC and Asia Pilot exploration campaign from 2004 to 2014.

Two resource estimation methods were conducted to estimate the mineral resources of AMPI and BARI projects, namely: Inverse Distance Weighting (IDW) and Conventional Polygon Method. The use of polygon method is meant to double check the resulting resources to be calculated through IDW.

Block modelling and resource estimation by way of Inverse Distance Weighting (IDW) was done using a combination of Microlynx and Surpac Version 6.7 software. IDW is a type of deterministic method for multivariate interpolation with a known scattered set of points. The assigned values to unknown points are calculated with a weighted average of the values available at the known points.

Microlynx was used to create the top and bottom surfaces of the resource model as well as the boundaries or resource extent. Construction of geological solids and block model, and interpolation of metal grades were done in Surpac 6.7. Microsoft excel was used to tabulate the resulting mineral resource estimates.

In the conventional polygon method, each drill hole is assigned a polygon that represents the extent of the area of influence of the drill hole. It is assumed that everywhere within the polygon, the thickness and grade of the resource material is uniform and, more or less, the same as the resource material of the drill hole enclosed by the polygon. Calculations and reporting of the resources were manually done using Microsoft Excel.

11.2 Database for Estimation: Validation and Integrity

The mineral resource estimation made use of the database that was provided by Asia Pilot to MMDC. The database consisted of collar, survey, assay and geology data of 8,616 samples from 2,862 drill holes and test pits of AMPI and 6,971 samples from 3,295 drill holes and test pits of BARI from 2004 to 2014 (Figure 11-1). Total meterage from AMPI is 16,015.91 meters and for BARI 13,457.14 meters.

Based on the due diligence activity that was done by the MMDC Exploration Team, the information contained in the database are deemed adequate to support the calculation of the mineral resources of AMPI and BARI. The mineral resources herein are in conformity with the generally accepted guidelines in accordance to the PMRC Code, 2007 edition.

The AMPI and BARI mineral resource presented in this report may need to be refined and updated depending on availability of new data from the two projects. It should also be noted that mineral resources are not mineral reserves and do not have demonstrated economic viability. It is uncertain if all or any part of the mineral resource will be converted into ore reserve without a feasibility study of the project.

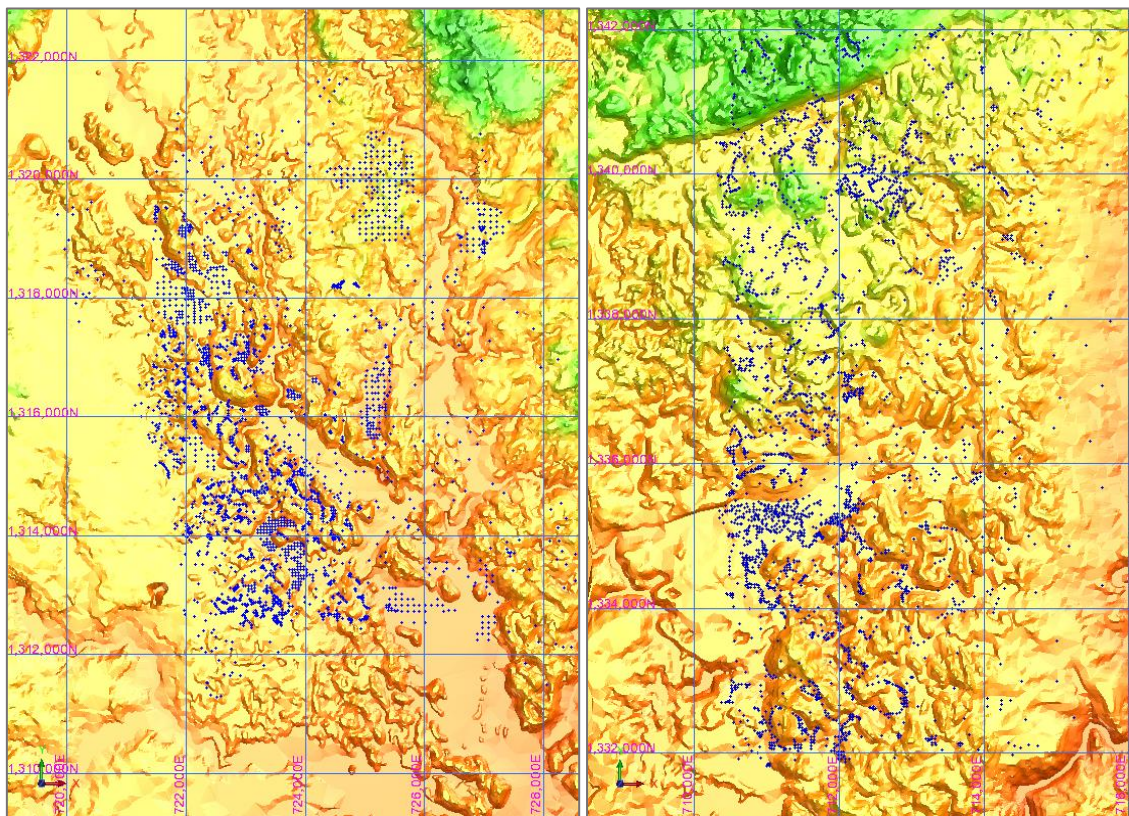


Figure 11-1. (left) AMPI and (right) BARI drill hole location (blue) with color banded topography (brown = lowest elevation; green = highest elevation)

11.3 Mineral Resource Estimation Method: Inverse Distance Weighting

The resource evaluation for AMPI and BARI by way of Inverse Distance Weighting (IDW) included the following procedures:

- Database compilation and verification
- Creation of resource domains (top and bottom boundaries)
- Sample data extraction
- Block modelling and grade interpolation
- Mineral Resource Statement
- Grade sensitivity analysis (grade-tonnage curve)

11.3.1 Resource Database

All materials intercepted by the drilling and test pitting activities are assumed to be bauxite with varying levels of Al_2O_3 and SiO_2 .

