REPUBLIC OF THE PHILIPPINES)
CITY OF MAKATI) S.S.
METRO MANILA

SECRETARY'S CERTIFICATE

I, **ARTEMIO C. MORALDA**, Filipino, of legal age, being the Corporate Secretary of **TAGANITO MINING CORPORATION**, a Corporation duly organized and existing under and by virtue of the laws of the Republic of the Philippines, with principal office at 4th Floor, Solid Mills Bldg., dela Rosa St., Legazpi Village, Makati City do hereby certify that in the Special Meeting of the Board of Directors of the said Corporation held on June 29, 2007 at its principal office at which meeting a quorum, was present, the following resolution was unanimously adopted and approved, and remains in full force and effect, to wit:

> "**RESOLVED**, that **TAGANITO MINING CORPORATION** is hereby authorized to convert the Corporation's Operating Contract with the Philippine Government into Mineral Production Sharing Agreement (MPSA) at the office of Mines and Geo-Sciences Bureau, Diliman, Quezon City;
>
> "**RESOLVED FURTHER**, that its President, **MR. SALVADOR B. ZAMORA II** is hereby authorized to sign any and all documents necessary and pertaining to the above mentioned conversion into MPSA."

Makati City, Metro Manila, July 17, 2007.

ARTEMIO C. MORALDA
Corporate Secretary

SUBSCRIBED AND SWORN to before me this JUL 17 2007 day of _____, 2007 at the City of Makati. Affiant exhibited to me his Community Certificate No.17657831, issued on January 22, 2007 at Makati City.

Notary Public

ATTY. GERVACIO B. ORTIZ JR
NOTARY PUBLIC
UNTIL DECEMBER 31, 2007
PTR NO. 0017551
APPT. M-84/2007 TO 2008

Doc. No. 236;
Page No. 49;
Book No. XXXV;

SOCORR

SKETCH PLAN
OF EXPLORATION PERMIT No. 001

AS PREPARED FOR

TAGANITO MINING CORPORATION

SITUATED IN THE

BARANGAYS OF URBISTONDO, TAGANITO & KADIANAO
MUNICIPALITY OF CLAVER
PROVINCE OF SURIGAO DEL NORTE
ISLAND OF MINDANAO
CONTAINING AN AREA OF 4,584.5145 Has.

PREPARED BY:

JESUS E. LEONZON
GEODETIC ENGINEER
PRC. No. 1239, 4-11-66
PTR-No. 5309476, 1-02-07

OFFSHORE DETAIL IS PLOTTED FROM PHOTOGRAPHY AND IS NOT BASED ON THE HYDROGRAPHIC DATUM AND CHARTS

Pagbuy Rocks
Lapinigan Island
Bagong Island
Urbistondo
Male Island
Aling Island
Telegraph Island
Taganito
Hayangabon
Cagdianao
Lang Island
Nakiauit Po

SHEET 4148 I

55'

126°00'

KANLANUK BAY

BUCAS GRANDE ISLAND

Pamotaingan

Santa Cruz

Nueva Estrella

Socorro

Kalunis Point

Bobon Island

Dahikan Islands

Dahakit Point

Kaba Point

Coral

coral and rocky

Coral reef

sand

rocky

sand and shells

mud

OFFSHORE DETAIL IS PLOTTED FROM PHOTOGRAPHY AND IS NOT BASED ON THE HYDROGRAPHIC DATUM AND CHARTS

TECHNICAL DESCRIPTION

CORS.	LATITUDE	LONGITUDE
22	9°31'14.00"	125°51'49.00"
23	9°31'04.00"	125°51'53.00"
24	9°30'56.00"	125°52'02.00"
25	9°30'56.00"	125°52'15.00"
26	9°31'00.00"	125°52'18.00"
27	9°31'00.00"	125°52'21.00"
28	9°30'51.00"	125°52'25.00"
29	9°30'37.00"	125°52'08.00"
30	9°30'30.00"	125°52'03.00
31	9°30'30.00"	125°52'00.00"
32	9°30'00.00"	125°52'00.00
33	9°30'00.00"	125°52'15.00"
34	9°29'53.00"	125°52'21.00"
35	9°29'53.00"	125°52'33.00"
36	9°29'45.00"	125°52'52.00"
37	9°29'38.00"	125°52'54.00"
38	9°29'30.00"	125°53'00.00
39	9°29'00.00"	125°53'00.00
40	9°29'00.00"	125°51'30.00"
41	9°30'00.00"	125°51'30.00

Ebb

Flood

INDEX TO BOUNDARIES

HINATUAN PASSAGE

BOUNDARIES APPROXIMATE

Province; Chartered City

Municipality

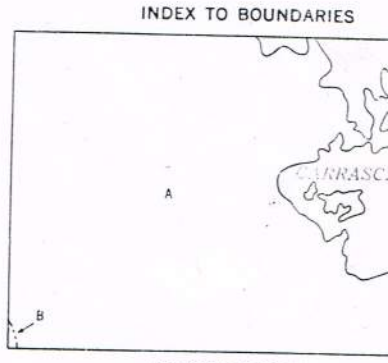
A. Province of Surigao

CARRASCAL BAY

OFFSHORE DETAIL IS PLOTTED FROM PHOTOGRAPHY AND IS NOT BASED ON THE HYDROGRAPHIC DATUM AND CHARTS

Carrascal
CANTILAN
Bonot
Nokat
Bagasang
Mugatong
Santa Fe
Pagantayan
Consuelo
Caglayag
Capungan Point
Ramillete Rock
General Island
Uramao Island
Ludguran Island
Puyo Island
Diju Island
Adlay
Gorda Point
Panikian

INDEX TO BOUNDARIES



BOUNDARIES APPROXIMATE

Province; Chartered City
Municipality

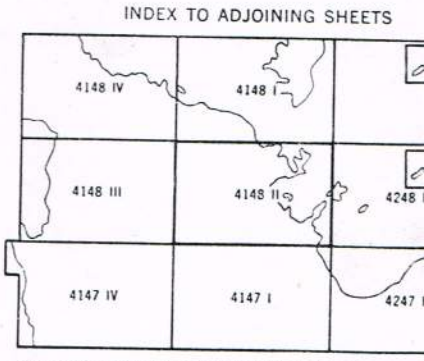
A. Province of Surigao
B. Province of Agusan

3 Statute Miles
000 Meters
ds

3 Nautical Miles

Reprinted by NAMRIA October 2006

INDEX TO ADJOINING SHEETS



Sheet 4148 II falls within NC 51-12, S501, 1:250,000.

Mount Legaspi

ROAD STOP 1.8 KM.

S OF INFORMATION:

reau of Coast and Geodetic Survey, US Army Map Series 711 Compiled in 1956
m 1947-1953 Photographs, Department of Public Highways and others.

rs noting errors or omissions on this map are requested to mark herein and refer
ctly to the NATIONAL MAPPING AND RESOURCE INFORMATION AUTHORITY,
Andres Bonifacio, Makati

Scale 1:50,000

1 0 1

1000 500 0 1000 2000 3000

1000 500 0 1000 2000 3000

1 0 1

CONTOUR INTERVAL 20 METERS WITH SUPPLEM
CONTOURS AT 10 METER INTERVALS
RELIEF PARTIALLY SHOWN BY FORM LIN
VERTICAL DATUM: MEAN SEA LEVEL

TRANSVERSE MERCATOR PROJECTION
HORIZONTAL DATUM: LUZON DATUM

HYDROGRAPHIC DATUM: MEAN LOWER LOW WATER

Published by

LEGEND

4.8m. (16 feet) or more wide
2.4-4.8m. (8 to 16 feet) wide
surface, 4.8m. (16 feet) or more wide
surface, 2.4-4.8m. (8 to 16 feet) wide
ther, loose surface, over 4.8m.
ther, loose surface, 2.4-4.8m.
vide
4m. (5 to 8 feet) wide
less than 1.5m. (5 feet) wide
National; Provincial
06m. (3'6") single track
06m. (3'6") double track

Built-up area
Church; School; Cemetery (Cem)
Water wheel or mill; Located or landmark object (Tower)
Principal navigation light or lighthouse; Anchorage
Limit of danger line; Submerged reef
Wreck: Sunken (depth exceeds 10 Fathoms); Exposed
Sunken rocks; Foreshore flats
Rocks uncovering or awash; Reef
Depth curves and soundings in fathoms
Reservoir; Dam; Ditch
Salt evaporators

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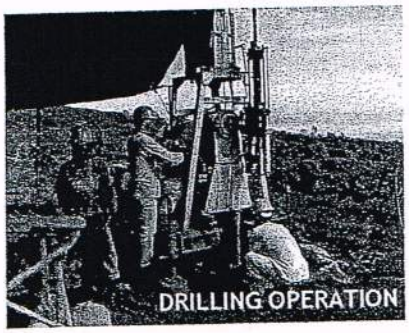
THREE (3) YEAR WORK PROGRAM

CORPORATE DATA


DRILLING OPERATION

Project Name:

TAGANITO MINING CORPORATION

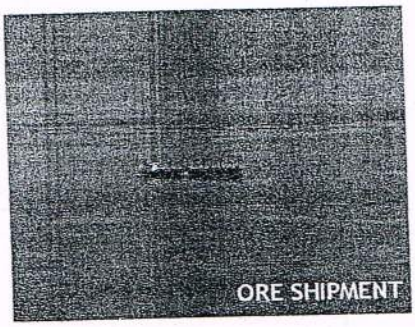

MINING OPERATION

Ownership:

REPUBLIC OF THE PHILIPPINES

Name of Claims:

NORTHERN PART OF PARCEL I OF THE
SURIGAO MINERAL RESERVATION
COVERED BY PERMIT TO EXPLORE NO. 01


ORE SHIPMENT

Location of Claims:

TAGANITO, CLAVER, SURIGAO DEL NORTE


ENVIRONMENTAL CONCERN

ADDRESS

Head Office:

4th Floor BMMC Building
Former Solid Mills Building
Dela Rosa Street, Legaspi Village
Makati City.
Tel. No. (02) 893-46-79/89
Fax No. (02) 812-60-74

Surigao Office:

#005 Phil-Am Life Building
Amat Street, Surigao City
Tel. No. PhilCom. (086) 826-3005
Cruztelco (086) 232-6680
Fax No. (086) 826-3005

Minesite Office:

Taganito, Claver, Surigao del Norte
Tel/Fax No. (086) 826-1412

Contact / Title

CONRADO C. TAMBILOC
Technical Manager

ARMANDO P. PEREDA
Resident Mine Manager

2. PROJECT DESCRIPTION

2.1 Project details

2.1.1 LOCATION

Geography

The 4,966 hectare project area is geographically bounded by the coordinates **125° - 47' - 00'' to 125° - 53' - 00'' E longitude and 9° - 30' - 00'' to 9° - 33' - 00'' N latitude** that falls within Parcel - 1 of Surigao Mineral Reservation.

Below is the geographic map of TMC vicinity.

It lies within the political jurisdiction of the Municipality of Claver, Province of Surigao del Norte that covers four (4) of the Municipality's southern barangay, namely Taganito, Urbiztondo, Hayanggabon and Cagdianao.

Marine and Meteorological Condition

The Taganito Claim faces the Hinatuan Passage. The narrowest portion, where the current is strong is about 7.5 km. Between the Taganito area and Bucas Grande Island.

Tidal level data at the causeway of barangay Taganito is shown in Table 1. The difference between the highest and the lowest tide level in a year is about 2.14 meters. The maximum tidal fluctuation in a day is about 2.0 meters.

Table 1. TIDAL OBSERVATION

Month	Highest(m)	Lowest(m)	Difference
January	1.25	-0.70	1.95
February	1.45	-0.95	2.40
March	1.68	-0.77	2.45
April	1.60	-0.77	2.37
May	1.14	-0.85	1.99
June	1.23	-0.82	2.05
July	1.45	-0.70	2.15
August	1.45	-0.72	2.17
September	1.56	-0.65	2.21
October	1.50	-0.50	2.00
November	1.50	-0.70	2.20
December	1.30	-0.47	1.77

The mining areas are within the tropical zone and as mentioned earlier, are characterized by two distinct seasons, the dry and wet seasons. Dry season is from April to September which is also the production period and schedule of limonite shipments. Wet or rainy season is from October to March, and stripping is on a minimum scheduled during these months. The campsite and minesite total average rainfall precipitations are 3,639.34 mm. and 3,738.46 mm. respectively and are most concentrated during the wet months although there are rainy days during the dry months. Figure 1 and 2 shows the annual rainfall observes at campsite and minesite from year 1987 to 2005. The maximum temperature of the area is about 32.13 degrees Centigrade. The average atmospheric pressure and humidity of the area is 1,020.66 millibars and 79.19% respectively.

Table 2 shows the meteorological data derived from annual meteorological observation from year 1987-2005.

