ANNEX –A

SECRETARY'S CERTIFICATE

Minutes of the Special Board Meeting of J. C. G. Resources Corp. held at its office at 1962 C. M. Recto Avenue, Quiapo, Manila on July 23, 1997

Present:

Joel T. Go
Vicente C. Go
Evelyn C. Go
Elvy T. Go
Amado M. Santiago, Jr.

The chairman called the meeting to order and announced the presence of a quorum. He informed the Board that the purpose of the meeting is to authorize the President to enter into a Mineral Production sharing Agreement with the Secretary of the Department of Environment and Natural Resources for and in behalf of the Company on its project site located in the municipalities of Alegria, Mainit and Tubod, province of Surigao del Norte, and also to apply for an Exploration Permit Application over the same area.

After further discussion, the Board unanimously approved, on motion made and seconded, the following resolutions:

RESOLVED THAT, the Board authorize as it hereby authorizes its President, Mr. Joel T. Go to enter into a Mineral Production Sharing Agreement with the Secretary of the Department of Environment and Natural Resources for and in behalf of J. C. G. RESOURCES CORPORATION on its project site in Surigao del Norte;

RESOLVED FURTHER, to authorize its President, Mr. Joel T. Go to apply for an Exploration Permit for its project in Surigao del Norte with Mines and Geosciences Bureau and/or Department of Environment and Natural Resources.

There being no further matters to be discussed, the meeting adjourned.

Certified Correct

AMADO M. SANTIAGO, JR.
Corporate Secretary

ATTESTED:

JOEL T. GO
President

VICENTE C. GO
Director

ELVY T. GO
Director

ANNEX – B

LOCATION MAP
OR
SKETCH PLAN

9°34'00"
9°33'00"
9°32'00"
9°31'00"
9°30'00"
9°29'00"

Lake Mahokdum
TUBOD
Tubod Creek
Morga
Magpayang River
BLOCK-2
Siana
Magpayang
Iyasagan
Pangtod
Gold
Gato
MAINIT
Tigbawan
Agong-ongan
Dugsangon
Higasi
Pautao
Puyo Creek
San Isidro
Dayatan
Naillog
Poniente
Bonot
Payapag
Paotao
Alipao
Candi-is
Coconut
ALEGRIA
Kitcharao
Leonisa Creek
Mount Legaspi
TAGAYAN 0.7 KM.

BLOCK-1

GEOGRAPHICAL COORDINATES		
CORNER	LATITUDE	LONGITUDE
1	9°28'30"	125°35'00"
2	9°29'30"	125°35'00"
3	9°29'30"	125°34'30"
4	9°30'30"	125°34'30"
5	9°30'30"	125°35'00"
6	9°30'00"	125°35'00"
7	9°30'00"	125°36'30"
8	9°30'30"	125°36'30"
9	9°30'30"	125°37'30"
10	9°30'00"	125°37'30"
11	9°30'00"	125°37'00"
12	9°29'00"	125°37'00"
13	9°29'00"	125°36'30"
14	9°28'30"	125°36'30"

BLOCK-2

GEOGRAPHICAL COORDINATES		
CORNER	LATITUDE	LONGITUDE
1	9°31'00"	125°34'00"
2	9°31'30"	125°34'00"
3	9°31'30"	125°33'30"
4	9°32'00"	125°33'30"
5	9°32'00"	125°33'00"
6	9°32'30"	125°33'00"
7	9°32'30"	125°33'30"
8	9°34'00"	125°33'30"
9	9°34'00"	125°34'00"
10	9°34'30"	125°34'00"
11	9°34'30"	125°35'30"
12	9°32'00"	125°35'30"
13	9°32'00"	125°35'00"
14	9°31'30"	125°35'00"
15	9°31'30"	125°34'30"
16	9°31'00"	125°34'30"

N

0 500 1000 2000 M.