The resource database provided to MMDC is in Philippine local coordinates (PTM Zone 5), which is a variation of the Universal Transverse Mercator (UTM) coordinate system. The digital topographic data that was acquired from the National Mapping and Resource Information Authority (NAMRIA) is in UTM Luzon Datum. Thus, the northing and easting of the drill holes and test pits were converted to UTM Luzon Datum using Mapinfo Discover 2012.

The database was entered into Microlynx software to search for error such as missing or overlapping intervals, correct lengths, azimuths, dips, duplicated samples, and other minor errors. The dxf file of the NAMRIA digital surface topography was also entered into Microlynx and was used to adjust the collar elevation of the drill holes and test pits.

11.3.2 Compositing

Sample data that were used in the interpolation of the block models were derived by using the Extract/Sample Data function of Surpac 6.7 considering that all the samples that were intercepted are bauxite materials, albeit with different levels of Al_2O_3 and SiO_2 .

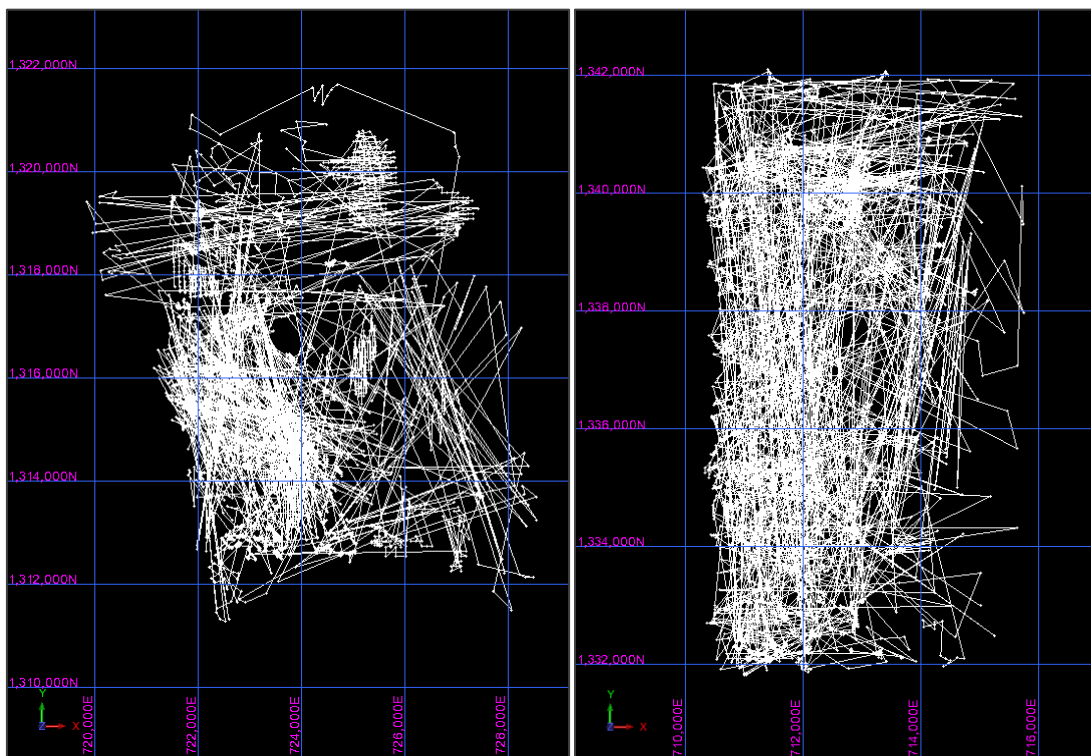


Figure 11-2. (left) AMPI and (right) BARI trace of extracted sample data.

11.3.3 Specific Gravity

MMDC used the specific gravity/density data derived from the PAMPC exploration between 2004 and 2008 which was further validated by Asia Pilot in 2013. SRK previously reported that a total of 962 density samples were collected by PAMPC and despatched to Intertek Manila for density and moisture measurement. In the mineral resource estimate, the wet density value of 1.6 g/cm³ was applied for AMPI and BARI. This density value is consistent to the density of material that was measured by MMDC Exploration Team during its due diligence.

11.3.4 Basic Statistics

Basic statistics was undertaken to assess extreme grade outliers that may affect the block grades in some parts of the deposit if not omitted. Based on the histogram of sample grades used in the estimation, there were no extreme high grades that need to be eliminated.

Table 11-1. Summary of AMPI basic statistics.

	samples	Al ₂ O ₃	SiO ₂	TiO ₂
N of cases	8,598	8,598	8,598	8,598
Sum	16,015.91	327,854.48	153,903.53	15,354.60
Minimum	0.04	3.74	0.36	0.19
Maximum	5.50	54.30	88.75	3.21
Range	5.46	50.56	88.39	3.02
Median	2.00	40.00	14.20	1.88
Arithmetic Mean	1.86	38.13	17.90	1.79
Standard deviation	0.66	7.62	13.63	0.34
Mode	2.00	40.40	12.20	1.94
Variance	0.44	58.05	185.84	0.12
Coefficient of variation	0.36	0.20	0.76	0.19

Table 11-2. Summary of BARI basic statistics.

	samples	Al ₂ O ₃	SiO ₂	TiO ₂
N of cases	6,971	6,971	6,971	6,971
Sum	13,457.14	295,454.24	70,385.17	16,145.86
Minimum	0.05	0.27	0.06	0.01
Maximum	6.00	62.28	78.83	25.30
Range	5.95	62.01	78.77	25.29
Median	2.00	43.60	7.04	1.95
Arithmetic Mean	1.93	42.38	10.10	2.32
Standard deviation	0.82	7.23	11.16	2.75
Mode	2.00	48.00	10.50	1.93
Variance	0.68	52.28	124.53	7.55
Coefficient of variation	0.43	0.17	1.11	1.19