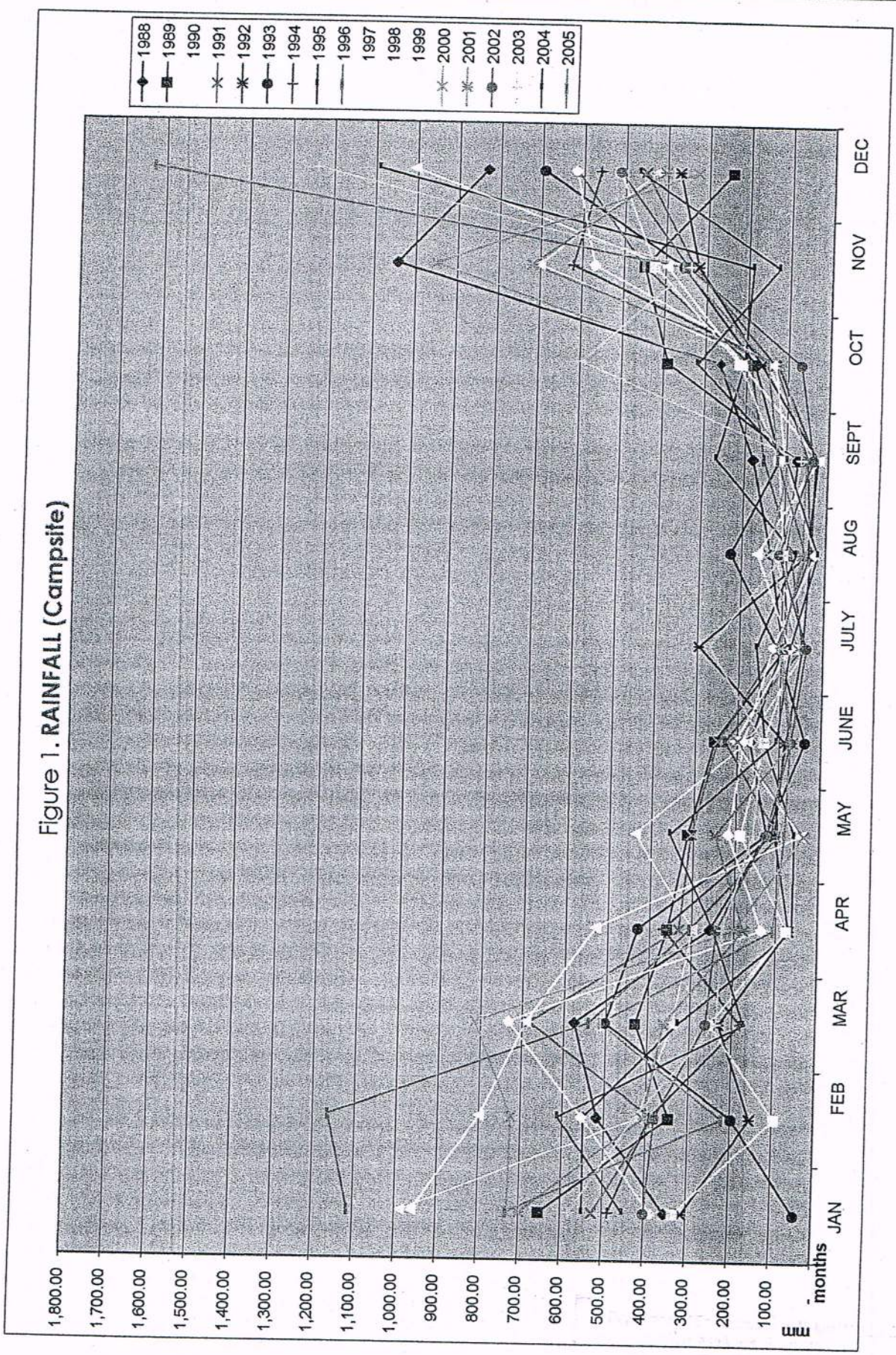


Figure 1. **RAINFALL (Campsite)**

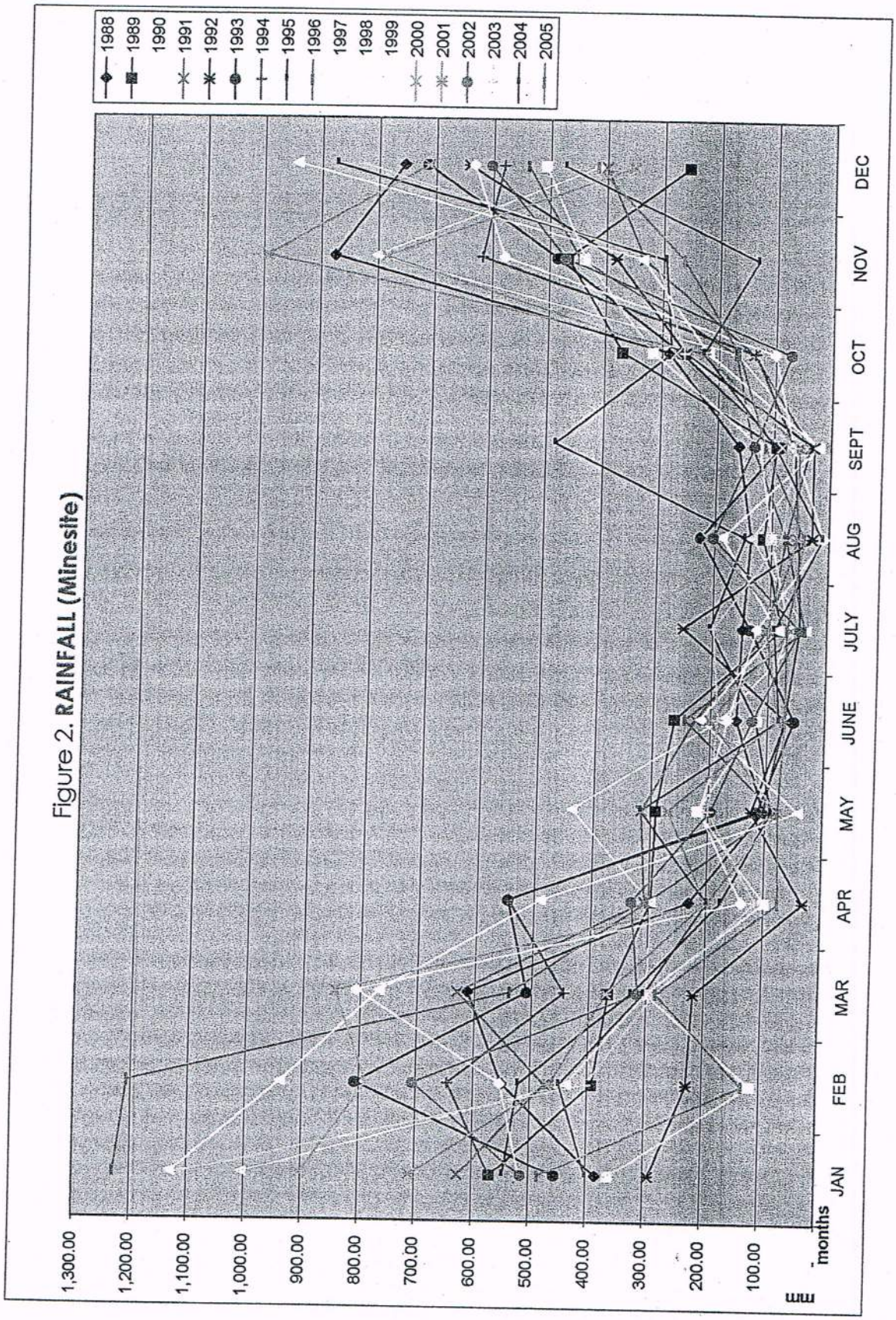


Figure 2. **RAINFALL (Minesite)**

Table 2. METEOROLOGICAL DATA

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
RAINFALL (Campsite)																			
Precipitation (mm)	3,052.10	4,538.00	3,679.00	4,141.00	3,525.00	2,169.75	3,010.71	3,037.81	3,575.64	4,981.08	3,760.53	2,511.65	5,098.75	4,536.00	3,402.00	2,589.50	4,374.00	3,042.00	4,123.00
Intensity (mm/mins)	0.19	0.16	0.17	0.18	0.20	0.29	No Data	No Data	No Data	No Data	0.37	0.13	0.14	0.15	0.19	0.23	0.20	0.20	0.22
Duration (mins)	15,754	29,258	21,448	23,439	17,280	7,585.00	No Data	No Data	No Data	No Data	10,195.50	19,830.00	37,825.00	29,505.00	17,942.50	11,435.00	21,447.00	15,448.50	19,052.00
Rainy Days (mins)	179.00	219.00	206.00	192.00	196.00	148.00	148.00	88.00	198.00	218.00	190.00	193.00	228.00	238.00	207.00	192.00	221.00	172.00	186.00
RAINFALL (Minesite)																			
Precipitation (mm)	1,369.71	4,387.29	3,545.62	4,237.87	3,653.84	2,848.38	4,389.00	3,871.50	4,055.10	4,997.00	3,917.20	2,758.10	5,372.50	4,775.50	4,147.53	3,710.15	4,037.50	2,776.50	2,180.50
Intensity (mm/mins)	No Data	No Data	No Data	No Data	No Data	No Data	0.23	0.23	0.20	0.20	0.14	0.13	0.14	0.15	0.20	0.22	0.21	0.21	0.21
Duration (mins)	No Data	No Data	No Data	No Data	No Data	No Data	18,796	16,754	19,929	25,360	27,635.00	21,260.00	39,400.00	31,375.00	21,070.50	16,541.00	19,406.00	13,348.00	10,379.00
Rainy Days (mins)	90.00	221.00	199.00	194.00	197.00	151.00	195.00	181.00	207.00	212.00	178.00	188.00	233.00	230.00	206.00	201.00	199.00	176.00	181.00
TEMPERATURE																			
Daily Maximum (C)	35.00	35.00	35.00	35.00	35.00	36.50	37.00	35.00	34.00	33.00	27.19	28.73	30.87	30.14	29.80	28.14	27.06	27.98	30.00
Daily Minimum (C)	21.00	20.00	20.00	20.00	18.50	18.50	20.00	20.00	19.00	17.50	20.15	21.13	22.98	21.58	20.50	18.97	18.33	17.46	10.06
Average (C)	27.67	26.44	26.44	25.49	25.42	25.48	27.10	26.74	25.52	24.33	23.92	24.89	26.88	26.02	25.15	23.52	22.69	22.72	20.03
HUMIDITY																			
Daily Maximum (%)	100.00	100.00	100.00	98.00	96.50	96.00	96.00	99.00	96.00	96.00	90.66	91.10	93.08	93.21	91.13	92.15	92.86	93.29	96.17
Daily Minimum (%)	45.00	45.00	45.00	38.00	42.00	42.00	39.00	44.00	49.00	46.00	66.03	67.32	68.64	66.45	69.28	71.80	72.53	65.96	69.58
Average . (%)	77.56	76.19	81.26	79.72	76.68	73.12	77.97	76.93	79.61	80.14	78.51	79.21	80.82	79.82	80.21	81.56	82.70	79.63	82.88
WIND																			
Prevailing Wind Direction	SE-SW	SE	SW	SW	SW	SW-NE	NE-S	SW-NE	NE-SW	NE-SW	SW-NE	SW-NE	SW-NE	SW-NE	SW-NE	-	-	-	-
Max. wind Direction (m/s)	No Data	No Data	No Data	38.00	18.00	34.00	29.00	23.00	11.00	6.00	2.75	3.31	3.01	3.00	3.01	-	-	-	-
Min. wind Direction (m/s)	No Data	No Data	No Data	No Data	0.50	0.50	0.50	0.50	0.50	0.50	0.83	0.85	0.50	0.50	0.50	-	-	-	-
ATMOSPHERIC PRESSURE																			
Max. atm. pressure(mlbars)	1,011.95	1,013.35	1,014.05	1,015.95	1,018.95	1,026.00	1,030.00	1,028.00	1,028.00	1,029.00	1025.71	1027.10	1022.82	1024.19	1,032.91	1,025.99	1,035.46	1,034.02	-
Min.atm. pressure(mlbars)	1,002.45	990.15	1,007.45	1,002.65	1,009.85	1,010.00	987.00	1,013.00	1,014.00	1,015.00	1021.88	1022.13	1019.35	1021.07	1,029.58	1,023.25	1,032.15	1,030.60	-
Average atm. Pressure	1,008.35	1,010.21	1,007.37	1,012.43	1,013.87	1,017.18	1,021.46	1,021.43	1,021.58	1,022.13	1023.40	1026.72	1021.08	1022.62	1,031.24	1,024.62	1,033.81	1,032.31	-

Topography

The ridges distributed in this area are dominated by several major faults and gradually descend towards the rolling coastal area facing Hinatuan Passage. The coastal areas are characterized by a small low-lying hills and narrow plains. A fairly wide flat area is found only in barangay Taganito. Major drainage lines in the claims are Taganito River and Kinalablaban River. The water volumes of these rivers are relatively large. Minor drainage lines consist of the Hubasan and Hayanggabon creeks.

Vegetation

The contract area is predominantly covered by a common shrub called *"payuspos"*. Coconut trees are grown mainly along the coast. Mangroves and nipa swamps are present along the Hayanggabon and Cagdianao coasts. Rice is grown in the plain areas where the soil is not lateritic.

Back in year 1964, a large portion of the claim areas was luxuriantly vegetated with several wood species like ironwood, yakal, lauan and others. Then the area was visited by a strong typhoon during that years and was greatly denuded. A series of forests fires later have totally eliminated the remaining growths of trees with economic value.

2.1.2 ESTIMATED CAPITAL COST

The Taganito Mining Corporation (TMC) is a Filipino-majority owned (65-35) corporation duly organized and existing by virtue of end in accordance with the laws of the Republic of the Philippines. It is organized under a Filipino-Japanese joint venture arrangement with an existing authorized capital of Php 200M with a paid-up subscription of Php 100M.

2.1.3 MINERAL COMMODITY

Under a Mineral Production Sharing Agreement (MPSA), TMC shall continue to mine and produce nickel silicate ore found within the Contract Area. The laterite cover of the area serves as the major indicator of the presence of the nickel silicate ore found along the horizontal of the saprolite zone. Delineation of the mineable ore reserve is done through 25 x25 meter grid intervals, which serve as the principal planning guide for development and preparation for actual mining/extraction. The type of this ore deposits is more feasible harnessed through the application of surface mining method.

Geology

The oldest rock in the vicinity of the contract area is amphibolite schist and other meta - volcanics overthrust by ultramafic rocks. The ultramafic rocks consist predominantly by Harzburgite interpreted as the basal layer of an ophiolite, and overlain by upper Eocene conglomerates and limestone. Above the upper Eocene rocks a thick succession of volcanic rocks and Miocene clastics. Local volcanics overlies limestone in some areas (see figure 3).

The dominant rock types within the contract area are the ultramafics of harzburgite. Harzburgite makes up the bulk of the ultramafic rock with minor lenses of dunite and pyroxinite. Floats of microdiorite and metadiabase occur along creeks. Northeast and Northwest faults dipping to the East are the prominent geologic structures primarily dictate and control the nickel depositions in the area.

Geologic Formations are as follows:

Formation	Age
Alluvium, coral reefs, etc.	Recent
Nickeliferous laterite	Pleistocene
Clastic sedimentary rocks and volcanics	Miocene
Conglomerates siltstone, shale minor limestone	Eocene
Ultramafic rocks and amphibolite schist	Pre - Tertiary

Ore Deposition

Nickeliferous laterite is chemical weathering products of developed from nickel bearing rocks. Most nickel laterite deposits of commercial significance have developed on peridotite bedrock were the primary source of nickel is forsteritic olivine (typically 0.3- 0.4 %Ni) and its metamorphic derivatives of serpentine. The deposits develop from peridotite bedrock under climatic and topographic conditions that favors the ultimate removal of all the least soluble elements (Fe, Al, Cr, Ti).

The schematic profile section and the typical chemical composition of each zone are3 shown below:

Schematic Profile Section

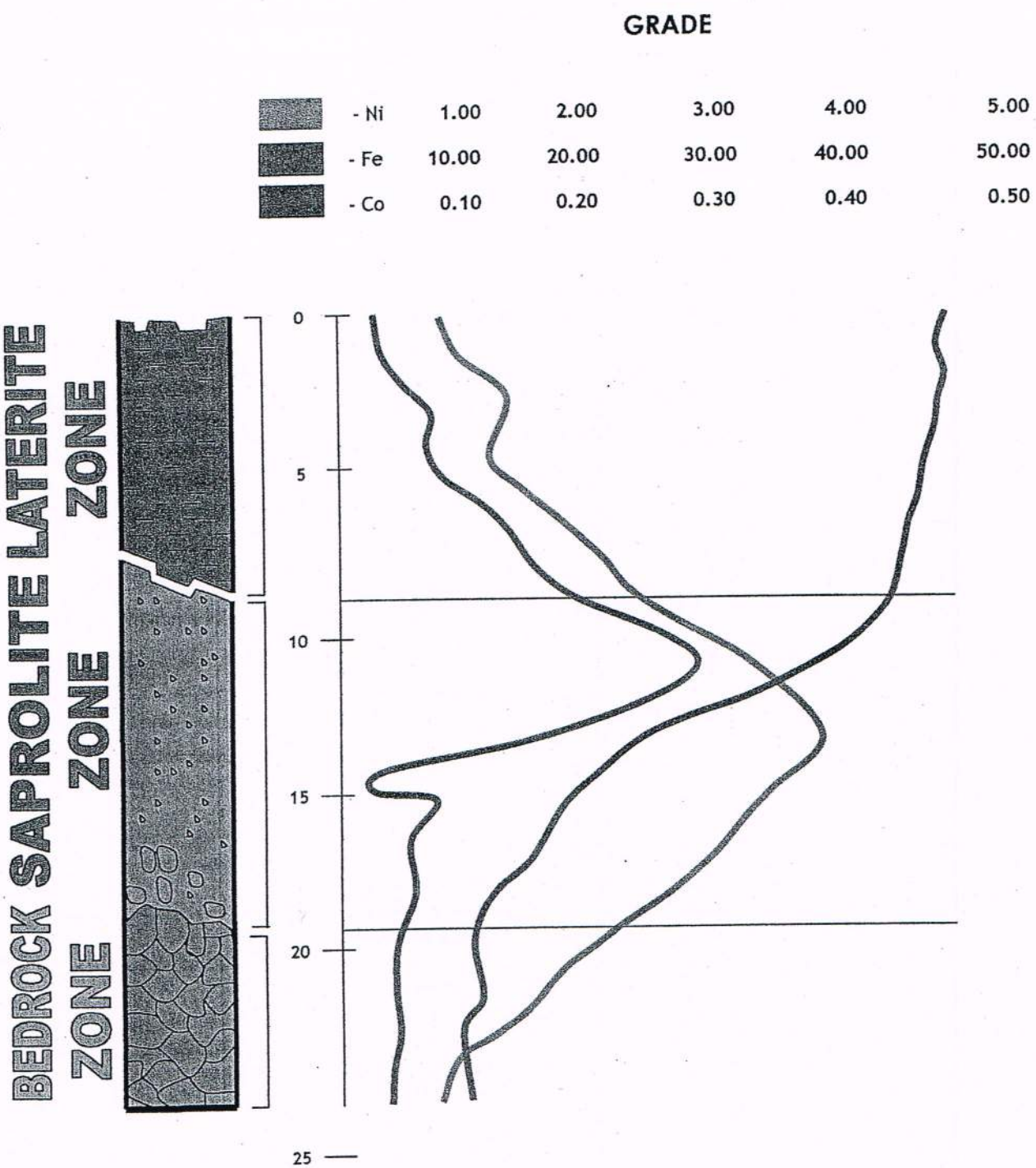
ZONE	TYPE	THICKNESS
Laterite	Fe pellets Dusky-reddish laterite Yellowish-brown laterite Multi-colored laterite	7.40 meters
Decomposed Zone (Ni-rich)	Saprolite (soft and hard ore)	6.10 meters
Bedrock Zone	Bedrocks (serpentinized peridotite and dunite)	

Typical Chemical Composition of each Zone

Zone	%Ni	%Co	%Fe
Laterite Zone	0.40 - 1.50	0.02 - 0.04	45.00 - 55.00
Saprolite Zone	1.80 - 3.50	0.03 - 0.20	7.00 - 30.00
Bedrock Zone	0.20 - 0.40	0.02 - below	6.00 - 9.00

Schematic Profile- Various layers of nickeliferous laterite deposit of Taganito Mining Corporation is shown in figure 4.

Figure 4: SCHEMATIC PROFILE OF THE NICKELIFEROUS LATERITE DEPOSIT
TAGANITO MINING CORPORATION



Laterite Profile Zone

Laterite is widely distributed on the area. They were developed by the weathering of the nickel bearing parent rocks. On a tropical climate, leaching is especially effective, the most insoluble oxide remain at the surface. Iron and aluminum from such stable compound and are so abundant that they are commonly left as residual concentrates.

The mineral solubility series grossly define the depth zoning of a complete laterite profile. The more soluble minerals at the top while less soluble minerals are at the base of the profile, and insoluble minerals are concentrated at the surface. Laterite profile concentrated ranging from the surface pH 5-6, down to the ground water table pH 7-9. This zone, upper layer contains observable geothite with reddish brown laterite, follows yellowish brown laterite, and yellowish orange laterite or multi-colors laterite. This multi-colors with few meters thick usually is enriched in manganese, cobalt, and nickel in iron manganese oxide.

Total average thickness of this profile ranges from 7-8 meters with a grade of 0.4 - 1.50 %Ni, 45 - 55 %Fe, 0.20 - 0.40 %Co.

Saprolite Zone

This is a zone of altered bedrock in which most of the parent rock minerals are present and the original structures and textures are well preserved. The zone consists of a mixture of bedrock fragments, saprolite rims and veins of precipitated garnierite, nickeliferous quartz. Garnierite as identified in the field is usually nickeliferous serpentine. This zone varies according to the water circulation pattern and the proportions of primary minerals in the parent rocks and depending on the water circulation.

Most saprolite consists of sub - units comprising a serpentinized peridotite core, and a saprolite rim with peripheral cracks and joints. Minerals dissolve in inner part of the saprolite provides metal ions to the solution; ions defuse outward to the porous outer zone ad marginal joints. In this outer zone, water is flowing, but the rate and direction of flow depends on the rainfall, the season of the year, and the location of the water table.

Saprolite zone range with the thickness of 6-7 meters with the average grade of 1.80 - 3.50 %Ni, 7.00 - 30.00 %Fe. It has a physical characteristic of yellowish green, yellowish orange and olive green with clayey to crumbly and firmly soft.

Bed Rock (Parent Rock) Zone

Characteristically, bedrock comprises with serpentinized peridotite and serpentinized dunite. Drilling core samples shows, the bedrock has fracture fillings of quartz. No economic importance to this zone base from our cut-off grade of 2.00 %Ni. The physical characteristics exhibit a pale green to pale olive green color indicates that there was a strong serpentinization process occurs made to alter the parent rock.

Rocks and Minerals

Generally, the Taganito mine is composed of serpentinized ultramafic rocks, contains chiefly of olivine, pyroxene and small amount of clastics plagioclase. These serpentinized ultramafic rocks were the peridotite and dunite with minor accessory minerals of chromite, picotite, and magnetite.

Intense serpentinization completely destroyed the primary constituents of the rock. Abundant serpentine fibers form psuedomorphs of cleavage traces and lattice structures. An overall mesh structure is predominant were interlacing networks of serpentine are widespread. Iron oxide stains contribute to the reddish coloration of the section. Occurrence of the reddish iron oxide stains was more predominant in these rocks. Relict pyroxene is also visible in greater amount. All these mineralogical and petrological analysis was base from the petrographic analysis done by the PETROLAB, Mines and Geosciences Bureau (MGB), Diliman Quezon City.

Factors of importance for the development of a residual nickel deposits includes the following:

1. Mineralogy of the peridotite
2. Climate
3. Topographic condition
4. Geomorphic history
5. Presence of water table
6. Geologic structure

The factors are completely interrelated and empirical determination of their individual importance. They affect the individual weathering profile, the topographic distribution of ore bodies within the area of a host serpentinized peridotite, affect the distribution of the residual nickel deposit.

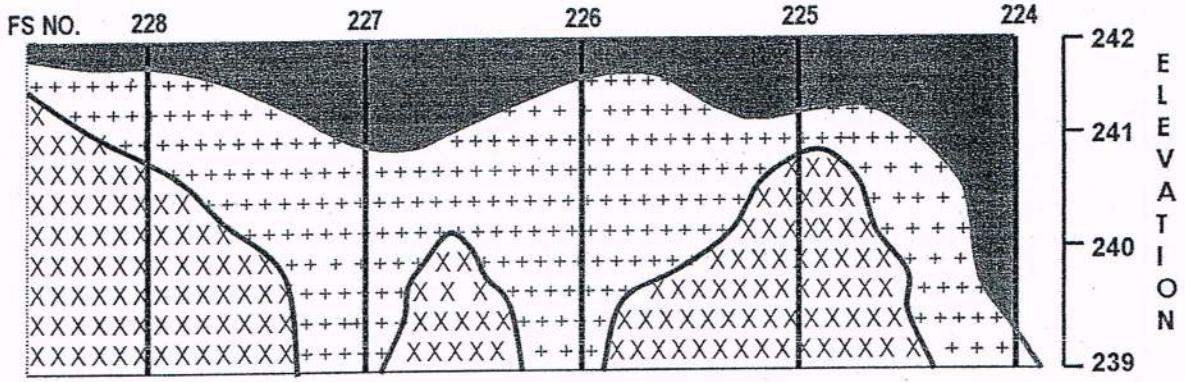
The structure and occurrence of nickeliferous laterite profiles are describe and explained in terms of mineral solubility and drainage condition. Complete profile, from top to bottom, includes laterite zone, saprolite zone and bedrock or parent rock. The transition zone is present only where drainage is sufficiently slow to allow saturation conditions to build up with resulting quartz or smectite precipitation. This precipitation may occur in any climate of a water table or in tropical climate with a long dry season. The degree of serpentinization of the laterite, parent rock is important in determining the nature of the saprolite zone. Unserpentinized peridotite produces saprolite ore with hard residual rock core, and fracture filing of garnierite and quartz. Serpentinites yield relatively homogeneous serpentine saprolite with minimal quartz or garnierite.

Figure 5 shows the typical section or face sketch of ore and overburden.

Figure 5: **FACE SKETCH OF ORE AND OVERBURDEN**

LEGEND:

- *Reddish Brown Laterite*
- *Yellowish Green Crumbly Soft Saprolite*
- *Yellowish Green Moderately Hard Rock*



ASSAY RESULT (%)

a.) %Ni = 2.78 %Fe = 12.96	%Ni = 2.03 %Fe = 34.35	%Ni = 2.01 %Fe = 15.41	%Ni = 2.79 %Fe = 8.74	%Ni = 1.67 %Fe = 42.45
b.) %Ni = 2.81 %Fe = 10.75	%Ni = 2.97 %Fe = 15.19	%Ni = 2.49 %Fe = 12.71	%Ni = 2.36 %Fe = 6.97	%Ni = 1.71 %Fe = 31.97

2.1.4 DESCRIPTION OF MINING METHOD

TMC's experience dictates that surface mining or open pit mining is the most economically viable method to systematically extract the nickeliferous laterite deposits in the area. Generally, the mining operation being employed is divided into different phases of major activities. Each of these major activities serves an important purpose towards attaining the desired specification of marketable ore. The activities are as follows;

Clearing and Stripping

This major activity is the initial phase of the mining cycle of operation. **Clearing**, however, is only done where significant vegetation covers a target mining area. Owing to the vegetative characterization of the area, clearing activity is very seldom done.

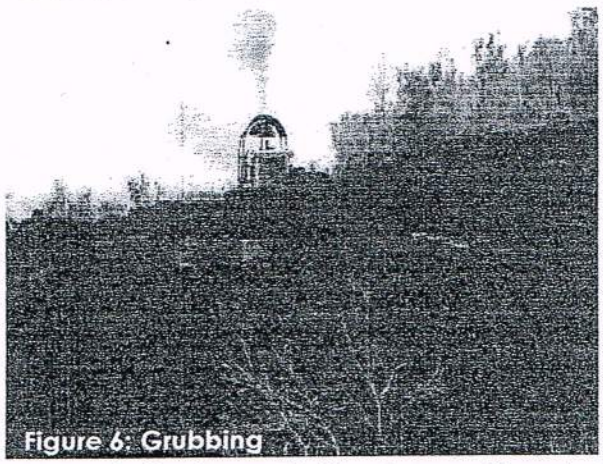


Figure 6: Grubbing

Where there is a necessity to do some clearing, TMC utilizes a bulldozer to do slight scraping and grab the vegetative remnants (see figure 6).

Overburden in the present mining area of Taga-2 is measured to have an average depth of 9 to 10 meters while the nickel ore is found with an average thickness of 7 to 8 meters. The stripping ratio for the proper bench formation is 3.0:1.0 (overburden : ore).