SCALE 1: 50,000

MAP KEY

AREA = 3,159 HECTARES

MUNICIPALITIES OF TUBOD, MAINIT AND ALEGRIA
SURIGAO DEL NORTE

APSA (XIII) 00032

OF

JCG RESOURCES CORPORATION

11TH FLOOR, GETESCO CORPORATE CENTER, BILIBID VIEJO
CORNER GIL PUYAT STS., QUIAPO, MANILA.

REGINO L. SOBREVIÑAS JR.
GEODETIC ENGINEER

GE REG. NO. 996
PTR NO. 2927299
JAN. 15, 2002 Q.C.

ANNEX – C

EXPLORATION WORK PROGRAM

EXPLORATION WORK PROGRAM

1.0 NAME AND ADDRESS OF COMPANY/PROPONENT

JCG RESOURCES CORPORATION
11th Floor, Gotesco Corporate Centre,
Bilibid Viejo corner Gil Puyat Streets,
Quiapo, Manila City

ATTN: MR. JOEL T. GO
President

2.0 LOCATION OF PROJECT

The project is situated within the municipalities of Alegria, Mainit, Tubod and Bacuag - Surigao del Norte Province . It is bounded by the following geographical coordinates:

CORNER	LATITUDE	LONGITUDE
Block I (*Area: 1,265.0309 Has*)		
1	9°28'30"	125°35'00"
2	9°29'30"	125°35'00"
3	9°29'30"	125°34'30"
4	9°30'30"	125°34'30"
5	9°30'30"	125°35'00"
6	9°30'00"	125°35'00"
7	9°30'00"	125°36'30"
8	9°30'30"	125°36'30"
9	9°30'30"	125°37'30"
10	9°30'00"	125°37'30"
11	9°30'00"	125°37'00"
12	9°29'00"	125°37'00"
13	9°29'00"	125°36'30"
14	9°28'30"	125°36'30"
Block II (*Area: 2,023.7367 Has*)		
1	9°31'00"	125°34'00"
2	9°31'30"	125°34'00"
3	9°31'30"	125°33'30"
4	9°32'00"	125°33'30"
5	9°32'00"	125°33'00"
6	9°32'30"	125°33'00"
7	9°32'30"	125°33'30"
8	9°34'00"	125°33'30"
9	9°34'00"	125°34'00"
10	9°34'30"	125°34'00"
11	9°34'30"	125°35'30"
12	9°32'00"	125°35'30"
13	9°32'00"	125°35'00"
14	9°31'30"	125°35'00"
15	9°31'30"	125°34'30"
16	9°31'00"	125°34'30"

3.0 AREA OR SIZE OF COVERAGE

The project area consists of thirty-nine 81-hectare meridional blocks, with an aggregate area of 3,288.7676 hectares, more or less.

4.0 PROJECT AREA DESCRIPTION

4.1 Terrain/Physiography

The northern block of the property covering barangays Motorpool, Marga, Poblacion, San Pablo, Del Rosario & Cawilan of Tubod Municipality; barangays Magpayang, Siana & Dayano of Mainit Municipality and barangay Pongtud of Alegria Municpality is characterized by flat to gently rolling area in the west and low but fairly rugged topography in the east. The flat area which is about 60% of the northern block has elevations ranging from 0 to 40 meters. The eastern portion is characterized by rugged and karst topography with elevations ranging from 40 to 320 meters. The southern block of the property covering barangays San Juan, Alipao, San Pedro & Budlingin of Alegria Municipality and barangay Payapag of Bacuag Municipality has moderate to rugged topography with elevations ranging from 40 meters to 772 meters (*the highest peak*).

4.2 Accessibility

Tubod Municipality which is about 36 kilometers south of Surigao City is accessible by land both from Surigao City in the north and is 88 kilometers from Butuan City to the south. Both cities are accessible by regular trips via land, sea and air from Manila City and Cebu City. National and municipal roads from Alegria, Mainit and Tubod traverse the property. Alegria Municipality is 48 kilometers from Surigao City and around 75 kilometers from Butuan City.

4.3 Drainage System

Beyond the eastern boundary of the property, the area is cut and traversed by the headwaters and tributaries of the Campo river which ultimately drains into the Hinatuan Passage. The western part of the area is traversed by the Timamana & Tubod creeks; Magpayang River; the Siana, Dayano, Alipao and Legaspi creeks. All creeks & river ultimately drain westward into Lake Mainit.