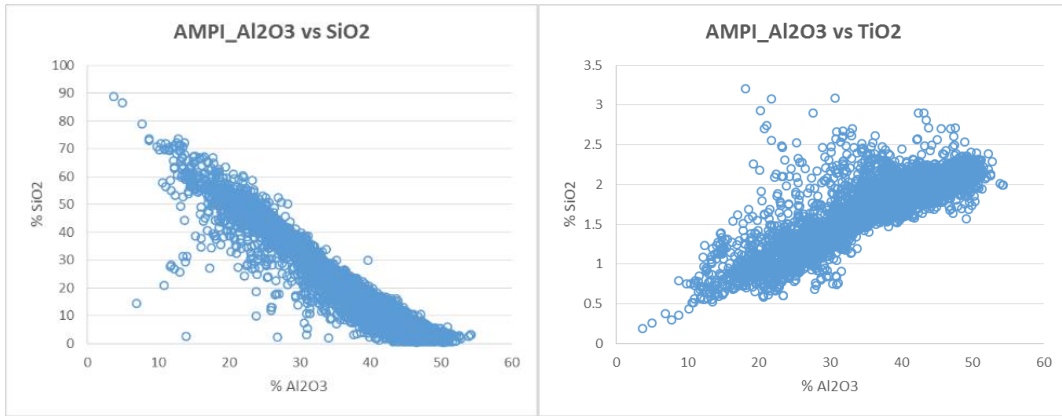


Figure 11-3. AMPI Al₂O₃ vs SiO₂ and Al₂O₃ vs TiO₂ scatter plot.

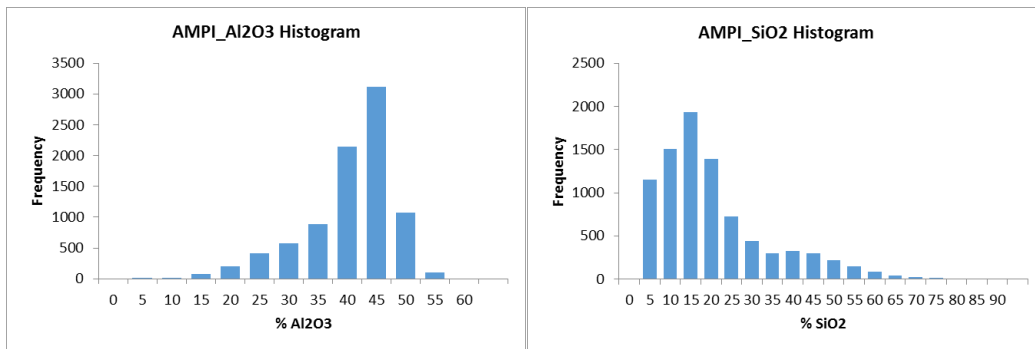


Figure 11-4. AMPI Al₂O₃ and SiO₂ histogram which shows which grade range were mostly intercepted.

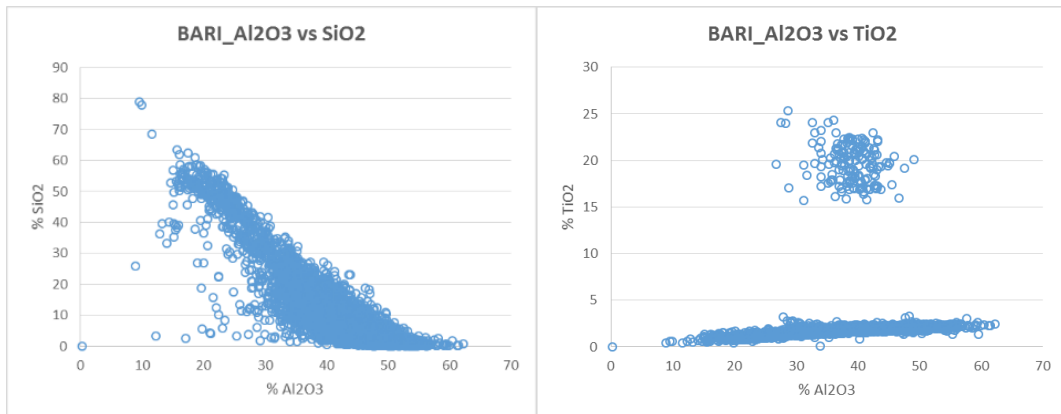


Figure 11-5. BARI Al₂O₃ vs SiO₂ and Al₂O₃ vs TiO₂ scatter plot.

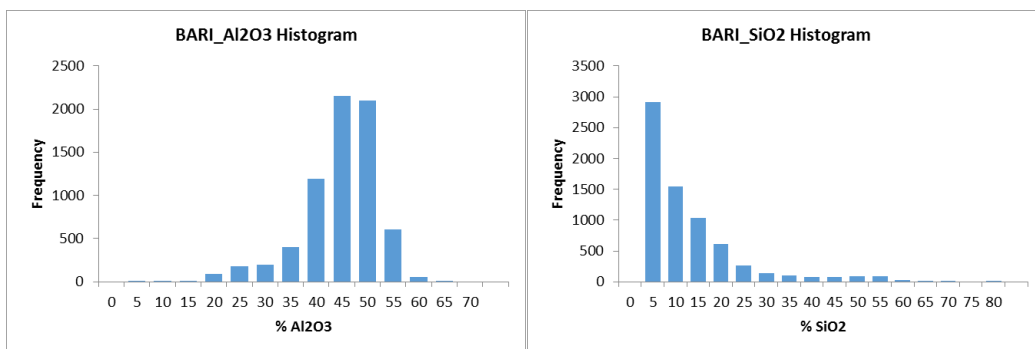


Figure 11-6. BARI Al₂O₃ and SiO₂ histogram which shows which grade range were mostly intercepted.