Stripping activities is usually scheduled even rainy months utilizing a bulldozer - track loaders - backhoes - dump truck equipment combination. This is done in accordance with the planned stripping limits of 3-meters working bench. Excavated laterite overburden is hauled and stockpiled to the laterite stockyard which is about 2.5 kilometers from active mine pits. Low grade ores, (<2.00% Ni but average 1.80% Ni) is stockpiled to the low-grade ore stockyard. The stockpiled materials are sometimes being utilized for matting the ore stockyards or beneficiation yards. Bulldozers do the stockpiling and maintenance of these stockyards. They are however, also being utilized in the development of benches during the early stage of stripping operation. Haul road maintenance is assigned to road graders.

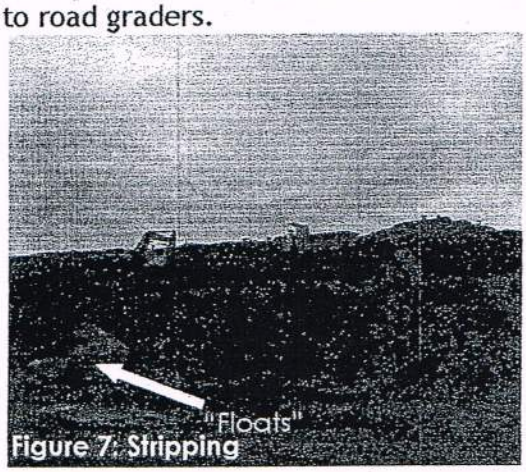


Figure 7: Stripping

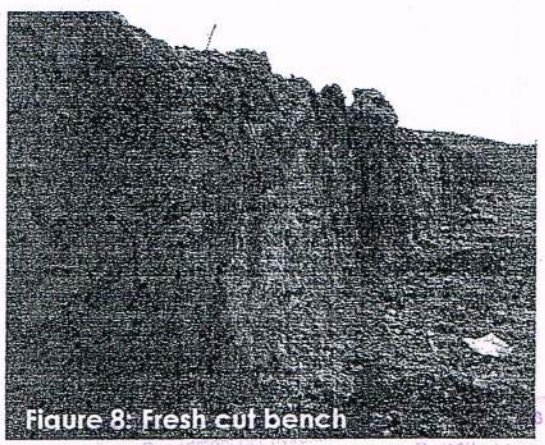


Figure 8: Fresh cut bench

Pockets of boulders or raw hard ore, occurring as "floats" (figure 7), are occasionally encountered during stripping. These are segregated and stockpiled where low grade floats are stockiled and reserved for environmental projects, while the high grade boulders are hauled to the breaking area for manual size reduction to -25 mm. Stripping advances until ore zone is reached and ready for mining operation (see figure 8).

Soft Ore Mining

Based on the test mining operations, open pit mining method without blasting is best suited to the nickel deposit. Mining is confined to the dry months, that is, from April to middle of October. Blasting of the hard ore portion in the mine pits are not required since the ore is moderately hard and/or soft. Backhoes directly excavate the bench face (see figure 9.) and load the ore materials straightly into dump trucks (see figure 10). In particular, backhoes are very effective in excavating and separating the soft ore from boulders, thus, the task of visual segregation by the operators is easier and more accurate.

The assay results are used for re-classification of the piles prior to haulings them to pieryards.

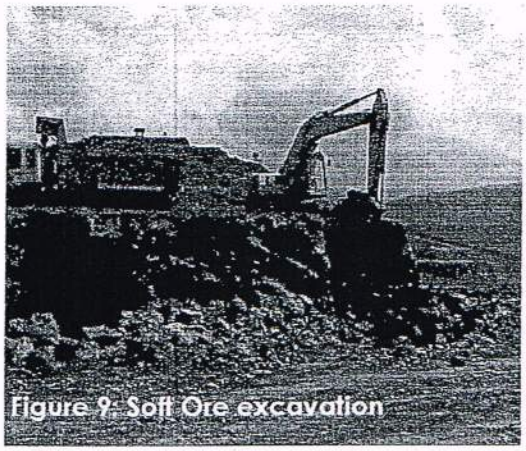


Figure 9: Soft Ore excavation

Figure 10: Direct load to DT

Considering the safety and quality control, bench are kept at 3.0 meters high and 5 to 10 meters wide. Ore excavated, based on assay results of face samples are hauled to mineyards and piled according to ore classification derived from visual segregation in the mine pits. In the mineyards, samples of the piles, for every 10 dump truck loads are taken during piling.

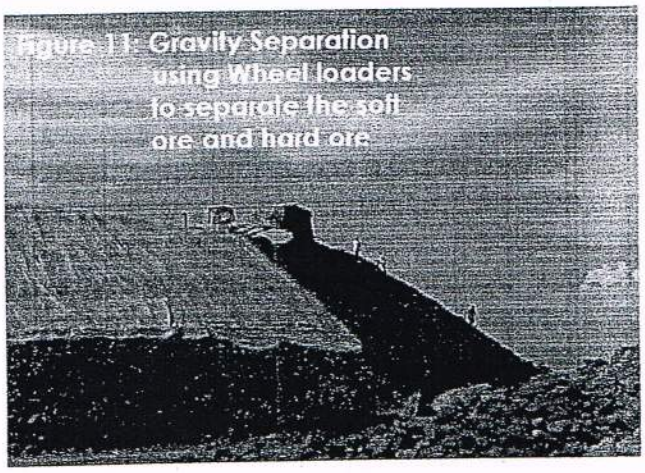
Hard Ore Production

Production of hard ore in the mine pit is carried out all year round. Even during the wet months, hard ore boulders present as "floats" in the stripping operations are gathered.

The accumulated hard ore boulders in the mine pits are sampled at random and based on the nickel grades, the high grade boulders are hauled to the nearest breaking area. Preliminary size reduction is done by a hydraulic breaker. Then the low grade fragments are sorted out manually. Further size reduction to marketable sizes, at 75 mm., is finally done by means of sledge hammers. These crushed hard ore are again sampled prior to the hauling to pier stockyards.

Other sources of crushed hard ore are the following;

a. Oversize sorting from the ore hauled down to pieryards (see figure 11)



b. Oversize sorting of the transferred ore at the mineyards and stockyards (figure 12).

Item a refers to the oversize recovered from the screening of ore stockpiles at the beneficiation yards. Item b is the oversize production coming from screening of mineyard stockpiles. At present, almost 65% of the total hard ore production comes from item a , 17% is derived from item b, and the remaining 18% of the total production comes from the mine pit.

ORE HAULING / TRANSFERRING

Reclassified piles at mineyards of shippable grades are being load by wheel loader, track loader and/or hydraulic excavator to the dump trucks and hauled down direct to the pieryards. During this ore hauling operation, the piles are again sampled through truck sampling of every other trips. Assay results and volume for each pieryard stockpile are recorded to monitor pieryard stockpile inventory. These records are then used for blending during ore shipment.

Remaining Low-grade ore stockpiled in the mineyard that do not pass shippable grade are transferred to their respective low-grade stockyards. Some low-grade materials with very low nickel content are occassionally used for matting.

STOCKPILING / BENEFICIATION

This phase of operation basically involves the separation of oversize hard ore from the soft ore materials at the pieryards and size reduction of hard ore materials to the required marketable sizes.

Screening


Figure 13

It is estimated that the mined-out raw ore consists of 21% hard ore materials. These are recovered and this is done by forming a ramp of ore materials for a wheel loaders or track loader. The loader scoops a bucketful of raw ore, then go up the ramp and dump the same at the top and over the sides. The ore materials are slide down on the slopes and the fragments of boulders roll down and accumulate at the base of the stockpile. This process segregates the hard ore from the soft ore materials(see figure 13).

Crushing

The accumulated hard ore materials are then gathered by the loaders from time to time and spread out in the breaking area. Manual crushing of the said materials by means of six-pound sledge hammers is then carried out to attain a marketable size of -75mm (see figure 14).


Figure 14

Stockpiling

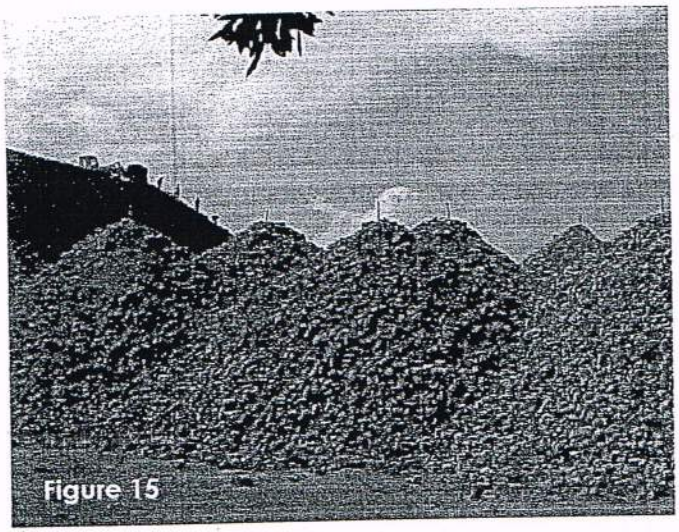


Figure 15

Beneficiated ore materials whether soft ore crushed ores are stockpiled using wheel loaders and/or track loaders at the pieryards. Due to moisture content restrictions, pieryard stockpiles are covered with canvass sheets to protect them from rain. Presently, beneficiated ore is stockpiled in eight pieryards around the vicinity of Taganito campsite (see figure 15).

ORE LOADING / SHIPPING OR MARKETING

The distance of the pieryard ore stockpile from the causeway is measured to be at an average of 700 meters. A landing barge and transport vessel (LCT) with hull capacity of 600 to 1,000 tons can dock at the causeway's landing platform (see figure 16). Beneficiated shipping grade are are then loaded to the dump trucks for unloading inside the LCT (see figure 17). A wheel loader is stationed near the LCT for trimming the loaded ore inside the LCT. Three (3) of these rented landing seacrafts or LCT's are utilized to compliment material-handling cycle during shipment. One shipment involves a targeted tonnage that varies from 44,000 WMT to 60,000 WMT. This loading activity is being undertaken on a 24-hr continuous operation and takes an average of 5 to 10 days complete without delay.

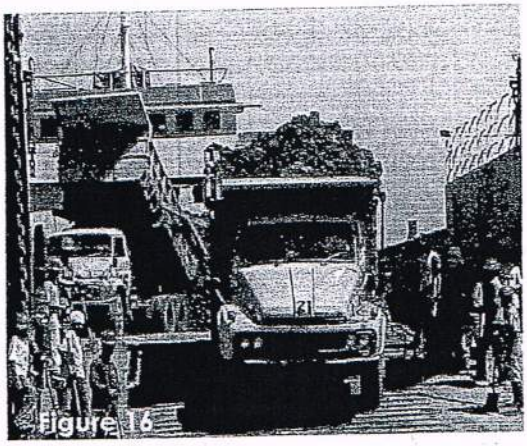


Figure 16

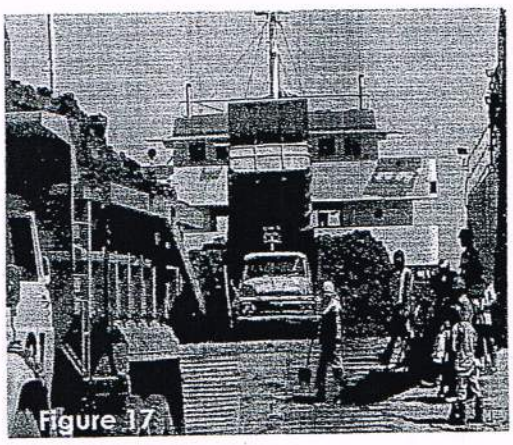


Figure 17

Truck sampling is done during the shipment for proper monitoring of the ore quality being loaded. Quick assay method is done by atomic absorption instrument to determined the grade during the progress of shipment.

Grade Control

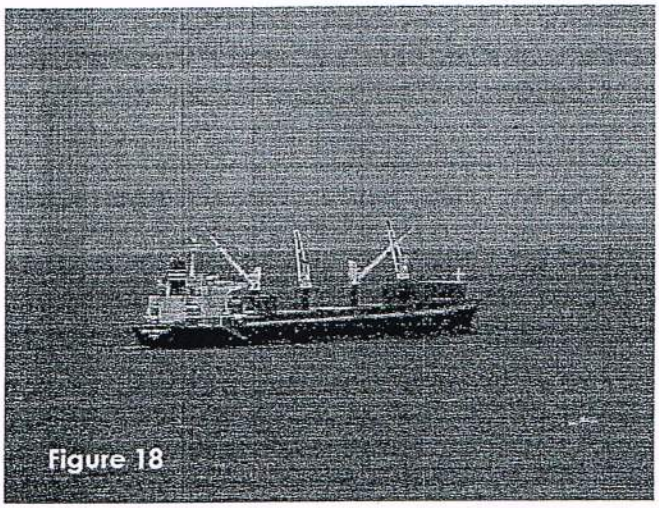


Figure 18

The loaded LCT shipside to the vessel and the vessel perform its task to unload the material from LCT using the crane. The material goes to the hatch of the vessel until it reaches the target cargo.(see figure18).

Ore grade control is strictly employed in order to meet market specification of beneficiated nickel ore. The first step of the grade control is start from the detailed drilling, where core samples are taken for every meter advance. Drilling pattern for the detailed drilling is base from the exploration drilling results with a grid interval of 300 x 300 meters, 100 x 100 meters, and 50 x 50 meters. Assay results of the detailed drilling with a grid interval of 25 x 25 meters are the final to design stripping and mining plans.

During stripping and mining, face sample are taken in each bench face by vertical channel at 2 meters interval. The assay result is the guide for selective mining and for effective segregation process done by the excavator operators. Hard ore boulders, encountered are sampled separately by random.

Ore Classification

Before Reclassification

Material	% Ni	%Fe
a). Low Iron Ore		
Special (SPL)	2.50 - above	<19.99
High Grade (HG)	2.30 - 2.49	<19.99
Ordinary/Marginal (OM)	2.00 - 2.29	<19.99
b). High Iron Ore		
High Grade (HG)	2.30 - above	≥20.00
Ordinary/Marginal (OM)	2.00 - 2.29	≥20.00
c). Hard Ore		
High Grade (HG)	2.00 - above	≤16.00
Low Grade (LGO)	1.99 - below	≤16.00
d). Low Grade Ore (LGO)	1.99 - below	<19.99
e). Limonite	1.99 - below	≥20.00

Ore is then hauled to the designated piles at the mine yards. Each pile consists of ten (10) dump truck loads. Again, sampling is done for each truckload. Base on this sampling, the piles are re-classified into different ore grades. For hard ore, sampling is done manually at the breaking area. These crushed ore are sampled every bucket interval with an estimated volume of 90 cu. per sample per pile.

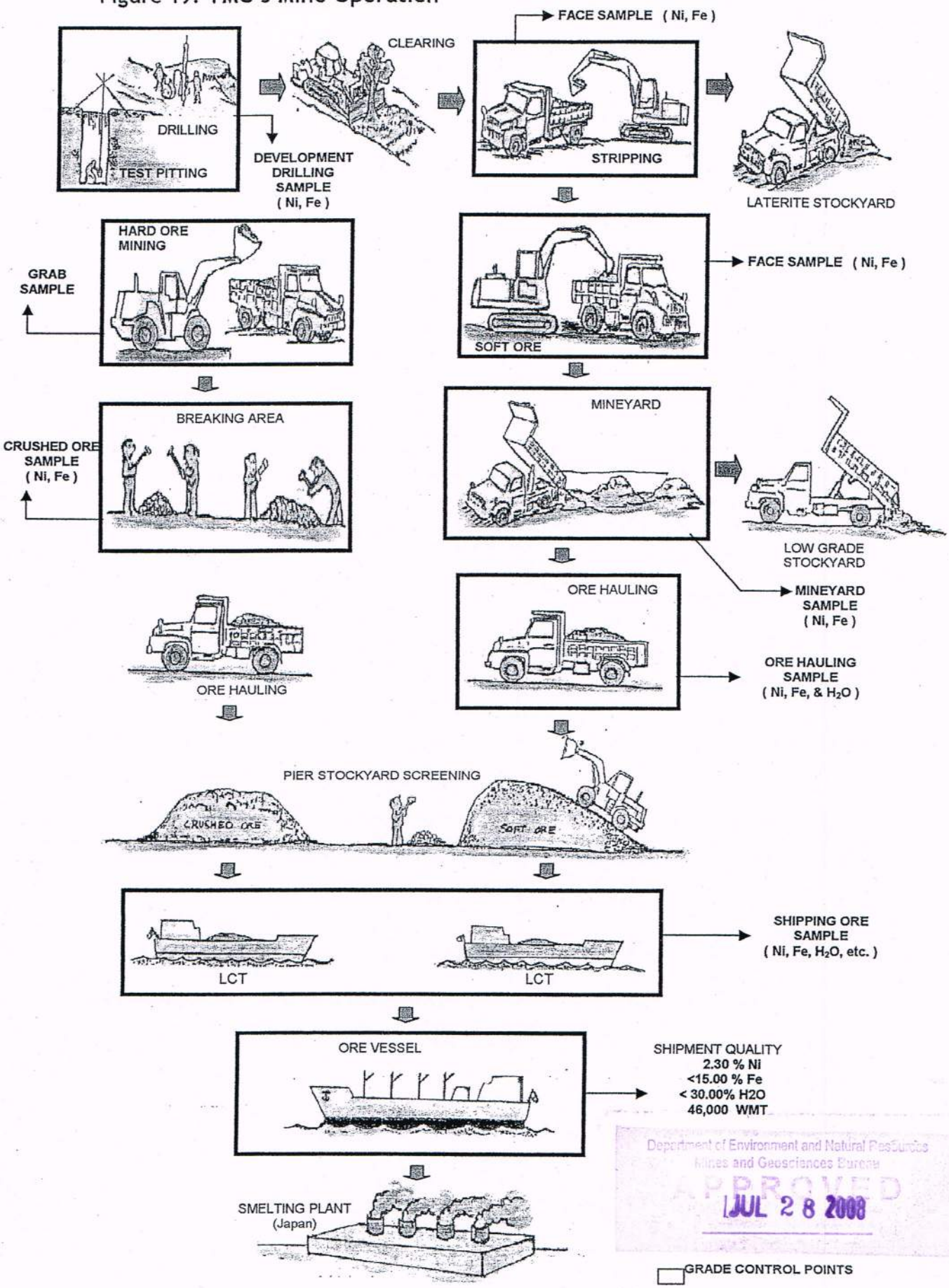
After Reclassification

Material	% Ni	%Fe
a). Low Iron Ore		
Special (SPL)	2.50 - above	<19.99
High Grade (HG)	2.30 - 2.49	<19.99
Ordinary (ORD)	2.20 - 2.29	<19.99
Marginal (MGL)	2.00 - 2.19	<19.99
b). High Iron Ore		
Special (SPL)	2.50 - above	≥20.00 - up
High Grade (HG)	2.30 - 2.49	≥20.00 - up
Ordinary (ORD)	2.20 - 2.29	≥20.00 - up
Marginal (MGL)	2.00 - 2.19	≥20.00 - up
c). Low Grade Ore		
LGO-LF	1.80 - 1.99	<19.99
Limonite B	1.50 - 1.99	≥20.00 - 39.99
LGO-LA	1.50 - 1.79	<19.99
LGO-LB	1.49 - below	<19.99
e). Limonite		
Limonite "A"	1.50 - 1.99	≥40.00 - up
Limonite "C"	1.20 - 1.49	≥20.00 - up

Base on mine yard re-classification, ore will be hauled and stockpiled at the pier yards. Further sampling is done for every two (2) dump trucks load to determine the final grade of the products. During ship loading, beneficiated are sampled for each truckload. A total of 24 truck loads made into one sub-lot sample and 10 sub-lot samples made into one (1) lot sample until the loading of the whole shipment is completed, a total of "n" lot sample is collected.

Figure 19 shows the TMC's Mine Operation Flow sheet with respect to its grade control points.