4.4 Vegetation

The eastern and southern portions of the property are generally logged-over characterized by second growth trees with much "kaingin" open areas. The western part is planted with coconut, root crops, corn, rice, bananas, fruit trees, other shrubs and wild cogon. The mountainous south block was known before as the vegetable bowl of Surigao del Norte Province while its north eastern part is still classified as timberland.

4.5 Land Use

On the total 3,288.7676 hectares, it is estimated that about 60% is logged-over forest and 40% is brushland / grassland and / or agricultural areas.

5.0 DESCRIPTION OF EXPLORATION PROGRAM

5.1 Research Work

5.1.1 Survey of previous work/s on the area

5.1.1.1 Type - data collection and compilation of previous works / activities / studies done in the area, such as: geochemical survey; geophysical survey; geological mapping including lithology, structures, mineralization & alteration; drilling data; Siana open pit and underground data.

5.1.1.2 Duration – one month

5.1.1.3 Coverage – project site and adjacent areas (*3,300 hectares*)

5.1.1.4 Proponent – JCG Resources Corp. consultants

5.1.2 Data compilation / collation

5.1.2.1 Geophysical / geochemical data – mainly Suricon data

5.1.2.2 Lithological data – mainly Suricon data

5.1.2.3 Mineralization / alteration studies – mainly Suricon data

5.1.2.4 Various thematic maps covering the project area – if available

5.1.2.5 Estimated cost – P 100,000.00

5.2 Reconnaissance / Regional Survey or Studies

5.2.1 Remote sensing studies

5.2.1.1 Type – Landsat imagery (*TM*) aerial photos of the area which are being supplied by NAMRIA & CERTEZA and airborne magnetic data will be studied and interpreted to enhance the identification of regional structural intersections that may serve as loci of ore mineralization. It will also determine other geologic structures such as: faults, folds, geologic contracts, lithology, etc.

5.2.1.2 Duration – one month

5.2.1.3 Proponent – JCG Resources Corp. consultants

5.2.1.4 Coverage – the study will cover the project area & adjacent areas (*3,300 hectares*).

5.2.1.5 Estimated cost – P 100,000.00

5.2.1.6 Output – a structural map at an appropriate scale which will be a useful aid in the exploration program.

5.2.2Regional Geological Survey

With the results of item 5.1 and 5.2.1 as a guide, mapping and sampling of the favorable areas will be undertaken in the ground. This will involve the identification and plotting of rock types, mineralization, hydrothermal alteration, geologic structures, weathering, zoning-silicification & seritization. One to two kilograms of rock chip sampling from interesting rock outcrops along water courses and rock exposures, will be conducted. Reports from the Mines and Geosciences Bureau, Suricon and other private groups will be accessed.

5.2.2.1 Coverage - the area will depend on the results of the research work (*3,300 hectares*).

5.2.2.2 Duration – three months

5.2.2.3 Manpower complement:

1 Geologist
1 Geological aide/mapper
1 aide/brusher

5.2.2.4 Estimated cost - P 150,000.00

5.2.2.5 Output - a geologic map that will be used to correlate with data from other exploration works in search for potential target areas that will be subjected to semi-detailed exploration works.

5.2.3Regional Geochemical Survey

5.2.3.1 Coverage – soil / sediment (*ridge*) sampling, rocks chip samples and stream or drainage sampling at 300-meter intervals on all creeks and rivers that are at least more than one kilometer length (*3,300 hectares*).

5.2.3.2 Sampling Media / Sample Type – the method will require digging a 10-centimeters diameter x 15-centimeters deep hole with the use of a post-hole digger. About one kilogram of soil sediments will be taken from specific horizons of the soil profile for analysis.

5.2.3.3 Sampling Density / Estimated Number of samples – the sampling density will be approximately 4 to 8 samples per square kilometer or approximately 250 samples.