11.3.5 Block Modelling and Grade Estimation

The wireframe of bauxite mineralization is bound to the sinkholes as outlined by PAMPC in 2007. This information was provided to MMDC in Mapinfo tab file and was revised as deemed necessary by MMDC geologists. The file was exported to dxf and was also inputted into Microlynx to check if the boundaries coincide with the drilling/test pitting data. The surface topography is used as the top boundary of the solid body and the drill hole/test pit bottom as the bottom boundary of the solid body. These data were exported from Microlynx as dxf file and entered to Surpac 6.7 to create surfaces.

Block models were created to encompass all drill hole/test pit data that are within AMPI and BARI MPSA boundary. This is to avoid inclusion of resources outside the MPSAs that were also drilled by the companies. Block model size of 25m x 25m x 3m was used for AMPI and BARI.

Interpolation was constrained within the delineated depression boundaries. Mineralized zones/resource bodies were further constrained by selecting all blocks with Al₂O₃ values greater than zero.

11.3.6 Mineral Resource Classification

Industry best practise in mineral resource classification suggest that resource classification should consider the confidence in the geological continuity of the mineralized structures, the quality and quantity of exploration data supporting the estimate, and the geostatistical confidence in the tonnage and grade estimates.

The CP finds the sampling information acquired primarily by drilling and test pitting as well as the geologic model presented in this report are sufficiently reliable to support resource evaluation. For its resource classification, MMDC followed the guidelines below:

- Measured Mineral Resource is defined by drill holes separated by nearest distance of less than 25 meters, therefore maximum search distance is 35.25 meters.
- Indicated Mineral Resource is defined by drill holes separated by nearest distance of less than 50 meters but more than 25 meters, therefore maximum search distance is 70.5 meters.
- Inferred Mineral Resource is defined by drill holes separated by nearest distance of less than 100 meters but less than 50 meters, therefore maximum search distance is 141 meters.

In this resource estimation, Measured and Indicated Mineral Resource have been interpolated and estimated simultaneously. Blocks of Inferred Mineral Resource was constrained to within the bauxite blocks of AMPI and BARI but outside the blocks of the Measured and Indicated Resources.

Block Model

Name:

Description:

Block Model Geometry

Min Coordinates	Y	<input type="text" value="1312590"/>	X	<input type="text" value="721440"/>	Z	<input type="text" value="48"/>
Max Coordinates	Y	<input type="text" value="1321765"/>	X	<input type="text" value="728790"/>	Z	<input type="text" value="321"/>
User block Size	Y	<input type="text" value="25"/>	X	<input type="text" value="25"/>	Z	<input type="text" value="3"/>
Min. block Size	Y	<input type="text" value="12.5"/>	X	<input type="text" value="12.5"/>	Z	<input type="text" value="1.5"/>
Rotation	Bearing	<input type="text" value="0"/>	Dip	<input type="text" value="0"/>	Plunge	<input type="text" value="0"/>

Block Summary

Total No. Blocks	<input type="text" value="591766"/>
Storage Efficiency %	<input type="text" value="99.24"/>

Figure 11-7. AMPI block model summary.

Block Model

Name:

Description:

Block Model Geometry

Min Coordinates	Y	<input type="text" value="1331600"/>	X	<input type="text" value="710200"/>	Z	<input type="text" value="162"/>
Max Coordinates	Y	<input type="text" value="1342200"/>	X	<input type="text" value="716000"/>	Z	<input type="text" value="663"/>
User block Size	Y	<input type="text" value="25"/>	X	<input type="text" value="25"/>	Z	<input type="text" value="3"/>
Min. block Size	Y	<input type="text" value="12.5"/>	X	<input type="text" value="12.5"/>	Z	<input type="text" value="1.5"/>
Rotation	Bearing	<input type="text" value="0"/>	Dip	<input type="text" value="0"/>	Plunge	<input type="text" value="0"/>

Block Summary

Total No. Blocks	<input type="text" value="766496"/>
Storage Efficiency %	<input type="text" value="99.41"/>

Figure 11-8. BARI block model summary.