Figure 19: TMC's Mine Operation



2.1.5 ESTIMATED ANNUAL PRODUCTION

Ore Sources

Schedule	Year 1	Year 2	Year 3
Stripping Areas	MP-27 MP-30 MP-103	MP-101 MP-102 MP-104	MP-105 MP-106 MP-107
Mining Areas	MP-16 MP-17 MP-23 MP-24 MP-25	MP-16 MP-17 MP-23 MP-24 MP-25	MP-27 MP-28 MP-29 MP-30

Production Schedule

PAMCO Production Tonnage

	SHIPPING ORE		RAW ORE
YEAR	DMT	WMT	WMT
1	339,213	460,000	460,000
2	339,213	460,000	460,000
3	339,213	460,000	460,000

QNI Production Tonnage

YEAR	DMT	WMT
1	61,824	92,000
2	61,824	92,000
3	61,824	92,000

Shipment Schedule

PAMCO Shipment

YEAR	TONNAGE(WMT)	%Ni	%Fe	%H2O
1	460,000	2.16	12.66	26.26
2	460,000	2.16	12.66	26.26
3	460,000	2.16	12.66	26.26
TOTAL	1,380,000	2.16	12.66	26.26

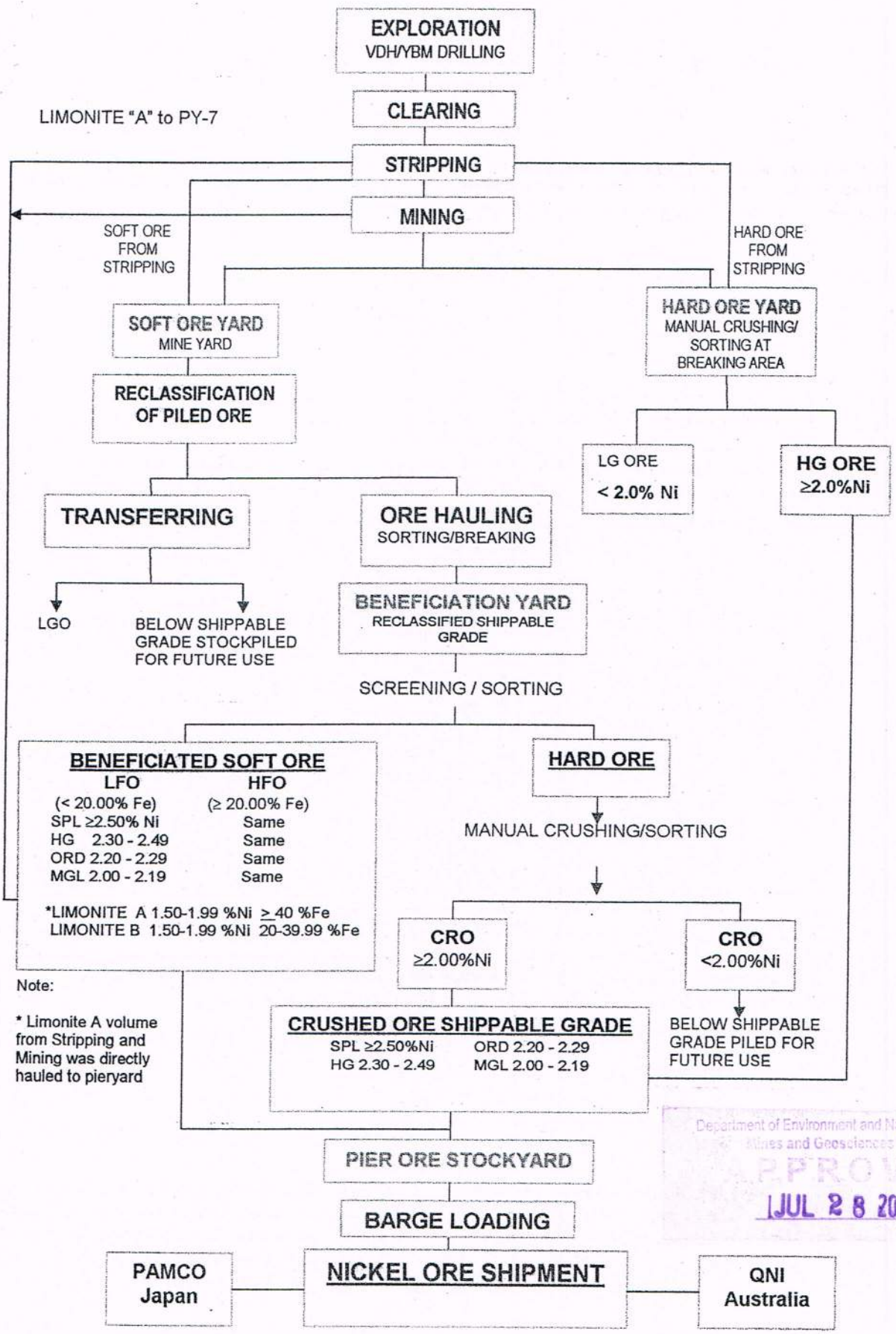
QNI Shipment

YEAR	TONNAGE(WMT)	%Ni	%Fe	%H2O
1	92,000	1.68	34.97	32.80
2	92,000	1.68	34.97	32.80
3	92,000	1.68	34.97	32.80
TOTAL	276,000	1.68	34.97	32.80

Technical Parameters used in the mining operation

Moisture content of Raw Ore	30%
Specific Gravity of Soft Ore	1.11
Specific Gravity of Hard Ore	1.46
Percent Swell	35%
Percent Oversize from Raw Ore	24%
Working Days per Month	
Dry Months (April - September)	26 days/mo.
Wet Months (October - March)	10 days/mo.
Efficiency (Human and Physical Availability)	80%
Working Hours per day	
Dry Months	20 hours
Wet Months	8 hours
Ship loading	24 hours
Capacity of Hauling Unit (cu.m./operating hr./unit)	
Stripping	21 cu.m.
Mining	23 cu.m.
Ore hauling	25 cu.m.
Transferring	24 cu.m.
Shipment (WMT/operating hr.)	40 WMT.
Dump Truck Capacity	10 cu.m.
Overburden / Ore Ratio	3.0 : 1.0

Figure 20. TMC PRODUCTION FLOWSHEET



2.1.6 DESCRIPTION OF PROCESS PLANT/MILL

Not Applicable for the TMC Mine Operation.

2.2 Mineral Reserves

History

Exploration of the Taganito claim area has been carried out since September 1986. This activity was conducted in cooperation with the technical assistance of Pacific Metals Co. Ltd. (PAMCO), particularly on the planning and engineering aspects. The exploration has been done mainly by means of portable Vibro drilling machines and by test pitting.

Initial geological exploration works started with the drilling or test pitting at 300 m. x 300 m. grid intervals to determine first the areas with good ore potentials. Next, the potential areas are blocked at 100 m. x 100 m. grid and, then at 50 m. x 50 m. grid intervals

Finally detailed drilling is done at 25 m. x 25 m. grid intervals and the data obtained at this stage are used as the base line data for the planning and design of mine pits as well as grade control.

As of end of 1993, Taga-2 ridge is the only area covered by extensive detailed drilling and is being continuously expanded to give headway for succeeding stripping and mining operations. The number of holes drilled by Vibro drilling machines as well as Yoshida Boring Machines (YBM) as of December, 1993 total 2,677 with a total combined depth of 53,774.39 meters. A total of 5,700,607 cu. m. meters of positive ore reserves have been blocked out over as estimated area of 81.67 hectares.

Four (4) units of portable Vibro drills and two (2) units of YBM drills are utilized until April of 1992. Then the Vibro drilling was phased out and the YBM were increased to three (3) units. Average drilling accomplishment runs to 65.72 meters per month from 1.89 meters per hour drilling rate.

2.2.1 RESERVES (MT in each Category)

Basis

1. The basis of ore reserve calculation is at the nickel cut-off grade of 2.00%.
2. Positive ore reserve based on 25 m. x 25 m. grid drilling and test pitting.
3. Probable ore reserve based on 50 m x 50 m. grid and 100 m. x 100 m. grid drilling and/or test pitting.
4. Possible ore reserve based on 300 m. x 300 m. grid and drilling, and/or test pitting.
5. Drill holes and test pits represent the unit area of 25 m. x 25 m., 50 m. x 50 m. and so on. Ore reserve calculation is made for each area. The sum of the reserve in these unit areas represents the total ore reserve.
6. The ore reserve calculation is based on the assay results of the Taganito Assay Laboratory.
7. The average Ni grade of the ore body is obtained as the integrated figure of the weighted average Ni grade of each unit area.

Mineral Resources (as of December 31, 2004)

I. MEASURED MINERAL RESOURCES AND ORE RESERVE

AREA	MEASURED RESOURCES			ORE RESERVE				
TAGA 1								
Ore Class	Volume	%Ni	%Fe	WMT	%Ni	%Fe	%H2O	DMT
LFO	488,019	2.18	12.89	731,296	1.96	14.06	31.00	504,594
HFO	160,781	2.20	28.20	240,931	1.96	22.61	32.00	163,833
H.O.	80,625	2.18	7.18	161,266	2.05	8.54	16.00	135,464
Total/Ave	**729,425**	**2.18**	**15.63**	**1,133,493**	**1.98**	**14.87**	**29.08**	**803,891**
LATERITE	1,058,300			1,585,863				
LIMONITE	794,256	1.49	43.05	1,190,193	1.49	43.05		
LGO	3,145,606	1.27	8.73	4,713,691	1.27	8.73		
TAGA 2								
Ore Class	Volume	%Ni	%Fe	WMT	%Ni	%Fe	%H2O	DMT
LFO	922,111	2.49	11.24	1,381,783	2.15	12.26	31.00	953,430
HFO	141,181	2.40	29.84	211,560	2.04	23.93	32.00	143,861
H.O.	456,683	2.38	7.12	913,457	2.24	8.47	16.00	767,304
Total/Ave	**1,519,975**	**2.45**	**11.73**	**2,506,800**	**2.18**	**11.60**	**25.62**	**1,864,595**
LATERITE	1,125,100			1,685,962				
LIMONITE	579,702	1.56	44.96	868,683	1.48	44.96		
LGO	3,001,936	1.13	7.54	4,498,400	1.07	7.53		
TAGA 3								
Ore Class	Volume	%Ni	%Fe	WMT	%Ni	%Fe	%H2O	DMT
LFO	554,181	2.29	11.30	830,441	2.07	12.33	31.00	573,004
HFO	130,038	2.23	32.70	194,861	1.99	26.22	32.00	132,506
H.O.	321,875	2.25	7.06	643,814	2.11	8.40	16.00	540,804
Total/Ave	**1,006,094**	**2.27**	**12.71**	**1,669,116**	**2.08**	**12.10**	**25.33**	**1,246,314**
LATERITE	1,853,863			4,111,210				
LIMONITE	2,452,263	1.45	47.28	3,674,715	1.45	47.31		
LGO	4,130,988	1.17	7.23	6,190,285	1.18	7.23		

CUT-OFF GRADE:

ORE CLASS	%Ni	%Ni	%Fe	%Fe
LFO	≥ 2.00		≥ 8.00	< 20.00
HFO	≥ 2.00		≥ 20.00	
H.O.	≥ 2.00		< 8.00	
LATERITE	< 1.20		≥ 20.00	
LIMONITE	≥ 1.20	< 2.00	≥ 20.00	
LGO	< 2.00		< 20.00	

NOTE: 1. Recovery factors applied here(Based on historical Taga-2 data)

%Ni	LFO	HFO	HO	OTHERS
MP-MY	0.92	0.95	1.00	1.00
MY-PY	0.98	0.94	0.94	1.00
%Fe	LFO	HFO	HO	OTHERS
MP-MY	1.08	0.81	1.00	1.00
MY-PY	1.01	0.99	1.19	1.00

2. Specific gravity used here as follows:

LFO	HFO	HO	OTHERS
1.11	1.11	1.46	1.11

3. Swell factor used here

LFO	HFO	HO	OTHERS
1.35	1.35	1.37	1.35

II.INDICATED MINERAL RESOURCES

AREA	INDICATED MINERAL RESOURCES		
CLASSIFICATION	IMR-1	IMR-2	IMR-3
Drilling Pattern	25x25m grid	50x50m grid 100x100m grid	300x300m grid
CAGDIANAO			
OB Vol.(cu.m.)	-	-	1,088,100.00
OB thickness (ave. m.)	-	-	12.10
Ore Vol. (cu.m.)	-	-	90,000.00
Ore thickness (ave. m.)	-	-	1.00
Average grade			
%Ni	-	-	2.26
%Fe	-	-	18.20
HAYANGGABON			
OB Vol.(cu.m.)	-	-	873,000.00
OB thickness (ave. m.)	-	-	9.70
Ore Vol. (cu.m.)	-	-	90,000.00
Ore thickness (ave. m.)	-	-	1.00
Average grade			
%Ni	-	-	2.26
%Fe	-	-	12.40
URBIZTONDO			
OB Vol.(cu.m.)	690,319.00	129,567.00	2,393,554.00
OB thickness (ave. m.)	12.70	13.80	9.10
Ore Vol. (cu.m.)	116,875.00	15,155.00	524,374.00
Ore thickness (ave. m.)	2.10	1.60	2.00
Average grade			
%Ni	2.15	2.11	2.17
%Fe	17.20	17.18	18.16
TAGA-1			
OB Vol.(cu.m.)	3,732,938.00	391,879.00	3,339,789.00
OB thickness (ave. m.)	7.30	6.70	6.70
Ore Vol. (cu.m.)	1,440,900.00	138,474.00	1,724,217.00
Ore thickness (ave. m.)	2.80	2.40	3.50
Average grade			
%Ni	2.20	2.19	2.25
%Fe	16.64	16.08	15.09
TAGA-2			
OB Vol.(cu.m.)	1,768,283.00	1,093,091.00	1,183,178.00
OB thickness (ave. m.)	4.75	5.00	5.70
Ore Vol. (cu.m.)	1,081,061.00	702,030.00	530,370.00
Ore thickness (ave. m.)	1.00	3.20	2.50
Average grade			
%Ni	2.35	2.34	2.56
%Fe	12.84	14.09	15.26

TAGA-3			
OB Vol.(cu.m.)	4,105,418.00	591,797.00	948,930.00
OB thickness (ave. m.)	7.90	8.00	6.30
Ore Vol. (cu.m.)	1,228,312.00	175,125.00	491,250.00
Ore thickness (ave. m.)	2.26	2.40	3.30
Average grade			
%Ni	2.23	2.22	2.34
%Fe	12.11	11.59	11.05
GRANDTOTAL			
OB Vol.(cu.m.)			
OB thickness (ave. m.)			
Ore Vol. (cu.m.)			
Ore thickness (ave. m.)			
Average grade			
%Ni			
%Fe			

2.2.2 AVERAGE GRADE OF ORE

Mineral Resources

Category	%Ni	%Fe
Positive	2.34	13.48
Probable	2.28	13.93
Possible	2.26	17.15

2.2.3 CUT – OFF GRADE

2.00 % Ni is the mining cut-off grade.

2.2.4 ESTIMATED MINE LIFE (YEARS)

The Project is based on a twenty-five (25) years mine plan.

2.2.5 POTENTIAL FOR ADDITIONAL ORE RESERVES

Portion of Taga - 1 and Urbiztondo ridge are with no drilling operation for 25 x 25 m grid interval and exploration area of 1,688 hectares are the potential area for the additional ore reserved. This requires detailed drilling operation to block and delineate the ore reserved area by 25 x 25 m interval.

2.3 Access / Transportation

2.3.1 ROAD

Barangay Taganito is located about 71 kms. Southeast of Surigao City and is accessible by means of RP-Japan highway up to Bad - as and then by coastal national road leading to Surigao del Sur. It takes approximately one hour and thirty minutes by jeep or by bus.

2.3.2 AIR ACCESS

Philippine Airlines maintains at least one flight from Manila to Butuan City daily and Asian Spirit one flight daily from Manila to Surigao City. Then in going to minesite, a company service pick-up is available.

2.3.3 SHIPPING

The company maintains a causeway as the loading point of the ore. TMC rented LCT for transporting the ore in going to the ore boat of approximately three kms. away from the causeway.

2.4 Utilities

2.4.1 POWER SUPPLY

Estimated Requirements (kilowatt-hr)

Supplier	Year 1	Year 2	Year 3
Purchase Power (SURNECO)	257,907	270,803	284,343

Estimated Supply Alternatives (kilowatt-hr)

Supplier	Year 1	Year 2	Year 3
Alternate Source (Genset # 11,14)	456,326	501,958	552,153

2.4.2 POWER CONSUMPTION

Projected Power Consumption computed @ 12 hrs. per day

	Year 1	Year 2	Year 3
Power consumed (kilowatt-hr)	714,233	772,761	836,496

2.4.3 WATER SUPPLY

Projected Water Consumption Per Day

	Year 1	Year 2	Year 3
Consumption (gal./day)	69,725	90,643	117,836

Assuming Eight Hours Of Usage Per Day

	Year 1	Year 2	Year 3
Consumption (gal./min.)	146	190	247

2.5 Mining Equipment

2.5.1 LIST OF MOBILE AND FIXED EQUIPMENT FOR DEVELOPMENT AND CONSTRUCTION

ITEM	MODEL/SPECIFICATION	QUANTITY
1. AIR COMPRESSOR	FUJI OU-5 1 X 2 FUJI OU-10 1 X 4 SWAN VP-23 FUJI E-5 INGERSOLL-RAND	1 unit 1 unit 1 unit 1 unit 2 units
2.GENERATING SET	CAT 3306 YANMAR YDG KOM EG125B-2 KOM EGS300-3 KOM EG300	1 unit 2 units 1 unit 1 unit 1 unit
3. CHAIN SAW	STIHL 070	1 unit
4. CONCRETE MIXER		1 unit
5. LAWN MOWER	BRIGGS & STRATTON	1 unit
6. WATER PUMP	ROBIN PTD KIRLOSKAR	4 units 2 units
7. WATER CLEANER	KYC-300E11TA-5H	2 units

2.5.2 LIST OF MOBILE AND FIXED EQUIPMENT FOR MINING

PRODUCTION EQUIPMENT

ITEM	MODEL/SPECIFICATION	QUANTITY
1. DUMP TRUCK	ISUZU DXZ ISUZU CXZ81KT ISUZU CXZ81KV ISUZU CXZ81KX VOLVO FM 10 IVECO MP260E37H VOLVO FM 9	7 units 25 units 8 units 5 units 6 units 8 units 11 units
2.HYD. EXCAVATOR (Backhoe)	KOMATSU PC200LC-6 KOMATSU PC200LC-7	15 units 2 units
3. WHEEL LOADER	KOMATSU WA 470-3A KOMATSU WA 470-3 KOMATSU WA 470-5	5 units 2 units 2 units
4. TRACK LOADER	KOMATSU D75S-5	5 units
5. BULLDOZER	KOMATSU D85E-21	7 units

MAINTENANCE EQUIPMENT

ITEM	MODEL/SPECIFICATION	QUANTITY
1. ROAD GRADER	GD511A-1	4 units
2. FUEL LORRY	ISUZU NKR57- 2,000 Li. cap. ISUZU CXZ281QT-16,000Li cap. ISUZU CXM7IP -16,000Li cap.	1 unit 1 unit 1 unit
3.MAINTENANCE TRUCK (LUBE TRUCK)	ISUZU NKR57 ISUZU NKR58EV ISUZU DXZ	1 unit 1 unit 1 unit
4. WATER TRUCK LORRY	ISUZU DXZ-3,140 gal. cap. ISUZU CXZ	4 units 3 units
5. MINI WHEEL LOADER	KOMATSU WA 30-5E	2 units
6. WHEEL EXCAVATOR	SAMSUNG SE130W-2	1 unit
7. WATER TANK TRAILER	300 gallon capacity	25 units
8. TRAILER		5 units
9. VIBROMAX	VIBROMAX W-1103D	1 unit

ACCESSORY EQUIPMENT (Used for excavator)

ITEM	MODEL/SPECIFICATION	QUANTITY
1. POLYP BUCKET ACCESSORIES	MARUJUN PB 705	1 unit
2. KRUPP HYDRAULIC HAMMER	KRUPP HM712	1 unit
3. SUPER LONG FRONT BOMM(50ft.)	JSLF 20L50 KOMATSU	1 unit

SERVICE EQUIPMENT

ITEM	MODEL/SPECIFICATION	QUANTITY
1. SERVICE PICK-UP	KIA CERES MITSUBISHI L200 NISSAN PATHFINDER NISSAN PATHFINDER Eagle NISSAN CABSTAR KIA KC 2700 FORD RANGER XLT NISSAN FRONTIER TOYOTA Hi ACE VAN	5 units 1 unit 1 unit 2 units 1 unit 11 units 1 unit 3 units 1 unit
2. SERVICE TRUCKS	ISUZU NKR57 w/ crane-2 TONS ISUZUF SR 33 HT	1 unit 1 unit
3. SERVICE BUS	SHUTLE BUS Mdified ISUZU DXZ ISUZU FTR	3 units 3 units 1 unit
4. FARM TRACTOR	KUBOTA M4030DT KUBOTA L4200 KUBOTA L4310 KUBOTA L4630DT	2 units 2 units 1 unit 2 units
5. PUMPBOATS	BRIGGS & STRATTON HONDA MITSUBISHI 80C-90A MITSUBISHI 6D14-0A	2 units 2 units 1 unit

DRILLING EQUIPMENT

ITEM	MODEL/SPECIFICATION	QUANTITY
1. YOSHIDA BORING MACHINE	YBM YSO-IH YBM-IWA YBM-YHP-I	3 units 4 units 33 units

2.5.3 LIST OF MOBILE AND FIXED EQUIPMENT FOR MINERAL PROCESSING

Not Applicable for TMC Mine Operation

2.6 Workforce Information

2.6.1 TOTAL OPERATIONAL WORKFORCE

The number of workforce requirement of TMC depends on the production schedule. Basically, the mining operation is done only during dry weather condition (mid-April - Sept.) and stripping is being undertaken even the wet season (Oct. - mid-April).

During production period additional hiring of seasonal employee as drivers, operators, and other utility position. And during shipment schedule additional hiring of barge maintenance personnel.