5.2.3.4 Mode of Analysis / Target Elements – All samples will be analyzed by AAS for Au, Ag, Cu, Pb, Zn, and other pathfinder elements.

5.2.3.5 Manpower complement:

1 Geologist
2 Geological aides
2 aides/brushers

5.2.3.6 Estimated cost - P 200,000.00 (*three months*)

5.2.3.7 Output – a geochemical map that will be used to correlate with data from other exploration works in search for potential target areas that will be subjected to semi-detailed exploration works.

5.2.4 Regional Geophysical Survey

5.2.4.1 Type – airborne magnetic and electro-magnetic (*EM*) are very useful geological tools for exploration of complex ore, especially sulfides.

5.2.4.2 Coverage - the area studied will depend on the results of the research work and the regional geological & geochemical surveys (*approximately 1,500 hectares*).

5.2.4.3 Duration – one month or more depending on the size of the anomalous areas delineated.

5.2.4.4 Manpower complement:

Contractor personnel

5.2.4.5 Estimated cost - P 500,000.00

5.2.4.6 Output – a geophysical map or profile showing how the intensities of electrical conductivity varies over the area being investigated. The map can be used to: a) define the presence of intrusions and faulting on a regional scale, b) define hydrothermally altered rocks.

5.3 Semi-Detailed Survey or Follow-up Studies

5.3.1 Geological mapping / alteration studies

A semi-detailed geological mapping and alteration studies will be done on areas that have indicated anomalous gold chemistry; coincident alteration or suspected to be mineralized based on the results of the various geological, geochemical & geophysical surveys in the reconnaissance / regional phase. The results will later be collated and correlated with other data to determine whether follow-up works would still be required or subsurface geological works, test pitting or diamond drilling is warranted.

5.3.1.1 Coverage - the area will depend on the results of the reconnaissance / regional surveys discussed above (*approximately 1,200 hectares*).

5.3.1.2 Duration – five months depending on the size of the anomalous areas delineated by the reconnaissance / regional surveys.

5.3.1.3 Manpower complement:

1 Geologist
1 Geological aide/mapper
1 aide/brusher
1 Cook

5.3.1.4 Estimated cost - P 250,000.00

5.3.1.5 Output - a geologic map at a convenient scale showing faults, folds, alterations, mineralization & lithology, outcrops, workings, infrastructure, etc.

5.3.2Geochemical Survey

A semi-detailed geochemistry will be done on areas delineated by regional geochemical study or anomalous catchment basins identified by the regional geological survey.

5.3.2.1 Coverage of the exercise will depend on the favorable results and number of anomalies identified by the reconnaissance / regional surveys (*approximately 1,200 hectares*).

5.3.2.2 Sampling Media - Close stream sediment sampling, ridge/spur traverse, rock chip and soil sampling (*100 meters, 150 meters and 25 meters interval*) will be continued at this stage. Stream sediments across rivers and creeks for Bulk-Leach Extractable Gold (*BLEG*) will be undertaken on potential areas. In addition, 50-gram magnetic concentrates will be collected for gold and base metals analysis. About one kilogram of soil will be taken from the "B" horizon of the soil profile for analysis in a geochemical laboratory.

5.3.2.3 Sampling density is estimated to be between 8 to 16 samples per square kilometer. The number of samples will depend on the size of target area that will be delineated by the reconnaissance / regional survey (*approximately 150 samples*).

5.3.2.4 Mode of analysis and target elements will be a multi-element geochemistry for Cu, Au, As, Zn, Pb, etc.

5.3.2.5 Manpower complement

1 Geologist
2 Geological aides
2 Helpers
1 Cook

5.3.2.6 The estimated cost - P 200,000.00 (*three months*)

5.3.2.7 The output will be a semi-detailed isogram map / assay map.

5.3.3Geophysical Survey

5.3.3.1 Nature or Type – Surface magnetic, EM and Induced Polarization (*IP*) surveys will be conducted on potential areas delineated by the reconnaissance / regional gelogical, geochemical and geophysical studies to pick the presence of intrusions and faulting and hydrothermally altered rocks for follow-up exploration.