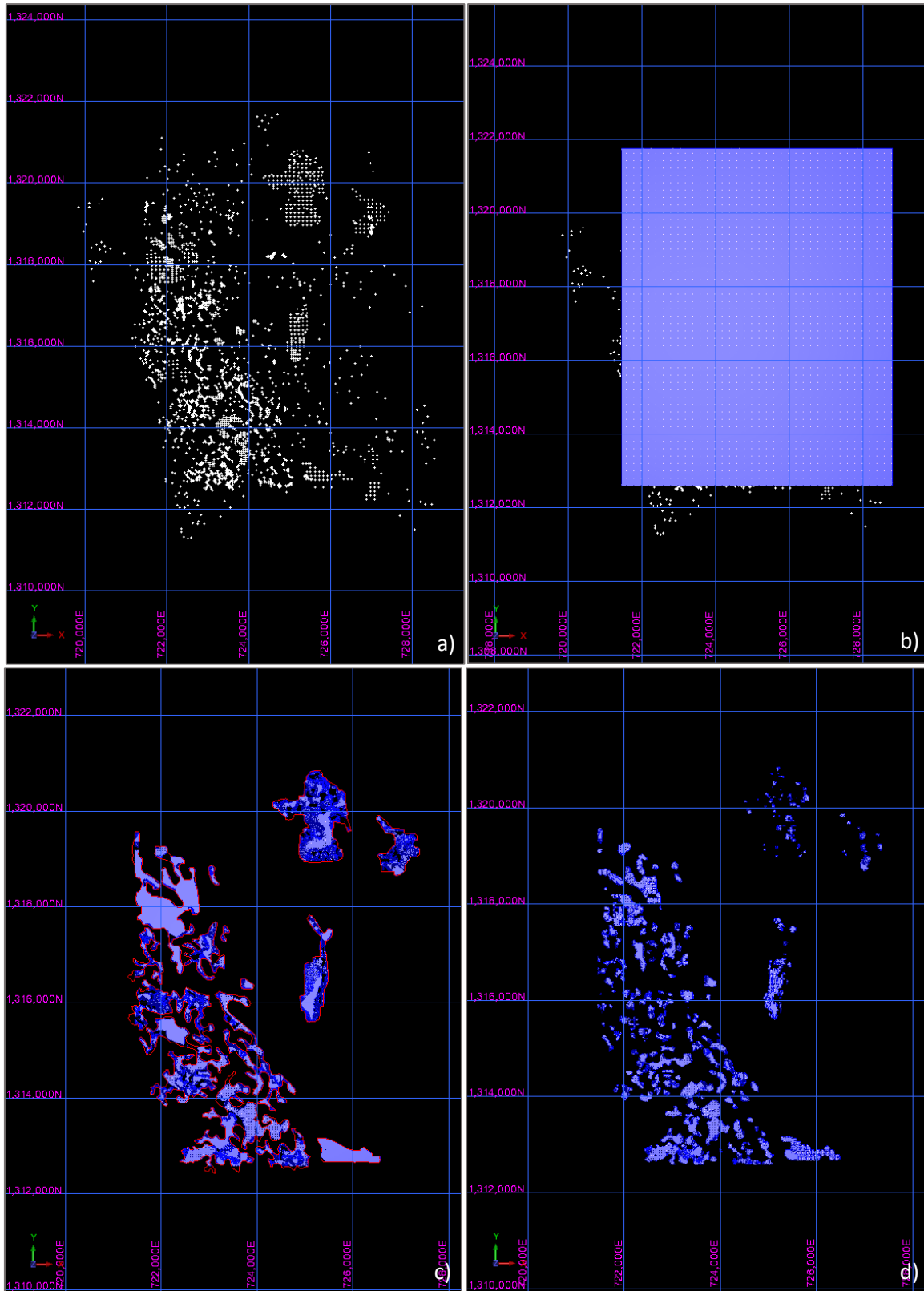


Figure 11-9. a) AMPI drill holes and test pits from 2004-2014, b) AMPI block model with 25m x 25m x 3m size, c) AMPI blocks as constrained using top and bottom surfaces as well as resource extent, d) AMPI resource blocks as constrained by setting Al_2O_3 greater than zero.

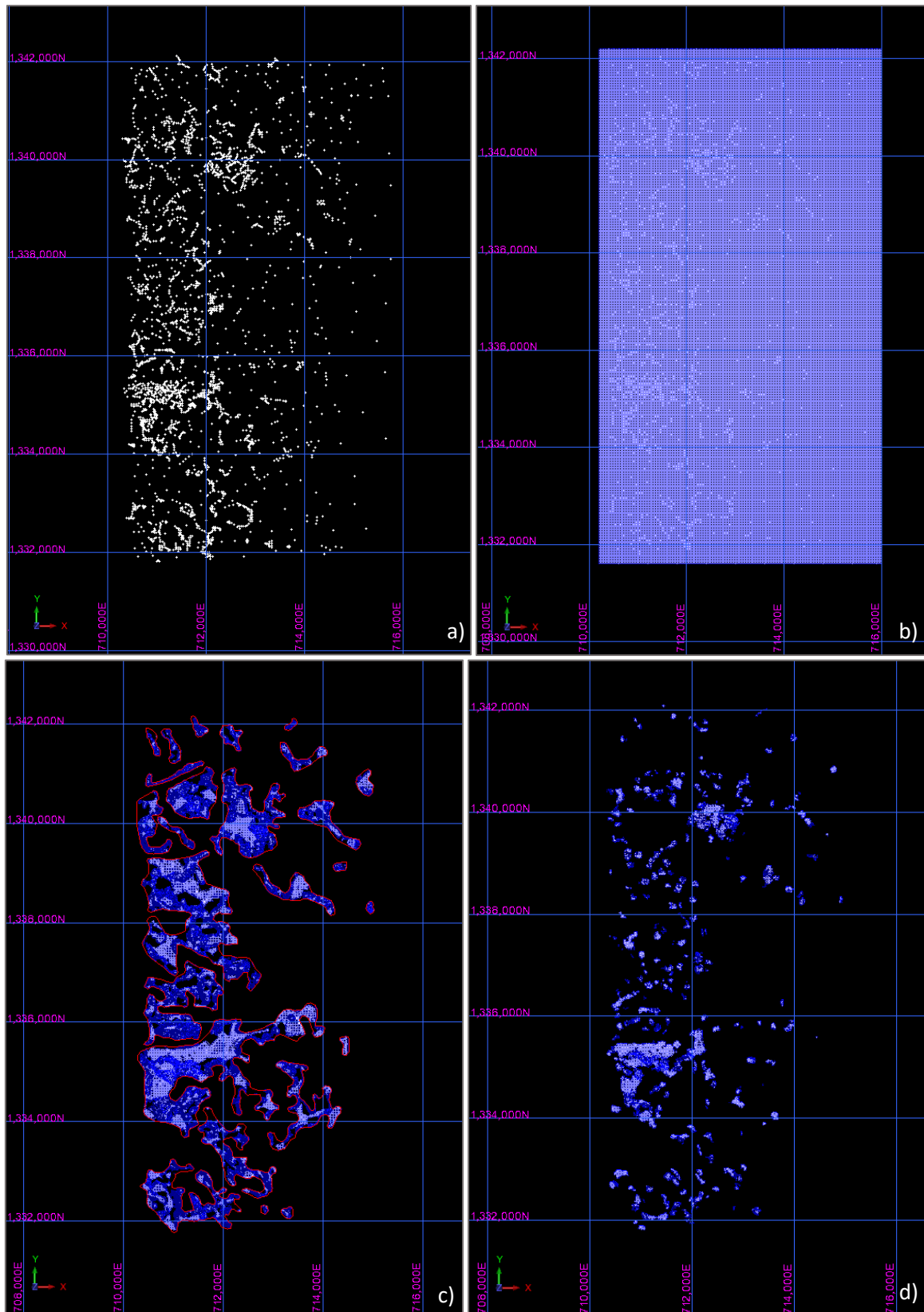


Figure 11-10. a) BARI drill holes and test pits from 2004-2014, b) BARI block model with 25m x 25m x 3m size, c) BARI blocks as constrained using top and bottom surfaces as well as resource extent, d) BARI resource blocks as constrained by setting Al_2O_3 greater than zero.