2.6.2 STAFF ORGANIZATIONAL SET-UP

TAGANITO MINING CORPORATION
Taganito, Claver, Surigao del Norte

ORGANIZATIONAL CHART

RESIDENT MINE MANAGER
ARMANDO P. PEREDA

SENIOR STAFF

- MINE SUPERINTENDENT — HONORIO F. de LEON
- MECHANICAL SUPERINTENDENT — ROMEO L. PINABACDAO
- ENVIRONMENTAL MANAGER — ROGELIO G. CADANO
- CHIEF CHEMIST — VIRGINIA R. HILARIO

JUNIOR STAFF

- OFFICE OF THE MANAGER SECTION
- ADMIN/PERSONNEL SECTION — R. A. LANDERO
- STRIPPING/MINING/ORE HAULING SECTION — G. N. ABABAO, JR./ E.G.PAGLINAWAN
- GRADE CONTROL/ ENGINEERING/ SURVEY SECTION — A. F. VALEROSO
- GENERAL REPAIR SECTION — C. T. CASINDAC
- PREV. MAINT/POWER ELECT OIC
- GEOLOGY SECTION — R. G. CADANO
- ENVIRONMENTAL SECTION — R. G. CADANO
- ACCOUNTING SECTION — OIC
- WAREHOUSE SECTION — A. F. PAJARILLO
- ASST. CHIEF CHEMIST — N. D. TIRO

	OFFICE OF THE MANAGER SECTION	ADMIN/PERSONNEL SECTION	STRIPPING/MINING/ORE HAULING SECTION	GENERAL REPAIR SECTION	GEOLOGY SECTION	ENVIRONMENTAL SECTION	ACCOUNTING SECTION	WAREHOUSE SECTION	ASST. CHIEF CHEMIST
JUNIOR STAFF	Cashier 1								
KEYMAN SUPERVISOR	Safety Engr. 1 Supervising Safety Inspector 1 Surigao Liaison Officer 1	R. S. GABELIGNO - Supervising Camp 1 Maintenance Personnel Officer 1	Mine Foreman 2 Mine Planning Engineer 1 Mine Supervisor 11 Geodetic Engineer 1	OIC PM Section 1 Repair Supervisor 4 PM Supervisor 2 P/E Supervisor 1	Foreman 1 Drilling Superv. 1	Agriculturist 1		F. M. MORALES - 1 Warehouseman	
TECHNICAL	RMM / JTA-Secretary 2 Nurse 1 Radio Operator 1 Safety Inspector 1 Com. Relation Off. 1	Jr.Civil Engineer 1 Document Costn. 1	Draftsman 1 Computer-Programmer/Optr. 1	Mechanical Engr. Trainee 1	Jr. Geologist 4	ICE Officer 1 Pollution Control Off. 1 Rafo. Supervisor 1 Marine Biologist 1	Sr. Bookeeper 1 Jr. Bookeeper 1 Computer Operator 1 Payroll Incharge 1		Chemist T3 1 Jr. Chemist T2 2 Jr. Chemist T1 1 Supervisor 1
CLERICAL	Radio Optr./Clerk 1 Safety Clerk 1	Personnel Clerk Typist 3	Statistician 2 Mine Clerk 1 Drafting Aide 1	Equipt. History Clerk / Typist 1	Clerk / Typist 1	Envi Clerk 1	Posting/Costing Clerk 1 Acctg. Clerk 2 Inventory Clerk 1	Clerk,Office 1 Posting/Costing Clerk 1 Invty. Control Clerk 1 Issuing/Receiving Clerk-II 2 Issuing/Receiving Clerk-I 1	
RANK & FILE	Service Driver 1 Painter 1	Carpenter 2 Engineman 2 Gate Checker 3 PB Patron 2 Seaman / Utility 1 SBDriver/Service 3 Janitor / Utility 3 Ambulance Driver 2 Draftsman 1	H.E. Operator 37 Instrumentman 2 D.T. Driver 8 Sampler / Spotter 4 Survey Aide 1 Truck Dispatcher 1	Mechanic "A" 3 Mechanic "B" 2 Mechanic "C" 7 Auto Electrician "A" 1 Auto Electrician "B" 1 Auto Electrician "C" 3 Welder "A" 1 Welder "B" 1 Welder "C" 1 Lubeman "A" 1 Lubeman "B" 4 Genset Tender Electrician 2 Tinsmen 3 Machinist 1 Parts Expediter/Toolkeeper 1 Aircon Technician 1	YBM Operator 7 FTR Driver 3 CT Operator 1	Nursery Aide 1		Fuel Lorry Driver 1 Service Truck Driver 1	Sample Prep Leadman 1 Grinder Operator 2 Laboratory Aide 3 Sample Prep. Aid 1
Total Workforce	15	29	78	45	18	8	9	10	14
Over-all Total Work Force		226							

2.6.3 HOUSING OPTIONS (camp, neighboring communities, new town)

Since, the mine site is located within the Barangay of Taganito providing a housing facility to all employees is not necessary. Monthly employees were from the neighboring Barangay that has their own houses. And some employees are renting a room from the Barangay.

For staff and technical employee are provided by the company with dorm. At present inside the camp, TMC constructed the following as listed below:

Camp Houses

1. Senior Staff house 1
2. Senior Staff house 2
3. Junior Staff house
4. Engineers Quarter 1
5. Engineers Quarter 2
6. Ladies Dormitory
7. OJT's Dormitory

Office Buildings

1. General Office w/ extension
2. Mine Office/Geology-Environmental Office
3. Safety Office/Health Clinic
4. Warehouse Building w/ extension 1, 2 & 3
5. Assay Laboratory Building w/ extension
6. Sample Preparation House w/ extension
7. Mechanical Office 1 & 2
8. Repair Shop Office
9. Mining Assembly Building
10. Sea craft & Carpentry Shop

Recreational Buildings and Facilities

1. Multi-purpose/Tennis Court
2. White Sand Beach
3. Badminton/Volleyball Court

Other Facilities

1. Power House 1
2. Power House 2
3. Cooperative House
4. Repair Bay
5. Mechanical Shop
6. Conference Room
7. Brainstorming Room

2.7 Development Programs

2.7.1 MINESITE DEVELOPMENT AND CONSTRUCTION

In preparation for the mining operation, the following activities will be undertaken:

1. Advance detailed drilling at 25 x 25 m grid interval shall be undertaken for positive ore reserve calculation. The drilling shall be undertaken down to the bed rock. The geologic horizon has varying grade of nickel, cobalt, iron, and magnesium for every depth of the deposit, such that samples from the boreholes shall be collected at every one (1) meter interval for nickel, cobalt, and iron analysis, and some other mineral analysis areas per required. Valuable geologic information was gathered from the borehole samples for mineable volume computation and it serve as the basis for pit design.
2. The layout and clearing of the area scheduled for stripping. These will involve dozing of under bush to approximately ground level, removal of all organic matter where the material will not obstruct the natural drainage courses.
3. The construction of main and secondary mines and haul roads to the different mining faces. These roads will be compacted preparatory and regularly maintained for the safety of all hauling equipment. The road will be maintained by spraying water for dust suppression, and these will be constantly graded to maintain the crown of the road so that the surface is self draining.

2.7.2 DESCRIPTION OF PLANNED ACTIVITIES

Activities during the Pre – mining Phase

Mine planning

Mine planning involves the formulation of a mining schedule, pit design, production forecast, grade control and tonnage volume calculation. Detailed drilling to the total mining claim is on progress to delineate addition ore reserve potential. The ore deposit has been mapped by 300 x 300 m, 100 x 100 m, and 25 x 25 m grid interval for mine block delineation. Base from our cut - off grade of 2% Ni, extracted ore tonnage is computed. Blending requirement to ship the ore are being given by PAMCO with acceptable grade of 2.4% Ni.

Topographic Survey

Before opening the TMC pit area, the reference is came from the municipal of Claver. The survey team establishes accurate triangulation and stadia points for the purpose of accurate drilling location, elevation, and accurate stock volume.

Mine Equipment and Asset Protection

All the TMC vehicular units are being registered for insurance claim, just in case the unit is being damage by natural or artificial.

Mine Rehabilitation Planning

As required by the Philippine Mining Act, TMC already undertake experimental for the different plant species utilize for mine rehabilitation project. Field trial as of this moment can be observed to determine the suitability of certain species for the reforestation and re-vegetation of the mine-out areas. The nursery is being restored and expanded to cope-up the plant needed for the progressive rehabilitation plan integrated with the mine scheduling.

Stripping of Overburden

Stripping of overburden will take five (5) months prior to commencement of ore mining operation.

Siltation Control and Re-vegetation

These activities are on progress. Reforestation / Re-vegetation cover in the form of shelterbelts and natural terracing are established along the slope of laterite stockyard and eroded contour area. Bands of rows of trees and grasses (Agoho, Acacia Mangium, Bermuda grasses, vetevir and other endemic grasses) have been planted to form natural terraces in order to minimize and control soil erosion.

Activities during Production Phase

The production phase will take five (6) months (May - October) to complete the target volume of the year. The major activities to be conducted during this timetable are described in the succeeding phase.

Stripping operation

This is the first stage of operation wherein the overburden (laterite) is stripped-out until the striping limit is reached.

Standard Operating Procedures:

1. The pit area is first cleared of its vegetational remnants using bulldozers or chainsaw if tall and big trees are encountered.
2. The area is surveyed based on the pit design with staking on the corners of the pit and to proposed benches. Stakes are pegged at 3 meters interval with elevation indicated on it. This serves as guide to operators during bench forming.
3. Prior to bench forming, access roads are constructed within or outside the stripping limit.
4. During bench forming, overburden is pushes in between benches are formed accessible by dump trucks.
5. At this point, laterite is directly excavated, loaded and hauled to laterite stockyards. Equipment to be use is track loaders, backhoes, and dump trucks.

6. Dump trucks are assigned in proportion to loaders for a normal cycle time considering road conditions and distance of the laterite stockyard.
7. Designate access road to load dump trucks and to empty dump trucks for the smooth and safety flow of operation.
8. When ore is encountered during stripping, this must be considered "Ore form stripping". This is then excavated, loaded and hauled to mineyards. The bench face must be sampled to determine the Ni and Fe content of the ore. After which a stake is again pegged for the assay result. Ribbons of different colors are tied on these stakes classifying the ore material.
9. Samplers / spotters must be aware of the sources of ore in the mine yards. Indication in the stakes pegged on the stockpile should be clear for monitoring purposes.
10. When boulders are also encountered in the pit, loaders and boulder trucks are assigned to load and haul these raw hard ores to dumping areas. High-grade raw hard ore must be hauled to mine yard or breaking areas while low-grade boulders are directly hauled to environmental project sites. This to decongest the pit area from scattered boulders and for easy maintenance of the pit.
11. In the laterite stockyards, there must be a spotter assigned for safety dumping of hauling trucks. Support equipment such as bulldozer or wheel loader is also necessary to pushed laterite for proper banking and stabilization of the laterite stockyard.
12. In the pit area, elevation of benches should be properly monitored. It is usually surveyed to determine undercut and over cut. In this case, a road grader is necessary to degrade or elevate the bench flooring. Clear instruction to operators prior to operation is also essential.
13. Stripping scheme continuous until the stripping limit is reached ready for mining.
14. Compute stripping-out volume using standard truck factor 10.0 cu.m. per DT for soft ore and laterite, 6.00 cu.m. per DT for boulders.
15. Stripping operation is usually done during rainy months while mining is confined to dry months. Safety should always be prioritized to obtain maximum production without accident.

Soft Ore Mining Operation

This is a phase of operation in mining wherein soft ore is obtained or extracted after exposure from stripping operation.

Standard Operating Procedures:

1. Prepare the area for mining operation. Road grades the access roads from mine pit the different stockyards.
2. Plan for equipment distributions considering safety, capacity of loaders and dump trucks, access roads and distance of stockyards.
3. Consider also personnel distribution such as samplers and spotters to different areas including sampling materials, record field books, tags and etc. for proper recording and monitoring.
4. Loader operators, DT drivers, sampler and spotter must be briefed regarding horn signals, color coding dumping areas of each materials and other parameters essential to mining operation.

5. Prior to excavation, checked the result of face sampling and also the ribbons tied on the stakes pegged on the bench's face. This will serve as guide to operators during segregation.
6. Whenever dump trucks is loaded, the loader operator should give a horn signal to the DT driver as to what classification of the loaded material, so in return the DT driver responses with the same number of horn signal as sing of compromise.
7. Upon reaching the ore stockyard, DT driver again should blow his horn to inform the sampler / spotter as to what classification of the loaded material. The sampler / spotter record the number of trips and take increment sample on the pile.
8. After new bench face is formed. Face sample through channel sampling in taken at interval to determine Ni and Fe values. Ribbons are then tied to stake indicating the ore class.
9. During the span of the soft ore mining operation, elevation of benches is monitored to determine whether it is undercut or overcut . A 3 meter bench height is maintained for safety and quality control.
10. In the mine yards, one pile must consist of ten (10) dump trucks load equivalent to 100 cu.m.
11. Mine yard stockpiling should be frequently monitored, checking sample numbers, sampling method, delivery of samples, record field books and etc. This to avoid discrepancies that may occur during the operation.
12. Boulder encountered during mining are hauled by boulder truck to their respective dumping areas. High-grade raw hard ores are hauled to breaking areas and low-grade raw hard ores in environmental projects.
13. Laterite encountered during mining is called the "laterite from mining" which is hauled and dump to laterite stockyards.
14. In computing for the mining volume, same truck factor is used in stripping.
15. Soft ore mining is usually done in dry months from April to October or depends on production schedule.

Hard Ore Mining

This operation in mining us refers principally to the production of hard ore from mine pits; Hand picking in laterite stockyards or mineyard, screening of transferred materials in mineyards and in pieryards. This also includes production of low-grade hard ore, which is utilized in environmental projects.

Standard Operating Procedures:

1. Prepare he pit area for hard ore mining. Include also preparation of equipment to be use such as bulldozers, backhoe and boulder trucks.
2. Hard ore boulder present in mine pit as "floats" are gathered and sampled at random. After the assay results, the high-grade boulders are hauled to breaking area for size reduction while the low-grade hard ore are directly hauled to environmental project sites.
3. In breaking area, preliminary size reduction must be done using hydraulic breaker. Contractors will sort out low-grade fragments from high-grade that are further reduced to shippable size at 75 mm. These are crushed using sledgehammers. Crushed ore are again sampled during scaling then hauled to pier stockyards.

Ore Loading / Ore Shipment

This is the last stage of operation where beneficiated nickel silicate ore is loaded to ore vessel then directly shipped-out to Hachinohe, Japan for metallurgical processing.

Standard Operating Procedures:

1. Based on buyer's specification, prepare the ore mixing ratio or the ore blending considering pieryard ending inventory. This will be the basis for quantity and quality of ore to be loaded.
2. Prepare necessary materials such as sampling materials, recording sheets, shovel for barge maintenance, and canvass sheets for covering and uncovering the loaded materials in the LCT.
3. Distribute loading personnel to different areas of work such as pieryard stockpiles covering and uncovering, barge maintenance, traffic aides (highway, in and out of LCT), samplers and recorders.
4. Assign proportionately loaders and hauling units for soft ore and crushed ore material considering number of trip to be loaded, distance of stockpiles from causeway and condition access roads. This is for the normal cycle time of loading.
5. Prior to loading, inspect and check the surroundings of ore stockpiles to be loaded. Check presence of foreign objects such as scrap irons, tin sheets, cans, woods and etc. to avoid mixture in the ore. Include also flooring of barges prior to dumping and clear it from foreign materials.
6. Anticipate and plan for a smooth flow of traffic. Designate routes for loaded dump truck and for empty dump trucks.
7. During the process of loading, sampling procedures must be strictly observed to attain quality requirements. Soft ore should be separated from crushed ore during sampling. Truck sampling is done every trip and it is taken at the center of the dump trucks. This are called "Shipping Samples".
8. For maximum loading in the barge, a wheel loader should be assigned to push and mount the loaded ore.
9. In times of rain, loading is temporarily stopped and the pieryards ore stockpiles and ore loaded in LCT are covered with canvass sheets to minimize increase of moisture.
10. When LCT is loaded the cargo must be covered with canvass sheet to protect it from rain during navigation. A number of five (5) persons must be assign on board to cover and uncover the cargo upon ship siding in the vessel. However, during fine weather, this system is not applied.
11. In the ore vessel, mining personnel are necessary to monitor particularly cycle time of loading of each barge, ship's hatch to be loaded, the position of LCT when it ship side, assists in protection of cargo loaded from rain by coordinating with the vessel's crew and with the barge crew, communication between the pier side, and the boat side must be maintained for systemic loading.
12. Ore loading continues considering all precaution until its completion.
13. When loading is finished LCT should be cleaned. Dead loads or back loads in barges must be hauled back to pieryard stockpile. Likewise, Stockpiles must be reshaped using backhoe or loaders then covered with canvass sheets for beneficiation activities.

2.7.3 TARGETED SITES / AREAS SHOWING THE PLANNED DEVELOPMENT SITES AND OTHER FACILITIES

(See figure 21)

2.7.4 SCHEDULE OF ACTIVITIES AND COST ESTIMATES (X P1,000)

Field Activities	Year 1	Year 2	Year 3	TOTAL
Stripping	45,816.40	47,190.89	48,606.62	141,613.91
Soft Ore Mining	17,700.70	18,231.72	18,778.67	54,711.09
Hard Ore Mining (PAMCO)	13,395.20	13,797.06	14,210.97	41,403.23
Hard Ore Mining (QNI)	2,227.60	2,294.43	2,363.26	6,885.29
Ore Hauling (PAMCO)	13,798.50	14,212.46	14,638.83	42,649.79
Ore Hauling (QNI)	6,366.20	6,557.19	6,753.91	19,677.30
Transferring	4,862.40	5,008.27	5,158.52	15,029.19
Survey	1,955.60	2,014.27	2,074.70	6,044.57
Drilling/Exploration	12,698.70	13,079.66	13,472.05	39,250.41
Total	122,512.00	126,187.37	129,972.99	378,672.36

2.8 Production Program and Cost Estimates

2.8.1 MINE OPERATING COST SUMMARY

Production Cost (X P1,000)

	Year 1	Year 2	Year 3	TOTAL
MINING COST				
Mine General	12,720.40	13,102.01	13,495.07	39,317.48
Stripping	45,816.40	47,190.89	48,606.62	141,613.91
Soft Ore	17,700.70	18,231.72	18,778.67	54,711.09
Hard Ore	15,622.80	16,091.49	16,574.23	48,288.52
Ore Hauling	20,164.70	20,769.65	21,392.74	62,327.09
Transferring	4,862.40	5,008.27	5,158.52	15,029.19
Survey	1,955.60	2,014.27	2,074.70	6,044.57
Drilling Operation	12,698.70	13,079.66	13,472.05	39,250.41
Total	135,232.40	139,289.38	143,468.06	417,989.84
MINE OVERHEAD COST				
Geology	1,698.60	1,749.56	1,802.05	5,250.21
Mechanical General	2,730.10	2,812.00	2,896.36	8,438.46
Assay Laboratory	800.40	824.41	849.14	2,473.95
Total	5,229.10	5,385.97	5,547.55	16,162.62

	Year 1	Year 2	Year 3	TOTAL
MANAGEMENT COST				
Accounting / Warehouse	8,496.80	8,751.70	9,014.25	26,262.75
Personnel / Admin.	36,947.30	38,055.72	39,197.39	114,200.41
ORMM / JTA	47,273.40	48,691.60	50,152.35	146,117.35
Total	92,717.50	95,499.02	98,363.99	286,580.51
OTHER EXPENSES				
Depreciation	30,802.27	31,726.34	32,678.13	95,206.74
Grand-total (P)	263,981.27	271,900.71	280,057.73	815,939.71

Marketing Expenses (X P1,000)

	Year 1	Year 2	Year 3	TOTAL
Ore Loading/Shipping	51,367.90	52,908.94	54,496.21	158,773.05
Depreciation	5,338.81	5,498.97	5,663.94	16,501.72
Total	56,706.71	58,407.91	60,160.15	175,274.77

2.8.2 COST ELEMENT SUMMARY (X P 1,000)

	Year 1	Year 2	Year 3	TOTAL
Personnel Cost	86,085.60	88,668.17	91,328.22	266,081.99
Contract Fees	42,597.10	43,875.01	45,191.26	131,663.37
Gen. Materials & Supplies	2,033.40	2,094.40	2,157.23	6,285.03
F.O.L.	63,329.30	65,229.18	67,186.06	195,744.54
Repair Parts	44,165.70	45,490.67	46,855.39	136,511.76
Tires	13,462.30	13,866.17	14,282.16	41,610.63
Operating Materials	13,877.70	14,294.03	14,722.85	42,894.58
Gen. Expenses	18,995.80	19,565.67	20,152.64	58,714.11
Depr'n/Depl'n/Amort.	36,141.08	37,225.31	38,342.07	111,708.46
Total Mine Operating Cost	320,687.98	330,308.61	340,217.88	991,214.47