11.3.7 Mineral Resource Statement

The “reasonable prospects for economic extraction” requirement as stated in PMRC Code (2007 Edition) generally implies that the quantity and grade estimates meet certain thresholds and that the mineral resources are reported at an appropriate cut-off grade, taking into account extraction scenarios and processing recovery rates.

To define the economic portion of the Mineral Resource of AMPI and BARI, SRK’s cut-off grade of 28% Al₂O₃ was used, which is based on the data collected for the project and assumptions of the mining and processing parameters.

Presented in the following tables are the tabulated summary of Measured and Indicated Mineral Resources of AMPI and BARI project areas. At a cut-off grade of 28% Al₂O₃, AMPI contains 41.7 Million tonnes of Measured and Indicated Mineral Resource at an average grade of 40.06% Al₂O₃ and 14.50% SiO₂. BARI contains about 31.5 Million tonnes of Measured and Indicated Mineral Resource at an average grade of 43.78% Al₂O₃ and 7.96% SiO₂.

Table 11-3. Summary of AMPI Mineral Resources estimated by Inverse Distance Weighting.

<i>AMPI_Measured and Indicated Resource</i>							
<i>Cut-off grade</i>	<i>Volume</i>	<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
> 50% Al2O3	155,000	249,000	50.67	2.29	22.13	1.26	40.21
45-50% Al2O3	3,763,000	6,021,000	47.09	4.29	10.98	2.36	19.95
40-45% Al2O3	10,460,000	16,737,000	42.17	10.6	3.98	5.83	7.23
35-40% Al2O3	7,643,000	12,229,000	37.87	17.21	2.2	9.47	4.00
28-35% Al2O3	4,048,000	6,477,000	31.83	29.44	1.08	16.19	1.97
	26,069,000	41,713,000	40.06	14.5	2.76	7.98	5.02

<i>AMPI_Inferred Resource</i>							
<i>Cut-off grade</i>	<i>Volume</i>	<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
> 50% Al2O3	17,000	27,000	50.73	2.45	20.71	1.35	37.58
45-50% Al2O3	1,700,000	2,720,000	46.83	4.04	11.59	2.22	21.09
40-45% Al2O3	3,412,000	5,460,000	42.31	10.33	4.1	5.68	7.45
35-40% Al2O3	2,778,000	4,444,000	37.57	18.16	2.07	9.99	3.76
28-35% Al2O3	2,890,000	4,624,000	31.64	29.94	1.06	16.47	1.92
	10,797,000	17,275,000	38.96	16.59	2.35	9.12	4.27

Table 11-4. Summary of BARI Mineral Resources estimated by Inverse Distance Weighting.

<i>BARI_Measured and Indicated Resource</i>							
<i>Cut-off grade</i>	<i>Volume</i>	<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
> 50% Al2O3	1,572,000	2,516,000	51.72	1.45	35.67	0.80	64.65
45-50% Al2O3	7,062,000	11,299,000	47.33	3.11	15.22	1.71	27.68
40-45% Al2O3	6,815,000	10,904,000	42.64	8.92	4.78	4.91	8.68
35-40% Al2O3	3,227,000	5,163,000	37.98	14.91	2.55	8.20	4.63
28-35% Al2O3	992,000	1,587,000	32.69	23.58	1.38	13.68	2.39
	19,668,000	31,469,000	43.78	7.96	5.5	4.38	10.0

<i>Cut-off grade</i>	<i>Volume</i>	<i>BARI_Inferred Resource</i>					
		<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
<i>> 50% Al2O3</i>	1,341,000	2,145,000	51.9	1.39	37.39	0.76	68.29
<i>45-50% Al2O3</i>	6,711,000	10,738,000	47.28	3.31	14.28	1.82	25.98
<i>40-45% Al2O3</i>	5,822,000	9,315,000	42.76	8.71	4.91	4.81	8.89
<i>35-40% Al2O3</i>	2,754,000	4,407,000	37.87	15.32	2.47	8.43	4.49
<i>28-35% Al2O3</i>	1,145,000	1,831,000	32.69	23.4	1.4	12.87	2.54
	17,773,000	28,436,000	43.75	8.09	5.41	4.45	9.83

Table 11-5. Total AMPI and BARI Mineral Resources estimated by Inverse Distance Weighting.

<i>Cut-off grade</i>	<i>Volume</i>	<i>AMPI and BARI Total Measured and Indicated Resource</i>					
		<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
<i>> 50% Al2O3</i>	1,727,000	2,765,000	51.63	1.53	33.75	0.84	61.46
<i>45-50% Al2O3</i>	10,825,000	17,320,000	47.25	3.52	13.42	1.94	24.36
<i>40-45% Al2O3</i>	17,275,000	27,641,000	42.36	9.94	4.26	5.47	7.74
<i>35-40% Al2O3</i>	10,870,000	17,392,000	37.9	16.53	2.29	9.09	4.17
<i>28-35% Al2O3</i>	5,040,000	8,064,000	32.0	28.29	1.31	15.56	2.06
	45,737,000	73,182,000	41.66	11.69	3.56	6.43	6.48