COMMUNITY DEVELOPMENT PROGRAMS AND STIMATED TOTAL COST

3.1 Social Dev't and Management Program for Year 1 to Year 3

M/ PROJECT/ TIES (P/P/A)	SPECIFIC ACTIVITY	STAKEHOLDERS INVOLVED	LOCATION	PROJECT COST	TIME FRAME	EXPECTED RESULTS	REMARKS
AIGNS							
n Generation	- Regular distribution of newsletters to all stakeholders - Reproduction of flyers/brochures - Intensive campaign on mine-related operations	CTWG MC LGAs	Mining Community	180,000.00	Year 1 to Year 3	- Community-wide updates and information dissemination.	- Distributed quarterly.
ormation	- Purchase of ICE campaign support facilities - Participation to exhibits	MC TMC ICE-CD		30,000.00	Year 1 to Year 3	- Proper Info. dissemination. - Participation to various exhibiting events.	- Audio-video facilities, billboards & posters.
& Training	- Participation of Seminar workshops related to community developments (esp. Value Formations) conducted by different agencies. - Conduct of Seminars/workshops for the mining community constituents.	MC TMC ICE-CD LGAs CTWG		90,000.00	Year 1 to Year 3	- Additional technical inputs for strategic CO approach. - Empowerment for the constituents.	- Training proposals to be prepared by ICEO.
Building	- Conduct of capability building & trainer's training for CTWG members.	CTWG MGB-XIII		30,000.00	Year 1 to Year 3	- Capability enhancement for the participants.	- Intended for PO facilitated by CTWG
ulong/Ugnayan	- Orientation: Overview on the Provisions of RA 7942 - Presentation of P/P/As and expenses incurred from the 1% DMC fund to the MC	CTWG		30,000.00	Year 1 to Year 3	- Awareness & transparency on 1% DMMC operations.	- Regularly conducted
ions/Meetings	- Conduct of regular consultations/meeting with the leaders & constituents.	CTWG		18,000.00	Year 1 to Year 3	- Transparency in SDMP undertakings.	- Proactive assessment of the MC.
etings	- Conduct of regular monthly meetings - Spearhead SDMP implementations	CTWG		180,000.00	Year 1 to Year 3	- Regular monitoring of SDMP projects.	- Regularly conducted
Sanitation	- Conduct of Seminar on Nutrition Education & Environmental sanitation.	CTWG, MHO		30,000.00	Year 1 to Year 3	- Sustained campaign on Health & sanitation matters.	- For implementation
ental s Campaign	- Participation to environmental celebrations on Clean and green campaign through inter-Barangay contest.	CTWG, MHO		46,841.94	Year 1 to Year 3	- Environmental Stewardship	- To be coordinated with the DENR for the schedules.
				634,841.94			

M/ PROJECT/ TIES (P/P/A)	SPECIFIC ACTIVITY	STAKEHOLDERS INVOLVED	LOCATION	PROJECT COST	TIME FRAME	EXPECTED RESULTS	REMARKS
OD ASSISTANCE PROGRAM							
Resource Development							
ng & HE ting Skills ng	- Tap Line Agencies for technical support in the conduct of skills training such as driving DTs, operating Heavy Equipment and others for employment purposes.	CTWG TESDA CTEC TMC	Taganito Urbiztondo Hayanggabon	264,000.00	Year 1 to Year 3	- Enhancement of skills of the local residents/ job generation.	- Participants will be recommended by respective Barangays/ community.
munity Based Enhancement ng	- Request trainors from TESDA, DOLE & DTI - Conduct of the training A technical expert will conduct skills training on cosmetology & candle making. Livelihood Materials/ Equipment assistance to skills trainees	CTWG TESDA NGOs DTI POs & Proponent	Skills Training Center	264,000.00	Year 1 to Year 3	- Skills enhancement for proponent POs	- Training proposals to be facilitated by ICEO.
ect Proposal rations	- Hire an expert to assist in the preparation of project proposals. - Conduct of project proposal workshops	CTWG	Community Proponents	30,000.00	Year 1 to Year 3	- Enhancement of proponents' capacity in proposal preparations.	- To be conducted to proponents/POs.
				558,000.00			
OOD PROJECTS							
O LIVELIHOOD PROJECTS							
ihood projects	- Launching of various Livelihood projects to qualified proponents.	CTWG, MRFC , BLGU, Proponents	Taganito	1,253,084.41	Year 1 to Year 3	- Proper assessment & implementation of launched livelihood projects.	- Implementations will be based on the approved proposals.
				1,253,084.41			
GABON LIVELIHOOD PROJECTS							
lihood Projects	- Implementations of various livelihood projects.	CTWG, MRFC, BLGU, Proponents	Hayanggabon	384,466.07	Year 1 to Year 3	- Proper Launching of feasible Livelihood projects.	- Implementations will be based on the approved proposals.
	- Poultry Production (Kaber, Broiler, Native Chicken)	Farmers, CTWG/MRFC	Hayanggabon	30,000.00	Year 2	- Help add'l income to the family.	- To be coordinated with a PO
	- Vulcanizing shop	Farmers, CTWG/MRFC	Hayanggabon	87,097.55	Year 1	- Help add'l income to the family.	
				501,563.62			

AM/ PROJECT/ ITIES (P/P/A)	SPECIFIC ACTIVITY	STAKEHOLDERS INVOLVED	LOCATION	PROJECT COST	TIME FRAME	EXPECTED RESULTS	REMARKS
ONDO LIVELIHOOD PROJECTS							
elihood Projects	- Implementation of various livelihood projects (Small scale industries such as fish vending/hog feeds dealing, bigasang bayan)	CTWG MRFC Proponents	Urbiztondo	54,411.12	Year 1 to Year 3	- Proper assessment & implementation of launched livelihood projects.	PO's Proposals for evaluation by CTWG
Sanctuary tion	- Restoration/rehabilitation of the existing marine sanctuary in the area.	CTWG, PO, BLGU	Urbiztondo	60,000.00	Year 1 to Year 3	- Protection of the marine habitat	For implementation
ased Industries	- Garments making	RIC Farmers DTI	Urbiztondo	67,097.55	Year 1	- To help rural women make busy by sewing garments & additional income.	- To be coordinated with a Women's group in the Brgy.
lture	- Fish cage, Abalone & crab fattening.	Fishermen	Urbiztondo	72,577.43	Year 2	- Alternative income generating project for fisherfolks affected by the established Marine Sanctuary.	To be coordinated with a PO
zing Shop	- Putting up of a vulcanizing shop.	Farmers, CTWG/MRFC	Urbiztondo	48,331.30	Year 3	- Established shop.	
Production	- Production of Poultry varieties of Kaber, Broiler and Native Chicken.	Farmers, CTWG/MRFC	Urbiztondo	30,000.00	Year 3	- Help additional income to the family.	- To be coordinated with the farmer's group.
				332,417.40			
UNITY LIVELIHOOD PROJECTS							
lihood projects	- Implementation of various livelihood projects.	CTWG, NCIP, IP Community Coop.	IP Community	93,400.96	Year 1 to Year 3	- Income generating projects.	- To be supported with feasible projects.
ntation of tive Store	- Construction of store/buildings (light materials). - Purchase of goods for cooperative store.	CTWG, NCIP, CDA IP Community Coop.	IP Community	50,000.00	Year 1	- To provide additional income to IPs wives.	- Sixth priority
n of OYAN	- Land preparation, procurement of abaca suckers & falcata seedlings.	IP Community, NCIP, LGU, MAO	Daging, Andupanon	84,905.60	Year 3	- Mass production of Abaca & falcata trees.	- Economic upliftment of IPs - It should be monitored by NCIP, LGU, CTWG & CRO
e Production	- Land preparation - Procurement of seeds/seedlings	IP Community	IP Community	24,920.04	Year 1	- Provide additional income/ livelihood to IPs. - Maximize the utilization of land thru intercropping on banana farms.	- Second priority
s & Pineapple n	- Identification of location, procurement of planting materials.	IP Community	Daging Andupanon	39,791.05	Year 2	- Provide additional income to IPs.	- Supervision of project will be conducted by CTWG, LGU, NCIP
ng	- Construction of pig sites. - Construction of Water system for the sites. - Purchase of piglets, feeds & medicines.	IP Community	IP Community	40,000.00	Year 2	- Provide the additional income of IPs wives/women's sector	- Supervision of this project will be conducted by the CTWG, LGU & NCIP.
				333,017.65			

M/ PROJECT/ TIES (P/P/A)	SPECIFIC ACTIVITY	STAKEHOLDERS INVOLVED	LOCATION	PROJECT COST	TIME FRAME	EXPECTED RESULTS	REMARKS
RVICES FOR TAGANITO							
AL ASSISTANCE							
s	- Fill in community need for teachers (elem. & high school).	CTWG, DepEd , TNHS & TES, PTCAs	Taganito	864,000.00	Year 1 to Year 3	- Supports govt's thrust of quality education. - Three (3) unemployed eligible teachers will be paid with Php8, 000/month.	- To be coordinated with DEPeD for possible & permanent budget extension after the plan
Painting	- Assistance in the painting of School Buildings' outside walling.	CTWG, DEPeD, TES & TNHS PTCAs	Taganito Elem. School & TNHS	20,000.00	Year 1	- Improvement of the physical well-being of the school.	- Beautification project of the school, in preparation of the incoming Evaluation.
er Fence	- Front Perimeter Fence repair & installation of cyclone wire & accessories.	CTWG , DEPeD, TES PTCA	TES	40,000.00	Year 3	- Enclosure of TES.	- With counterpart from school.
er	- Purchase of computers (1 for TES & 6 sets for TNHS).	CTWG , DEPeD, TES & TNHS PTCAs	Taganito Elem. School & TNHS	142,500.00	Year 1 to Year 3	- Education of pupils/students & for reportorial requirements of the school.	- Maintenance of the unit will be handled by the school. - With counterpart from other agencies.
Pathway	- Concrete pavement/pathway	CTWG , DEPeD, TES PTCA	TES	20,000.00	Year 1	- Completed	- With counterpart from school
Library for TES	- Improvement of TES school Library.	CTWG , DEPeD, TES PTCA	TES	20,000.00	Year 2	- Well-established school library (i.e. bookshelves, etc)	- With counterpart from school
Library for	- Assistance in the construction of School Library	CTWG , DEPeD, TNHS PTCA	TNHS	70,000.00	Year 3	- In-place library.	- Donation of books may be solicited.
SSISTANCE							
e	- Hiring of a midwife to offer free medical services to the Barangay constituents.	CTWG Taganito Council	Taganito	288,000.00	Year 1 to Year 3	- Employment of 1 midwife, free medical services within the midwife's capability.	- Coordination with DOH for permanent budget.
d Medicines	- Purchase of assorted medicines for community consumption	CTWG, BLGU, Midwife & local residents	Taganito	60,000.00	Year 1 to Year 3	- Availability of over the counter medicines @ clinic.	- To be given to indigent families
ence Painting	- Purchase of painting materials for RHC Fence	CTWG,BLGU & Midwife	Taganito RHC	20,000.00	Year 1 to Year 3	- Fully painted RHC fence	- Labor- counterpart from BLGU
Rehabilitation	- Rehabilitation or Renovation of Rural Health Center	CTWG,BLGU & Midwife	Taganito RHC	80,000.00		- Fully rehabilitated clinic	- With counterpart from the brgy.

A/ PROJECT/ IES (P/P/A)	SPECIFIC ACTIVITY	STAKEHOLDERS INVOLVED	LOCATION	PROJECT COST	TIME FRAME	EXPECTED RESULTS	REMARKS
CTURE ASSISTANCE							
oad & culvert	- Extension of Brgy. Road with culvert.	BLGU, CTWG, TMC	Taganito	50,520.26	Year 1	- Established street patterns/ Proper drainage.	- To be implemented after the riprap. - To be coordinated with TMC Mining Dept.
Lighting	- Installation of Street Lighting on newly constructed road.	BLGU, CTWG	Taganito	30,000.00	Year 2	- In-place street lights	- Electric bills to be shouldered by the brgy.
tion Center	- Assistance in the ground preparation and construction of a Brgy. recreation center.	BLGU, CTWG,TMC	Brgy.Park Area	113,164.18	Year 2 to Year 3	- Completion of Brgy. Recreation Center.	- Spatial development; at the façade of TMCSTC.
Improvements	- Assistance in the purchase of roofing materials for St. James Chapel & other improvements. - Assistance in the improvements of other Church buildings existing in Brgy. Taganito.	Roman Catholics Protestants	Taganito Taganito	56,500.00 70,433.59	Year 2 Year 1 & Year 3	- Completion of roofing & other improvements. - Improvements of Church facilities	- Church will shoulder the trusses - To be supported with Program of Works.
				1,945,118.03			
RVICES FOR HAYANGGABON							
AL ASSISTANCE							
uilding Repair	- Repairs of dilapidated portions in Hayanggabon Elementary School Building.	BLGU, DepEd, HES PTCA	HES	20,000.00	Year 1	- Complete repair of the Building	- With counterpart from the BLGU
Library	- Provision of library facilities	BLGU, DepEd, HES PTCA	HES	40,000.00	Year 1 to Year 2	- Library with facilities	- With counterpart from school & BLGU.
ing of School	- Repainting of the entire school building.	BLGU, DepEd, HES PTCA	HES	25,000.00	Year 1	- Beautification of School	- With counterpart from school & BLGU.
er	- Purchase 1 set Computer with printer.	BLGU, DepEd, HES PTCA	HES	25,000.00	Year 2	- Computer literacy	- Maintenance will be shouldered by HES.
und apparatus	- Provision of playground apparatus.	BLGU, DepEd, HES PTCA	HES	15,000.00	Year 3	- Playground for school children.	- With counterpart from school & BLGU.
SSISTANCE							
es/Clinic	- Conduct of Medical Health Services & Provision of free medicines.	BLGU, BHW, CTWG, TMC	Hayanggabon	60,000.00	Year 1 to Year 3	- Control & prevention of diseases	- With support from MHO
tation of RHC	- Rehabilitation of Hayanggabon Rural Health Center	BLGU, Local Residents	Hayanggabon	100,000.00	Year 1 to Year 2	- Rehabilitated RHC	- With counterpart from BLGU

AM/ PROJECT/ TIES (P/P/A)	SPECIFIC ACTIVITY	STAKEHOLDERS INVOLVED	LOCATION	PROJECT COST	TIME FRAME	EXPECTED RESULTS	REMARKS
CTURE ASSISTANCE							
system	- Rehabilitation of Water system, purchase of GI pipes/faucet.	BLGU, BWASA, TMC	Hayanggabon	50,000.00	Year 2	- Maintenance of potable water system.	- With counterpart from BLGU
& Maintenance voir	- Fencing of the Reservoir and maintenance of the watershed area.	BLGU, BWASA	Hayanggabon	12,000.00	Year 2	- Safe potable water	- To be coordinated with a PO
Management	- Construction of Drainage system and solid waste management facilities.	CTWG, BLGU, TMC	Hayanggabon	183,792.24	Year 1 to Year 3	- In-place & recovery of drainage system. - Establishment of Waste Management System.	- To be coordinated with the EMB
improvements	- Construction of church pews and other improvements.	BLGU, BPC, TMC	Roman Catholic Church	20,000.00	Year 1	- Completed	- With POW
of shoreline	- Construction of rip-rap or Bouldering of riverbank at Febrero area.	BLGU, TMC	Riverbank	14,195.10	Year 1	- Protected coastlines from scouring.	- LGU to prepare ECC
m Park	- Construction of tourism park	BLGU, TMC	Hayanggabon	50,000.00	Year 1	- In-place tourism park	- With POW
ay road	- Construction of Brgy. Road for Brgy. expansion	BLGU, TMC	Hayanggabon	10,000.00	Year 2	- Brgy. expansion	- With LGU support
g of gym	- Concrete fencing of Barangay Gymnasium	BLGU, TMC	Hayanggabon	100,000.00	Year 3	- Fenced Gym	
lights	- Installation of street lights	BLGU, CTWG	Hayanggabon	70,000.00	Year 1		
				794,987.34			
RVICES FOR URBIZTONDO							
AL ASSISTANCE							
ibrary	- Provision of library facilities	BLGU, DepEd, UES PTCA	UES	45,000.00	Year 1 to Year 2	- Library with facilities	- With counterpart from school & BLGU.
er	- Purchase 1 set Computer with printer	BLGU, DepEd, UES PTCA	UES	30,000.00	Year 1	- Computer literacy	- Maintenance will be shouldered by HES.
ing of School	Repainting of the entire school building.	BLGU, DepEd, UES PTCA	UES	25,000.00	Year 2	- Beautification of School	- With counterpart from school & BLGU.
e Fence	- Improvement of the existing concrete fence at the façade of UES.	CTWG, BLGU, UES, PTCA	UES	30,000.00	Year 3	- Concrete fence completed	- With assistance from LGU
nd apparatus	- Provision of playground apparatus	BLGU, DepEd, UES PTCA	UES	20,000.00	Year 3	- Playground for school children	- With counterpart from school & BLGU.
SISTANCE							
mission	- Rendering of medical services to the constituents package of consultations, dental & others.	CTWG, BLGU, Local Residents	Urbiztondo Health Center	150,000.00	Year 1 to Year 3	- Reduce morbidity rate	- To render health services
Center	- Completion of Feeding center	CTWG, BLGU, Local Residents	Urbiztondo	40,000.00	Year 2	- Completely usable Feeding Center	- Need of assistance
ce Painting	- Purchase of painting materials for RHC Fence	CTWG, BLGU, Midwife	Urbiztondo RHC	10,000.00	Year 1	- Fully painted RHC fence	Labor- counterpart from BLGU

M/ PROJECT/ TIES (P/P/A)	SPECIFIC ACTIVITY	STAKEHOLDERS INVOLVED	LOCATION	PROJECT COST	TIME FRAME	EXPECTED RESULTS	REMARKS
CTURE ASSISTANCE							
Management	- Establishment of Materials Recovery Facility, Landfill & support equipment.	CTWG, DENR-EMB, LGU-Urbiztondo, PO	Urbiztondo	218,861.87	Year 1 to Year 3	- Establishment of MRF for proper waste disposal.	- To be coordinated with the MLGU.
n improvements	- Improvement All church buildings Capangdan: Renovation; Urbiztondo Ceiling Renovation; (Phil. Mission Foundation 2007)	CTWG, Church constituents	Urbiztondo Capangdan	35,000.00	Year 1	- Equal sharing for 4 churches	
tion Center	- Assistance in the ground preparation and construction of a Brgy. recreation center.	BLGU, CTWG, TMC	Urbiztondo	69,372.86	Year 3	- In-place Recreation Center	- Spatial development; delineated recreation center.
				673,234.73			
ERVICES FOR IP COMMUNITY							
AL ASSISTANCE							
ner	- Monthly allowance for 2 Teachers for the IP communities' Learning centers.	CTWG, IP Community	Taganito, Urbiztondo	244,800.00	Year 1 to Year 3	- Employment for 2 residents. Intensive education for the IPs.	- Continuing program
g Center ments	- Physical Improvement of 2 Learning Centers	CTWG, IP Community	Urbiztondo	26,666.67	Year 2	- Completed learning center	- For implementation
	- Construction of Library, provision of books/ references & necessary facilities.	CTWG, IP Community	Taganito Urbiztondo	10,000.00	Year 3	- Completely usable libraries for the 2 tribal communities.	- To be coordinated with DepEd as to the reference materials.
SSISTANCE							
es	- Provision of free over-the-counter medicines.	CTWG, IP Community	Taganito Urbiztondo	72,000.00	Year 1 to Year 3	- Medicines will be stored for availability to every tribal family.	- To be coordinated with the ALS facilitator & RH Midwife.
nental Feeding	- Supplemental Feeding of all malnourished IP children.	CTWG, BNS, IP Community	Taganito Urbiztondo	60,000.00	Year 1 to Year 3	- Provision of proper & balanced diet especially to school children.	- To be coordinated with the ALS facilitator & BNS.
CTURE ASSISTANCE							
tion of Houses	- Installation of walls (kalakat) & roofing (nipa shingles & nails).	CTWG, IP Community, NCIP	Taganito Urbiztondo	71,463.95	Year 1	- Provides shelter to IP families	- 38 houses for reconstruction.
all Courts	- Construction of Basketball Courts at the 2 tribal communities.	CTWG, IP Community	Taganito Urbiztondo	60,000.00	Year 1 to Year 3	- Provide sports facility for IPs	- Construction will be done by phase.
ion Centers	- Construction of Recreation Centers (Parks) within the tribal communities.	CTWG, IP Community	Taganito Urbiztondo	42,811.20	Year 2 to Year 3	- Established recreation centers (adjacent to the Basketball areas).	- Labor - IP counterpart
ystem ments	- Improvements of water system facilities for the two tribal communities.	CTWG, IP Community	Taganito Urbiztondo	40,582.09	Year 2 to Year 3	- Maintenance of potable Water systems.	- This includes water analysis
Management	- Construction of drainage canals and in-house Materials Recovery Facility.	CTWG, IP Community	Taganito Urbiztondo	15,000.00	Year 1 to Year 3	- Establishment of Waste Management Systems.	- To be supported with intensive ICE campaigns.
				643,323.91			
				7,669,589.03			

4 ENVIRONMENTAL MANAGEMENT AND PROTECTION COST ESTIMATE (To include Mine Safety and Health)

4.1 Activities

4.1.1 MINE REHABILITATION PROGRAM

Progressive Rehabilitation

TMC is a surface mining method using hydraulic shovel to excavate the different class of nickel silicate material. After the excavation of 15-17 meters from the surface elevation and declaring as a mined-out pit, low-grade boulders as parent rock are the observable surface exposure. This effect done by mining operation damaged plant soil profile, that the survival of the flora species is impossible. The surface absorption is also damaging, that during heavy rainfall it easily forming a different gully.

On the effect, the TMC established progressive rehabilitation program to formulate remedial counter measures that can mitigate and protect our environmental condition. The main objectives of this program are to restore the area that has been damage done by the mining operation. Basically, the progressive rehabilitation practices of TMC are very simple; cut and fill method. The method manifests the best effective practices for our standard. Mine out pit will be backfilled with waste material (laterite) from the stripping operation.

Rehabilitation Standard

The objective of the rehabilitation is to restore or reclaim disturbed area to a safe, stable non-erodable condition thereby establishing a land use capability that is functional and proximate to the land use prior to the disturbance made in the mine area. With this in mind, standards set by DENR and this implementing agency shall be adapted including the conditionality contained in the Environmental Compliance Certificate (ECC). Likewise, internationally accepted best environmental practices in mining shall be followed whenever applicable.

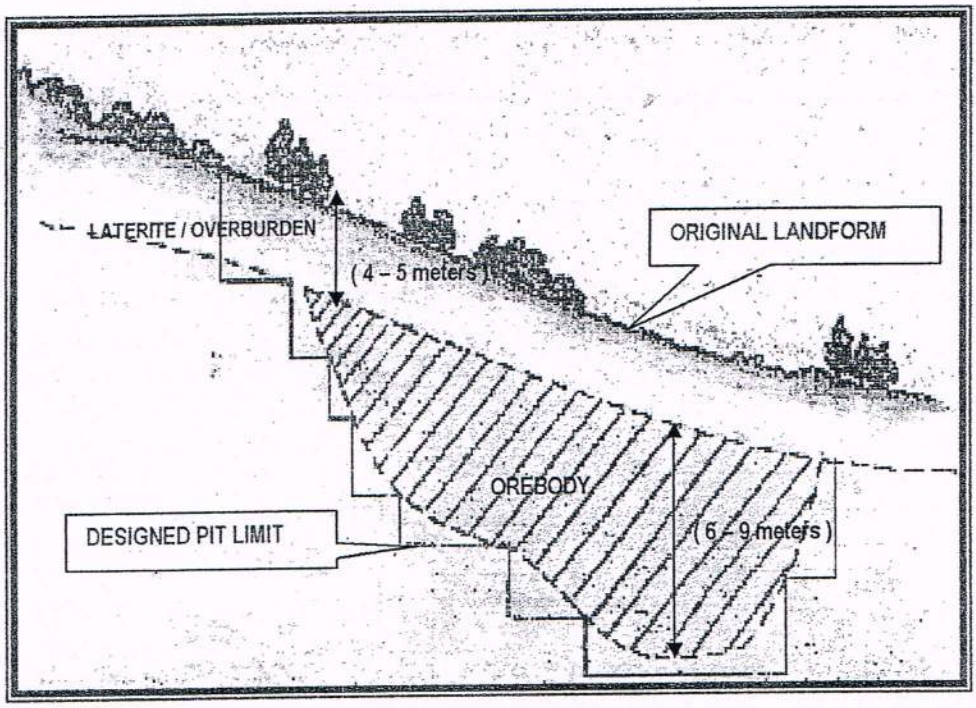
Rehabilitation Method

The objective of rehabilitation is to prepare the mined-out pit area for future land use, which includes the establishment of Forest Park and other natural amenities. With these proposed result, schedule of work activities and sufficient resources are allocated to carry these plan a realistic endeavor.

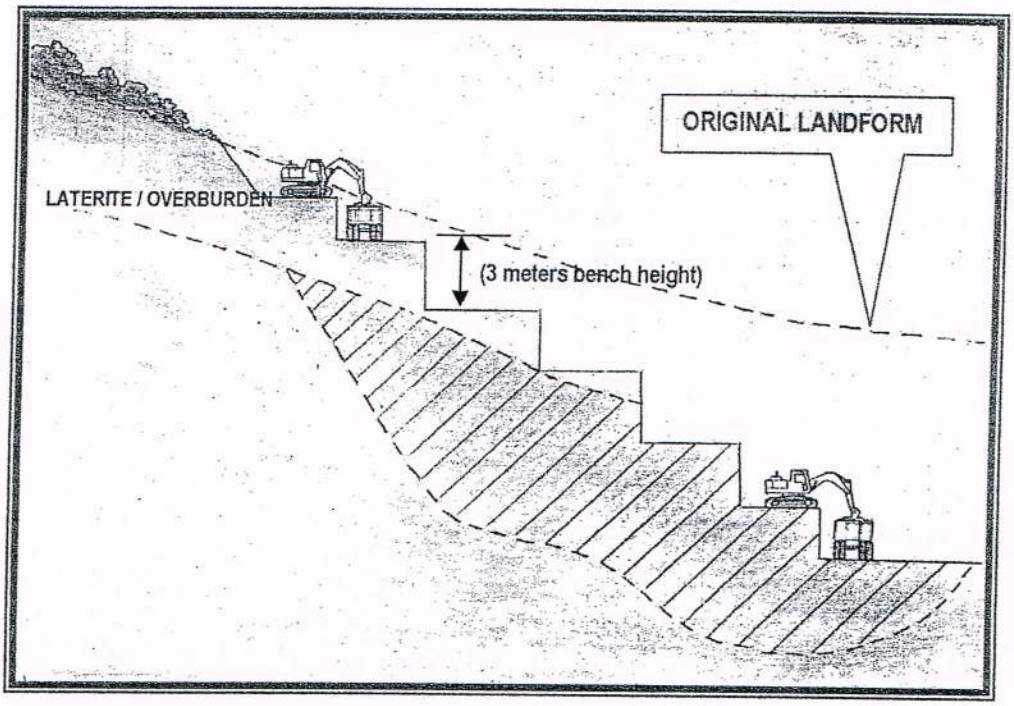
Rehabilitation Method (see model no.1-4)

1. Defined the desired crest line and toe along the bench, considering the target bench slope of 1:3.
2. Start forming the 1:3 bench slope using crawler tractor (bulldozer).
3. Stabilization of slope by compaction using bulldozer.
4. During compaction at least three to four passes of bulldozer is required to attain the relative compaction of laterite material.
5. Pile low-grade boulders if the water seepage occurs.
6. Upon completion of the established bench interval, cover the final slope with topsoil of approximately 20 centimeters thick all throughout the slope.
7. Compact surface material using the bulldozer. At least two to three passes of bulldozer is required to attain the relative compaction of surface material.
8. Bench height and angle of the slope should always check by the survey.
9. Reforest the compacted area with Acacia Mangium, Japanese Acacia and Agoho.
10. Re-vegetate with local grasses like Bermuda, Humi de cola, cogon, and native vines.

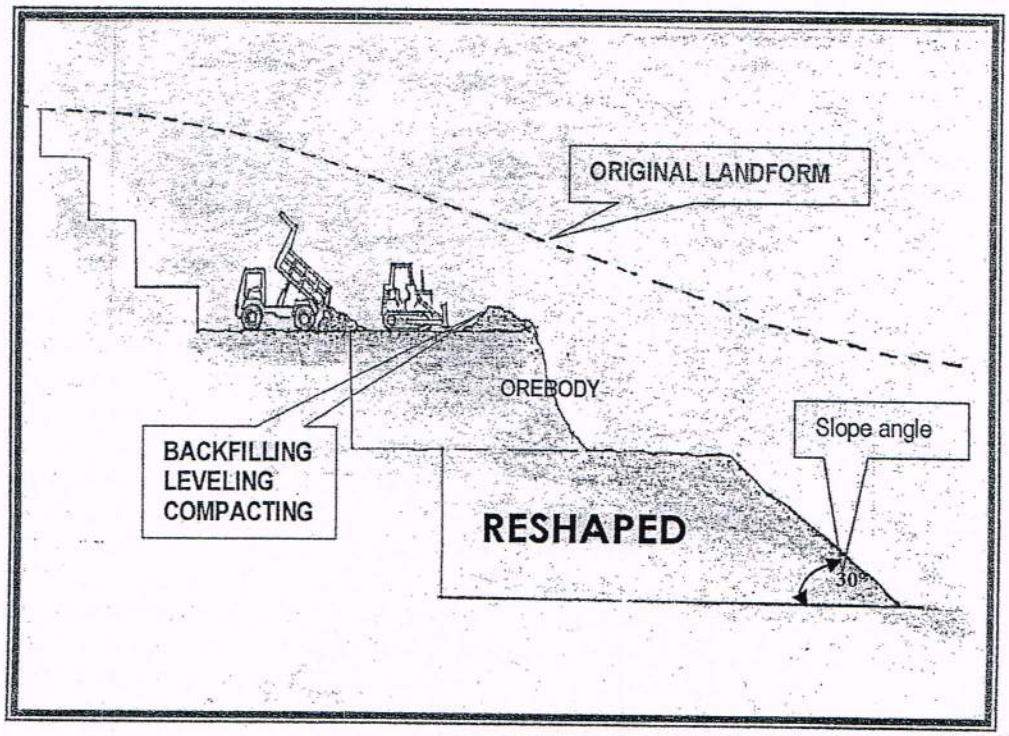
Model no. 1: Undisturbed Mine pit



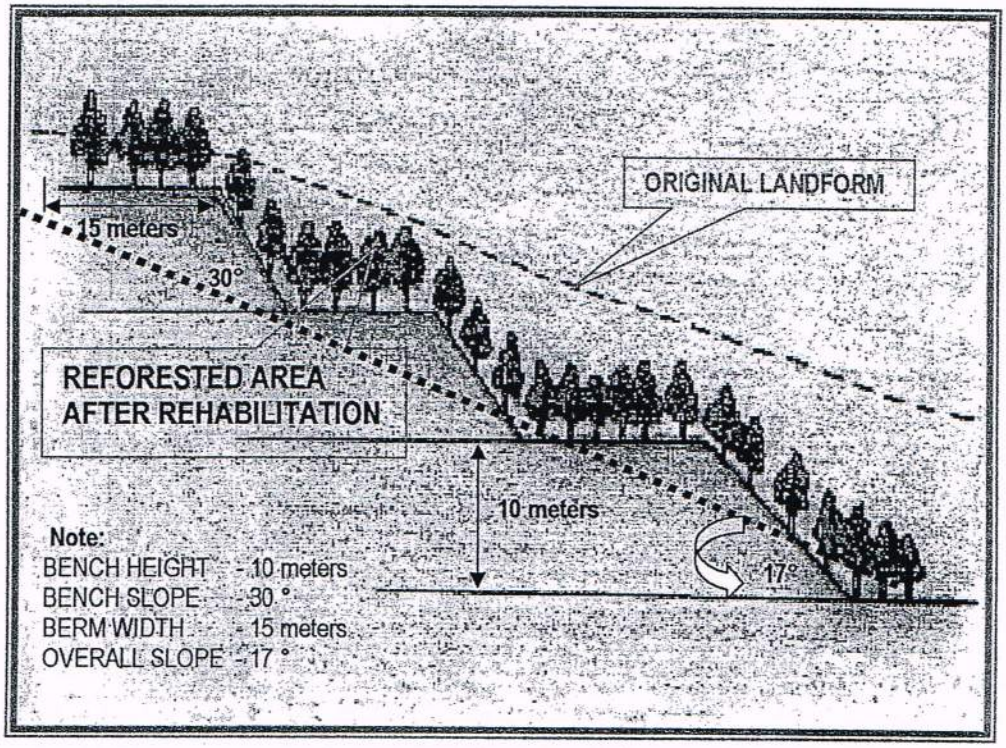
Model no. 2: Stripping and Mining Operation



Model no. 3: Mine Rehabilitation



Model no. 4: Final Landform



4.1.2 REFORESTATION / REVEGETATION PROGRAM

The laterite soil condition of TMC was derived from leaching of ultramafic rocks resulting to accumulate iron and aluminum hydroxide in the upper horizon. The sectional profile has a stable columnar or prismatic structure and has a high infiltration capacity. Characteristically, they are deficient the most important plant nutrients, particularly phosphorous and other basic minerals

TMC started the reforestation / revegetation in selecting the different types of species that can survive on a laterite soil (high iron content). The first phase of the experiment was the propagation of wild seedlings, but it was failure. Then follows the germination of commercial seeds. Almost all kind of commercial seeds were experimented, but the most conclusive is the Acacia Mangium, and Bagrass adopt the soil condition.

Reforestation / revegetation project aim to restore the damage native ecosystem of the plant species. The initial accomplishment effort established the building blocks for a self-sustaining system, so that successful process led to the desired vegetation complex.

The reforestation pioneer species chosen are those that are typically fast growing and have high tolerance to sun exposure. These are Acacia Mangium, Acacia Auriculiformis, Agoho and Bagrass.

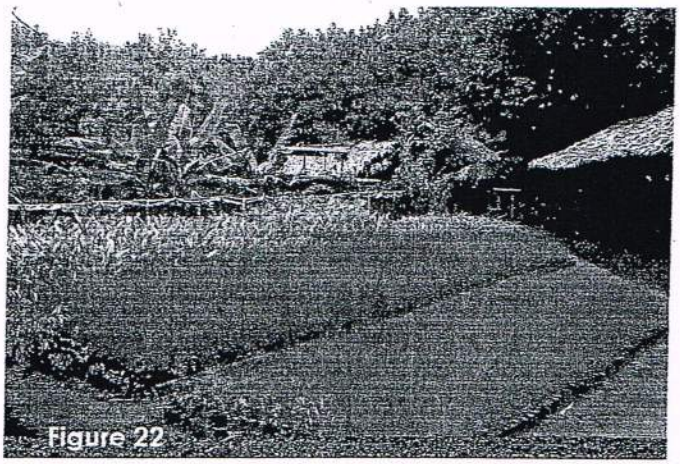


Figure 22

These species shall be initially grown in the existing TMC nursery (Figure 22).

Actual field planting shall be conducted at the onset of the rainy season following the field surface preparation. Distance between plants shall be maintained at 2 meters interval (see Figure 23).

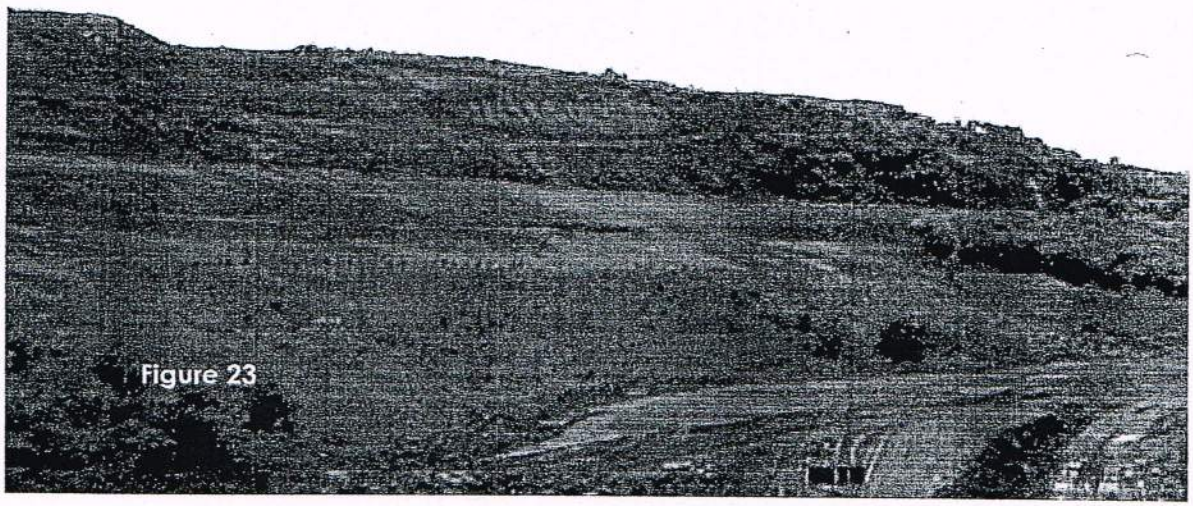


Figure 23

Method of Reforestation/ revegetation

1. Spacing of forest plantations - square method of spacing - 2x2, 2x3 meters.
2. Timing of plantation work.

A time schedule based in our climate has to be devised, which sets the date for starting and the deadline for computing each operation.

The key operations, which have to be carried out at the right time are:

2.1 Seed collection depending on ripening date.

2.2 Collection of topsoil at the beginning of the dry season.

2.3 Ordering of supplies and equipment, if possible, 3 months in advance.

2.4 *Sowing* - when selecting the optimum date, the basic considerations are the time it takes to produce a plantable seedling and the beginning of the planting season.

2.5 Site preparation s by slashing brush to establish grid line, enough not to disturb the newly planted trees.

2.6 Field planting - the optimum time to start planting is when enough rain has fallen to moisture the top surface. It is safe to start planting when the rainfall of a proceeding seven (7) days period.

2.7 Weeding and tending operation must be carried out before the seedlings have suffered from suppression by weeds. If weeding is delayed too much, the seedlings may not be able to survive a sudden exposure and die after weeding.

2.8 Replacement of failure must be carried out at the planting time, the beginning of the rainy season, before the new plantation was started.

2.9 Construction of fire line has to be constructed out at the beginning of dry season.

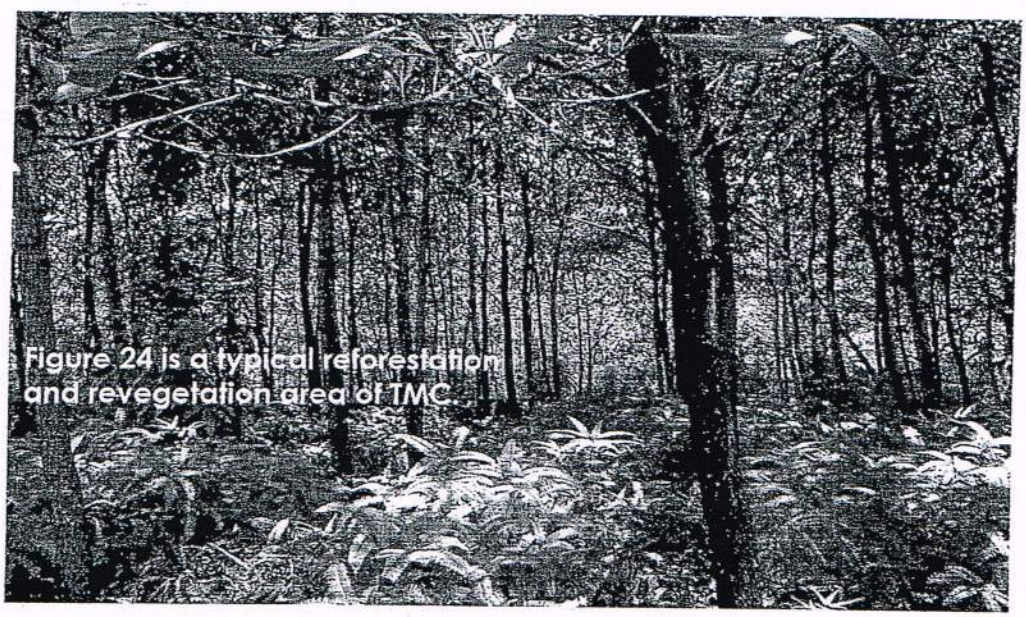


Figure 24 is a typical reforestation and revegetation area of TMC.

4.1.3 DUST CONTROL

Dust from Mining Operation

The dust generated from the mining operation can be controlled and minimized by water spraying to all active haulage road by using water truck tankers (see figure 25). Scheduling of spraying the haulage road done by two shifts (day and night shift).

National road within the Barangay Taganito span and inside barangay road is also scheduled for water spraying.

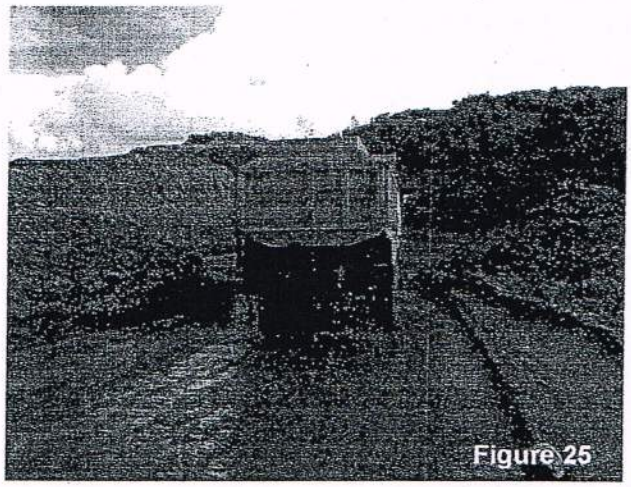


Figure 25

Enhancement Measure

The enhancement measure will include proper disposal of spoils, proper design of dumping areas. During production period hauling equipment should implemented speed limit. One way route system to the haulage road is being observed.