<i>Cut-off grade</i>	<i>Volume</i>	<i>AMPI and BARI Total Inferred Resource</i>					
		<i>WMT</i>	<i>Al2O3</i>	<i>SiO2*</i>	<i>Al/Si</i>	<i>Rx SiO2**</i>	<i>Al/RxSi</i>
<i>> 50% Al2O3</i>	1,358,000	2,172,000	51.89	1.4	37.06	0.77	67.39
<i>45-50% Al2O3</i>	8,411,000	13,458,000	47.19	3.46	13.64	1.90	24.84
<i>40-45% Al2O3</i>	9,234,000	14,775,000	42.59	9.31	4.57	5.12	8.32
<i>35-40% Al2O3</i>	5,532,000	8,851,000	37.72	16.75	2.25	9.21	4.10
<i>28-35% Al2O3</i>	4,035,000	6,455,000	31.94	28.08	1.14	15.44	2.07
	28,570,000	45,711,000	41.94	11.3	3.71	6.22	6.74

***Total Silica (SiO2) – XRF analysis of random bauxite samples from the properties demonstrated that Reactive Silica is about 55-60% of the Total Silica, therefore Reactive Silica is about 6.42-7.04%**

****Reactive Silica (RxSiO2) – estimated to be from 55 to 60% of the Total Silica, is tabulated in column 7 for the various Al2O3 cut-off grades and the corresponding ration of Alumina/Reactive Silica (Al/RxSi) shown in Column 8. The inclusion of these columns in the Resource table is considered relevant in the Technical Report as the reactive silica to a certain concentration, could affect the economics of the metallurgical treatment of the bauxite ore. The estimated reactive silica percentages used in these estimates which are based on historical data, appear largely favorable in terms of its ratio with Al2O3, however, this might need further checking.**

11.3.8 Grade Sensitivity Analysis

Global model quantities and grade estimates at various cut-off grades are presented in Table 11-5 and Figure 11-11 to illustrate the sensitivity of the AMPI and BARI mineral resource tonnage to the selection of the reporting cut-off grade. It should be noted however that these figures are presented to show sensitivity of the block model

estimates and should not be misinterpreted at representing a Mineral Resource Statement.

Table 11-6. AMPI and BARI Grade and Tonnage estimates at various cut-off grade.

% Al2O3 Cut-off grade	AMPI			BARI		
	Tonnage	Ave. % Al2O3	Ave. % SiO2	Tonnage	Ave. % Al2O3	Ave. % SiO2
0	45,426,750	38.83	16.69	32,019,375	43.44	8.55
28	41,712,750	40.06	14.50	31,467,750	43.78	7.96
30	40,021,875	40.53	13.61	31,271,250	43.87	7.81
32	38,587,500	40.89	12.94	30,994,500	43.99	7.64
34	36,598,125	41.32	12.20	30,340,125	44.22	7.32
36	33,582,750	41.88	11.29	29,255,250	44.56	6.89
38	29,262,750	42.59	10.22	27,552,375	45.02	6.31
40	23,006,625	43.55	8.86	24,718,125	45.71	5.5
42	14,911,125	44.93	6.90	20,821,875	46.58	4.47
44	8,293,500	46.56	4.94	16,361,250	47.56	3.31
46	4,590,750	47.88	3.66	11,346,000	48.7	2.4
48	2,001,750	49.12	2.83	6,373,500	50.01	1.89
50	248,625	50.67	2.29	2,515,500	51.72	1.45
52	27,375	53.99	2.93	811,500	53.43	1.1
54	18,000	54.10	2.95	169,875	55.82	1.04

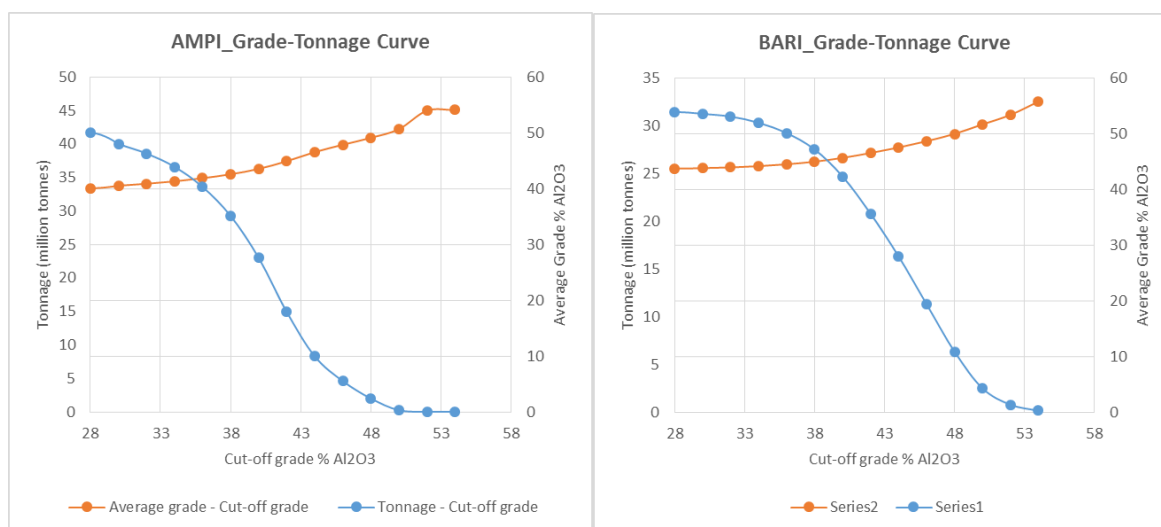


Figure 11-11. AMPI and BARI grade-tonnage curve.

11.4 Mineral Resource Estimation: Polygon Method

To validate the results of the IDW resource estimation, conventional polygon method was also done with the assumption that all drill hole and test pit data are regularly spaced at 50-meter interval. The volume of each block is the product of the area of influence, in this case 2,500 sq. m., and the combined thickness of samples that fall within the set cut-off grades. To determine the equivalent Wet Metric Tonnage (WMT), the total in-situ volume is multiplied by the density value of 1.6 g/cm³.

Based on these parameters and assumptions, resource estimates for AMPI and BARI using polygon method yielded the following Indicated Resources.

Table 11-7. Summary of AMPI Indicated Resources estimated using conventional polygon method.