Other control measures being implemented are as follows;

Setting up desired maximum speed limit to all types of vehicular equipment.

a. Planting trees along the sides as dust curtain.
b. Proper maintenance of haulage road thru the use of road grader and road roller/compactor into a near paved-road status.
c. Mined area shall be stabilized and re-vegetated.
d. Windbreakers such as fast growing trees are planted around the open space to disturb the strong wind during dry season.
e. Stockpiles at pieryards shall be covered with canvass sheets.

4.1.4 SILTATION CONTROL MEASURE

One of the major considerations to open a certain scheduled area for mining operation is the drainage network. All the possible seepage and run-off accumulates during heavy rainfall are being addressed. The drainage system is integrated to the pit design. During the layout of the pit, it follows the construction of the diversion canal.

Surface run-off water coming from disturbed mining faces and mine road network usually collects soil and other suspended solids from mine slopes itself, mine roads and along its path as it drains to low-lying area. This silt laden mine surface run-off also contributes to siltation and sedimentation.

To minimize soil erosion, mined-out area should be restored and rehabilitated/revegetated. Silt collector sumps shall be constructed along its drainage system as silt traps thus minimizing suspended solids gravitating into siltation ponds.

Figure 26: Settling Pond Phase I

Figure 27: Settling Pond Phase II

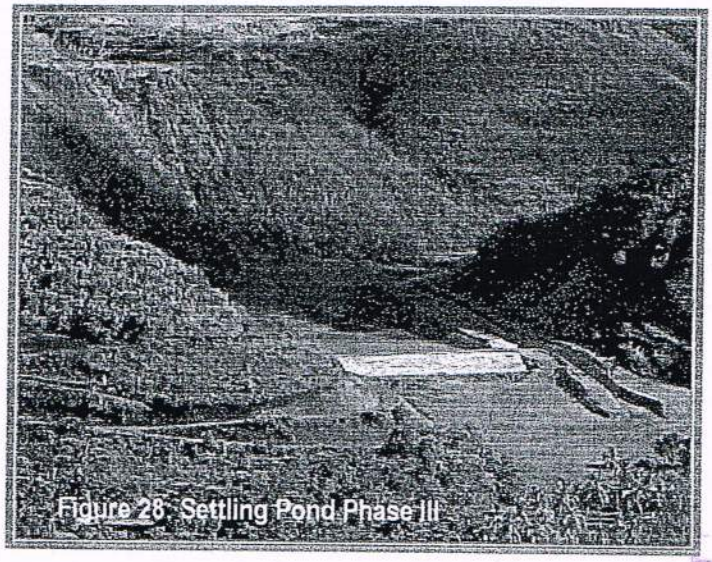


Figure 28: Settling Pond Phase III

Mine pit run-off were all diverted and passes through a series of catching pond as to reduce the volume of silts that brought to the main settling ponds. Multi-stage settling pond Phase I (see figure 26) is located between Taga 2 and Taga 3. It covers an area of 6.0 hectares with an impounding capacity of 105,000 cu.m. of silt. Settling pond Phase II (see figure 27) is located near Taganito River. It covers an area of 7.90 hectares with an impounding capacity 216,876 cu.m. silt.

The newly constructed settling pond Phase III (see figure 28) is located between Taga 1 and Taga 2. It covers an area of 2.5 hectares with an impounding capacity of 103,822 cu.m. of silt. These three (3) settling ponds serves as the impounding structure to reduce the Total Suspended Solid (TSS) drains to the nearby Taga – river and along the coastal area of Taganito and Hayanggabon Bay.

4.1.5 MINE SAFETY & HEALTH PROGRAM

TMC management conducts a monthly Central Safety Meeting participated by all departments head to discuss sanitation and safety of employees. Safety promotions such as safety orientation for newly hired employees is conducted. Safety personnel initiate a routinary inspection to all working places and coordinated with concerned supervisors the unsafe practices and discrepancies observed. Preparation of memorandum report of unsafe acts/unsafe condition is observed in the respective working places. Concerned personnel arranged pep talk to all drivers/operators regarding safety rules and regulations in driving. Every year, the company maintained a record of zero (0) frequency and severity rates in personnel Lost Time Accident (LTA) and Non-Lost Time Accident (NLTA).

Safety personnel arranged the issuance and/or replacement of personal protective equipment to all employees as may deem necessary for their daily work assignments. Traffic signboards and safety posters are installed in the mine site.

The company's health services provides primary benefits to all employees and their dependents. The management employs medical assistant inside the campsite that disposes medicines to employees and dependents for free for minor illness. The company invites it's doctor twice a month from Surigao City and holds clinic in the barangay for free. Medicines are shouldered by the management and these are given free to all people, including the barrio folks. In case of emergencies, transportation to the nearest urban hospital is provided by the company. Å group of medical insurance policy is also provided and availed of by all regular employees. The company initiates and participates in the seminars and workshop related to the health services like the three days Basic First Aid Training.

4.2 Cost Estimates for Three Years (X 1,000)

Cost Code	Activities	Year 1	Year 2	Year 3	TOTAL
075-A	Environmental Gen.	1,581.80	1,629.25	1,678.13	4,889.18
075-B	Refo/Revegetation	3,646.30	3,755.69	3,868.36	11,270.35
075-C	Nursery	788.00	811.64	835.99	2,435.63
075-D	Dust Control	3,565.00	3,671.95	3,782.11	11,019.06
075-E	Silts/Erosion	8,468.30	8,722.35	8,984.02	26,174.67
075-F	Mine Rehab/Slope	3,491.40	3,596.14	3,704.02	10,791.56
075-G	ICE Program	486.40	500.99	516.02	1,503.41
075-H	MMT-MRFC	60.00	61.80	63.65	185.45
075-I	Coastal Protection	478.70	493.06	507.85	1,479.61
017-CIP	Special Project	3,690.70	3,801.42	3,915.46	11,407.58
073	Mine Safety & Health	2,310.90	2,380.23	2,451.64	7,142.77
	Total	29,567.50	29,424.52	30,307.25	88,299.27

5 GANTT CHART

5.1 Social Development and Management Program for Year 1 to Year 3

PROGRAM/ PROJECT/	Year 1				Year 2				Year 3			
ACTIVITIES (P/P/A)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1 ICE CAMPAIGNS												
1.1 Publication Generation												
1.2 Public Information												
1.3 Seminars & Training												
1.4 Capability Building Training												
1.5 Pulong-pulong/Ugnayan												
1.6 Consultations/Meetings												
1.7 CTWG meetings												
1.8 Health & Sanitation Seminar												
1.9 Environmental awareness Campaign												
2 LIVELIHOOD ASSISTANCE PROGRAM												
2.1 Human Resource Development												
2.1.1 Driving & HE operating Skills Training												
2.1.2 Community Based Skills Enhancement Training												
2.1.3 Project Proposal Preparations												
2.2 LIVELIHOOD PROJECTS												
2.2.1 TAGANITO LIVELIHOOD PROJECTS												
Implementations of various livelihood projects												
2.2.2 HAYANGGABON LIVELIHOOD PROJECTS												
Implementations of various livelihood projects												
Poultry Production												
Vulcanizing shop												
2.2.3 URBIZTONDO LIVELIHOOD PROJECTS												
Implementation of various livelihood projects												
Marine Sanctuary Restoration												
Garments making												
Aqua-culture												
Vulcanizing Shop												
Poultry Production												
2.2.4 IP COMMUNITY LIVELIHOOD PROJECTS												
Implementation of various livelihood projects												
Implementation of Cooperative Store												
Expansion of ABAKAHOYAN												
Vegetable Production												
Fruit trees & Pineapple production												
Hog Raising												
3 SOCIAL SERVICES FOR TAGANITO												
EDUCATIONAL ASSISTANCE												
3.1 Teachers												
3.2 School Painting												
3.3 Perimeter Fence												
3.4 Computer												
3.5 School Pathway												
3.6 School Library for TES												
3.7 School Library for TNHS												
MEDICAL ASSISTANCE												
3.8 Midwife												
3.9 Assorted Medicines												
3.10 RHC Fence Painting												
3.11 RHC Rehabilitation												
INFRASTRUCTURE ASSISTANCE												
3.12 Brgy. Road & culvert												
3.13 Street Lighting												
3.14 Recreation Center												
3.15 Church Improvements												

PROGRAM/ PROJECT/	Year 1				Year 2				Year 3			
ACTIVITIES (P/P/A)	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
4 SOCIAL SERVICES FOR HAYANGGABON												
EDUCATIONAL ASSISTANCE												
4.1 School Building Repair												
4.2 School Library												
4.3 Repainting of School Building												
4.4 Computer												
4.5 Playground apparatus												
MEDICAL ASSISTANCE												
4.6 Medicines/Clinic												
4.7 Rehabilitation of RHC												
INFRASTRUCTURE ASSISTANCE												
4.8 Water system												
4.9 Fencing & Maintenance of Reservoir												
4.10 Waste Management												
4.11 Church improvements												
4.12 Riprap of shoreline												
4.13 Tourism Park												
4.14 Barangay road												
4.15 Fencing of gym												
4.16 Street lights												
5 SOCIAL SERVICES FOR URBIZTONDO												
EDUCATIONAL ASSISTANCE												
5.1 School Library												
5.2 Computer												
5.3 Repainting of School Building												
5.4 Concrete Fence												
5.5 Playground apparatus												
MEDICAL ASSISTANCE												
5.6 Medical mission												
5.7 Feeding Center												
5.8 RHC Fence Painting												
INFRASTRUCTURE ASSISTANCE												
5.9 Waste Management												
5.10 Church improvements												
Roman Catholic Convent Chapel - Urbiztondo												
Roman Catholic Chapel- Sitio Capangdan												
Jehovah's witnesses' Church												
Phil. Missionary Foundation												
5.11 Recreation Center												
6 SOCIAL SERVICES FOR IP COMMUNITY												
EDUCATIONAL ASSISTANCE												
6.1 IP Teacher												
6.2 Learning Center Improvements												
6.3 Library												
MEDICAL ASSISTANCE												
6.4 Medicines												
6.5 Supplemental Feeding												
INFRASTRUCTURE ASSISTANCE												
6.6 Completion of Houses												
6.7 Basketball Courts												
6.8 Recreation Centers												
6.9 Water System Improvements												
6.10 Waste Management												

5.2 SAFETY AND HEALTH PROGRAM SCHEDULE FOR YEAR 1 to YEAR 3

TARGET FOR YEAR 1

PROGRAM	ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL	YR 1 Budget	REMARKS
A. Safety Meetings	1. Safety Tour (Out of Town)				●									1	50,000	First week of April
	2. Central Safety Meeting	●	●	●	●	●	●	●	●	●	●	●	●	12	6,000	Last week of the month
	3. Departmental Meeting	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	4. Contractors Meeting				●	●	●	●	●	●	●			7	3,500	First week of the month
B. Management &	1. Training: Safety Pers. (out of town)			●			●			●			●	4	80,000	Quarterly
Employee Training	2. First Aid AR/CPR Training (in house)		●											1	10,000	First week of Feb.
	3. Defensive Driving Seminar (in house)			●										1	2,500	First week of March
	4. Fire Fighting Seminar (in house)				●									1	5,000	First week of March
	5. Disaster Standard Management (in house)											●		1	15,000	Second week of Nov.
	6. Waste Management Seminar (in house)												●	1	2,500	First week of December
C. Planned Inspection	1. Fire Fighting Equipt. Inspection	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	2. Monitoring Unsafe Acts/Conditions	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	3. Preparation of Inspection Reports	●	●	●	●	●	●	●	●	●	●	●	●	12	-	Second week of the month
D. Accident/incident	1. Formulation of Accident/incident			●										1	-	Last week of March
Investigation	Investigation Procedure															ASAP, if there is an
	2. Conduct of Investigation														-	accident/incident
	3. Preparation of Investigation Reports														-	happened.
	4. Follow-up Remedial Measures														-	
E. Accident/incident	1. Preparation of Accident/incident												●	1	-	First week of Dec.
Accomplishment	Statistics															
Analysis	2. Preparation/Submission of Accident	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	& Accomplishment Reports													-		
F. Emergency	1. Formulation/Review of ERP			●										1	-	First week of March
Preparedness	2. Procurement of Equipment			●	●									2	20,000	Second week of March/Apr.
Program	3. Maintenance of Fire Fighting Equipt.	●											●	2	10,000	Second week of Jan & Dec
	4. Organization of Preparedness Team		●											1	-	Second week of Feb.
	5. Conduct of Emergency Drills				●									1	2,000	First week of April
	6. Repainting & Renewal of various	●	●	●										3	15,000	Third week of first quarter
	Safety Slogan & Traffic signs															
G. Personal Protective	1. Procurement of PPE			●							●			2	250,000	First week of March & Oct.
Equipment (PPE)	2. Issuance/replacement of PPE				●						●	●		3		Last week of Apr., Oct & Nov
H. Safety Promotions	1. Posters & Signboards				●		●							2	2,500	Second week of Apr & Jun
	2. Pre-employment Safety Orientation				●	●								3	-	First week of Apr & May
	3. Safety Week Celebration			●										1	10,000	Third week of March
	4. Selection of mines best									●				1	-	Last week of Sept.
	5. Annual Mine Safety & Accident										●			1	140,000	Third week of Nov.
	Prevention conference															
I. Health Control and	1. Med. Exam. for employees (Annual PE)									● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	16	150,000	Month of Sept/Oct/Nov&Dec
Services	2. Maintenance Clinic	●			●			●			●			4	10,000	Quarterly
	3. Provision of medicines for employees													12	360,000	Available at Clinic
	4. Community Consultation	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	24	840,000	Twice a month (Sunday)
	5. First-Aid Stations		●	●										2	5,000	Last week of Feb. & March

Note: *Dotted portion means the target activity of the month.*
Total, the target activity of the year.

TARGET FOR YEAR 2

PROGRAM	ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL	YR 2 Budget	REMARKS
A. Safety Meetings	1. Safety Tour (Out of Town)				●									1	50,000	First week of April
	2. Central Safety Meeting	●	●	●	●	●	●	●	●	●	●	●	●	12	6,000	Last week of the month
	3. Departmental Meeting	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	4. Contractors Meeting				●	●	●	●	●	●	●			7	3,500	First week of the month
B. Management &	1. Training: Safety Pers. (out of town)			●			●			●			●	4	80,000	Quarterly
Employee Training	2. First Aid AR/CPR Training (in house)		●											1	10,000	First week of Feb.
	3. Defensive Driving Seminar (in house)			●										1	2,500	First week of March
	4. Fire Fighting Seminar (in house)				●									1	5,000	First week of March
	5. Disaster Standard Management (in house)											●		1	15,000	Second week of Nov.
	6. Waste Management Seminar (in house)												●	1	2,500	First week of December
C. Planned Inspection	1. Fire Fighting Equipt. Inspection	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	2. Monitoring Unsafe Acts/Conditions	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	3. Preparation of Inspection Reports	●	●	●	●	●	●	●	●	●	●	●	●	12	-	Second week of the month
D. Accident/Incident	1. Formulation of Accident/incident			●										1	-	Last week of March
Investigation	Investigation Procedure															ASAP, if there is an
	2. Conduct of Investigation														-	accident/incident
	3. Preparation of Investigation Reports														-	happened.
	4. Follow-up Remedial Measures														-	
E. Accident/Incident	1. Preparation of Accident/incident												●	1	-	First week of Dec.
Accomplishment	Statistics															
Analysis	2. Preparation/Submission of Accident	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	& Accomplishment Reports															
F. Emergency	1. Formulation/Review of ERP			●										1	-	First week of March
Preparedness	2. Procurement of Equipment			●	●									2	20,000	Second week of March/Apr.
Program	3. Maintenance of Fire Fighting Equipt.	●											●	2	10,000	Second week of Jan & Dec
	4. Organization of Preparedness Team		●											1	-	Second week of Feb.
	5. Conduct of Emergency Drills				●									1	2,000	First week of April
	6. Repainting & Renewal of various	●	●	●										3	15,000	Third week of first quarter
	Safety Slogan & Traffic signs															
G. Personal Protective	1. Procurement of PPE			●							●			2	250,000	First week of March & Oct.
Equipment (PPE)	2. Issuance/replacement of PPE				●						●	●		3		Last week of Apr., Oct & Nov
H. Safety Promotions	1. Posters & Signboards				●		●							2	2,500	Second week of Apr & Jun
	2. Pre-employment Safety Orientation				●	●								3	-	First week of Apr & May
	3. Safety Week Celebration			●										1	10,000	Third week of March
	4. Selection of mines best									●				1	-	Last week of Sept.
	5. Annual Mine Safety & Accident										●			1	140,000	Third week of Nov.
	Prevention conference															
I. Health Control and	1. Med. Exam. for employees (Annual PE)									● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●	16	150,000	Month of Sept/Oct/Nov&Dec
Services	2. Maintenance Clinic	●			●			●			●			4	10,000	Quarterly
	3. Provision of medicines for employees													12	360,000	Available at Clinic
	4. Community Consultation	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	24	840,000	Twice a month (Sunday)
	5. First-Aid Stations		●	●										2	5,000	Last week of Feb. & March

Note: *Dotted portion means the target activity of the month.*
Total, the target activity of the year.

TARGET FOR YEAR 3

PROGRAM	ACTIVITY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL	YR 3 Budget	REMARKS
A. Safety Meetings	1. Safety Tour (Out of Town)				●									1	50,000	First week of April
	2. Central Safety Meeting	●	●	●	●	●	●	●	●	●	●	●	●	12	6,000	Last week of the month
	3. Departmental Meeting	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	4. Contractors Meeting				●	●	●	●	●	●	●			7	3,500	First week of the month
B. Management &	1. Training: Safety Pers. (out of town)			●			●			●			●	4	80,000	Quarterly
Employee Training	2. First Aid AR/CPR Training (in house)		●											1	10,000	First week of Feb.
	3. Defensive Driving Seminar (in house)			●										1	2,500	First week of March
	4. Fire Fighting Seminar (in house)				●									1	5,000	First week of March
	5. Disaster Standard Management (in house)											●		1	15,000	Second week of Nov.
	6. Waste Management Seminar (in house)												●	1	2,500	First week of December
C. Planned Inspection	1. Fire Fighting Equipt. Inspection	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	2. Monitoring Unsafe Acts/Conditions	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	3. Preparation of Inspection Reports	●	●	●	●	●	●	●	●	●	●	●	●	12	-	Second week of the month
D. Accident/Incident	1. Formulation of Accident/incident			●										1	-	Last week of March
Investigation	Investigation Procedure															ASAP, if there is an
	2. Conduct of Investigation														-	accident/incident
	3. Preparation of Investigation Reports														-	happened.
	4. Follow-up Remedial Measures														-	
E. Accident/Incident	1. Preparation of Accident/incident												●	1	-	First week of Dec.
Accomplishment	Statistics															
Analysis	2. Preparation/Submission of Accident	●	●	●	●	●	●	●	●	●	●	●	●	12	-	First week of the month
	& Accomplishment Reports															
F. Emergency	1. Formulation/Review of ERP			●										1	-	First week of March
Preparedness	2. Procurement of Equipment			●	●									2	20,000	Second week of March/Apr.
Program	3. Maintenance of Fire Fighting Equipt.	●											●	2	10,000	Second week of Jan & Dec
	4. Organization of Preparedness Team		●											1	-	Second week of Feb.
	5. Conduct of Emergency Drills				●									1	2,000	First week of April
	6. Repainting & Renewal of various	●	●	●										3	15,000	Third week of first quarter
	Safety Slogan & Traffic signs															
G. Personal Protective	1. Procurement of PPE			●							●			2	250,000	First week of March & Oct.
Equipment (PPE)	2. Issuance/replacement of PPE				●							●		3		Last week of Apr., Oct & Nov
H. Safety Promotions	1. Posters & Signboards				●		●							2	2,500	Second week of Apr & Jun
	2. Pre-employment Safety Orientation				●	●								3	-	First week of Apr & May
	3. Safety Week Celebration			●										1	10,000	Third week of March
	4. Selection of mines best									●				1	-	Last week of Sept.
	5. Annual Mine Safety & Accident										●			1	140,000	Third week of Nov.
	Prevention conference															
I. Health Control and	1. Med. Exam. for employees (Annual PE)									●●●●	●●●●	●●●●	●●●●	16	150,000	Month of Sept/Oct/Nov&Dec
Services	2. Maintenance Clinic	●			●			●			●			4	10,000	Quarterly
	3. Provision of medicines for employees													12	360,000	Available at Clinic
	4. Community Consultation	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	24	840,000	Twice a month (Sunday)
	5. First-Aid Stations			●										2	5,000	Last week of Feb. & March

Note: *Dotted portion means the target activity of the month.*
Total, the target activity of the year.

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Date Jan. 24, 2007

CONFORME:

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(Authorized Representative per Board Resolution)

Department of Environment and Natural Resources
Mines and Geosciences Bureau
APPROVED
JUL 28 2008