AMPI MEASURED + INDICATED MINERAL RESOURCE ESTIMATE								
Ore Class	Cut-off Grade	BCM	WMT	%Al ₂ O ₃	%SiO ₂	Al/Si	%H ₂ O	DMT
Bx1	> 50 Al ₂ O ₃	421,000	673,000	50.74	2.01	28.58	30.00	471,100
Bx2	45-50 Al ₂ O ₃	4,447,000	7,115,000	46.96	4.18	12.70	30.00	4,980,500
Bx3	40-45 Al ₂ O ₃ , ≤ 8 SiO ₂	13,017,000	20,827,000	42.26	10.33	4.63	30.00	14,578,900
Bx4a	35-40 Al ₂ O ₃ , ≤ 7 SiO ₂	397,000	635,000	38.57	8.18	5.34	30.00	444,500
Bx4b	35-40 Al ₂ O ₃ , > 7 SiO ₂	8,210,000	13,137,000	37.79	18.04	2.37	30.00	9,195,900
Bx5a	28-35 Al ₂ O ₃ , ≤ 6 SiO ₂	67,000	106,000	32.86	10.11	3.68	30.00	74,200
Bx5b	28-35 Al ₂ O ₄ , > 6 SiO ₂	3,003,000	4,805,000	32.40	27.62	1.33	30.00	3,363,500
Total/Ave.		29,562,000	47,298,000	40.78	13.16	3.51		20,475,000

Table 11-8. Summary of BARI Indicated Resources estimated using conventional polygon method.

BARI MEASURED + INDICATED MINERAL RESOURCE ESTIMATE								
Ore Class	Cut-off Grade	BCM	WMT	%Al ₂ O ₃	%SiO ₂	Al/Si	%H ₂ O	DMT
Bx1	> 50 Al ₂ O ₃	2,840,000	4,544,000	52.13	1.36	43.25	30.00	3,180,800
Bx2	45-50 Al ₂ O ₃	8,244,000	13,190,400	47.40	2.89	18.57	30.00	9,233,280
Bx3	40-45 Al ₂ O ₃	5,629,000	9,006,400	42.57	8.73	5.52	30.00	6,304,480
Bx4a	37-40 Al ₂ O ₃ , ≤ 7 SiO ₂	506,000	809,600	38.89	6.74	6.54	30.00	566,720
Bx4b	37-40 Al ₂ O ₃ , > 7 SiO ₂	2,117,000	3,387,200	38.54	15.47	2.82	30.00	2,371,040
Bx5a	28-37 Al ₂ O ₃ , ≤ 6 SiO ₂	543,000	868,800	34.47	10.53	3.71	30.00	608,160
Bx5b	28-37 Al ₂ O ₄ , > 6 SiO ₂	2,085,000	3,336,000	33.42	23.95	1.58	30.00	2,335,200
Total/Ave.		21,964,000	35,142,400	44.08	7.68	6.50		19,285,280

Note that although the resources estimated using polygon method is generally higher in tonnage than the resources estimated using IDW, the resulting grades of the two resources are within acceptable range from one another.

12. CONCLUSIONS and RECOMMENDATIONS

Conclusions

Based on the due diligence activity that was conducted by the MMDC Exploration Team, the information contained in the database are deemed adequate to support the estimate of the mineral resources delimited within the explored portions of the AMPI and BARI tenement areas.

The resource estimates documented in the reports of the various entities who, at one time or another, evaluated the resource potentials of AMPI and BARI employed various methodologies to arrive at the figures presented. Of these estimates, the works of SRK Australia (CP Jankowski) and SRK China (CP Yiefei) are considered JORC Code-compliant. The latest resource estimates done by MMDC's using Inverse Distance Weighing (IDW) with Polygon Method check, may also be considered JORC/PMRC Code-compliant as the mineral resources are in conformity with the generally accepted guidelines of the PMRC Code. The lower tonnage arrived at is an indication that the MMDC Team opted to be on the conservative side.

At a cut-off grade of 28% Al₂O₃, AMPI contains 41.7 Million tonnes of Measured and Indicated Mineral Resource at an average grade of 40.06% Al₂O₃ and 14.50% SiO₂. BARI contains about 31.5 Million tonnes of Measured and Indicated Mineral Resource at an average grade of 43.78% Al₂O₃ and 7.96% SiO₂. This is equivalent to a total

Measured and Indicated Resource of some 73.2Mwmt with grades averaging 41.66% Al₂O₃ and 11.69% SiO₂.

Inferred resources of AMPI and BARI were also estimated using IDW wherein some 17.3Mwmt was computed for AMPI with grades averaging 38.96% Al₂O₃ and 16.59% SiO₂ while about 28.4Mwmt was estimated for BARI at 43.75% Al₂O₃ and 8.09% SiO₂. Additional drilling and test pitting works need to be done to upgrade these Inferred resources to Measured and Indicated resources. Assuming that 25% of these Inferred resources will be upgraded to Measured and Indicated resources once the additional drilling and test pitting works are completed, this will translate to additional Measured and Indicated resources of some 11.4Mwmt at 41.94% Al₂O₃ and 11.30% SiO₂. The projected total Measured and Indicated resources will now be 84.6Mwmt averaging 41.70% Al₂O₃ and 11.64% SiO₂.

Recommendations

The AMPI and BARI mineral resource presented in this report may need to be further refined and updated should new exploration data become available from the two projects. It should be noted that mineral resources are not mineral reserves and do not have demonstrated economic viability. A definitive feasibility study will be required for the mineral resource to be converted into ore reserve. This should be pursued by the company.

One upside of the project is that the exploration done in AMPI and BARI tenement areas is still partially complete such that the potential to block additional bauxite resources with additional drilling and test pitting works remains wide open. This could be pursued simultaneous with the resource development and exploitation if ever the project will move forward and these prospects become a mine.

13. REFERENCES

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14. ACKNOWLEDGEMENT

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