5.3.3.2 Coverage – dependent on the number and size of the anomalous areas defined by the reconnaissance / regional surveys (*approximately 1,200 hectares*).

5.3.3.3 Manpower complement:

2 Geologists
2 Geological aides
4 Helpers
1Cook

5.3.3.4 Estimated cost – P 500,000.00 (*four months*)

5.3.3.5 Output – a geophysical map which will be collated and correlated with other geological data and interpreted to determine whether a more detailed sub-surface exploration works is warranted.

5.3.4Subsurface investigation

5.3.4.1 Type – Test pitting and trenching will be conducted on the anomalous areas or on outcrop of the mineralized zones delineated by semi-detailed geological / geochemical / geophysical evaluation works to initially determine the lateral extension, grade and other characteristics of the deposits.

5.3.4.2 The number, length and depth of the test pits and trenches will depend on the number and size of the anomalous areas but is projected to be 120 cubic meters and 60 meters, respectively.

5.3.4.3 The number of samples are estimated to be 60 to 90.

5.3.4.4 Mode of analysis and target elements will be wet chemical analysis of test pit and trenching samples for Cu, As, Zn, Pb, etc. Gold and silver will be analyzed by fire assaying. The samples will be sent to accredited laboratories in Manila.

5.3.4.5 Manpower complement:

1 Geologist
1 Geological aide
1 Helper
1 Cook

5.3.4.6 Estimated cost – P 100,000.00 (*three months*)

5.3.4.7 Output – an isograd map showing the test pit and trench locations, the corresponding assay values which will serve as guide for the diamond drilling and/or closely-spaced test pits.

5.3.4.8 Aditing or tunneling

5.3.4.8.1 two 10 meter tunnel / adit

5.3.4.8.2 Duration – two months

5.3.4.8.3 Estimated cost – P 100,000.00

5.3.4.8.4 Output – These activities will be conducted to determine the lateral / vertical extent, number and width of mineralization / ore zones.

5.4 Topographic Survey

5.4.1 Coverage – Detailed topographic & boundary survey will be conducted on anomalous / mineralized areas delineated by the semi-detailed exploration works that will be scheduled for closely-spaced test pits, trenching and diamond drilling operations. The survey will also include locations of existing and proposed road network; proposed plant / mill site; tailings pond; waste dump; housing quarters; office buildings.

5.4.2 Scale and Contour Intervals – an appropriate scale map at 1:10,000 scale or larger, and contour intervals of 1 to 5 meters.

5.4.3 Manpower Complement:

1 Geodetic Engineer
1 Instrument man
1 Recorder
2 Survey Aids
1 Cook

5.4.4 Estimated cost – P 400,000.00 (*three months*)

5.4.5 Output – a topographic map that will be used as vertical and horizontal control of all detailed geological works including diamond drilling and access road preparations covering an area of approximately 200 hectares.

5.5 Detailed Survey or Studies

5.5.1 Detailed Geological Mapping

5.5.1.1 The survey will use a Brunton compass, tape, GPS, hand lens, etc. Various geologic features as hydrothermal alteration, weathering, zoning, silicification, sericitization, rock types, structures will be mapped in target areas which have not been thoroughly explored. These will be correlated with the geochemical and geophysical anomalies to come up with target areas for diamond drilling operations.

5.5.1.2 Coverage - Duration – three (*3*) months

5.5.1.3 Manpower Complement:

1 Geologist
1 Geological aide
1 Helper
1 Cook

5.5.1.4 Estimated Cost - P 200,000.00 inclusive of direct supervision, labor, materials, supplies & services.

5.5.1.5 Output – a geologic map at an appropriate scale showing configuration and grades of deposits, traverse routes with structures, sampling points, lithology & other geologic features. After completion of the geological mapping and interpretation, this will be collated with new information gathered from semi-detailed studies to determine whether additional geochemical/geophysical work and / or target testing by diamond drilling will be undertaken.

5.5.2 Detailed Geochemical Survey

5.5.2.1 Coverage of Grid Survey - this will cover approximately 100 hectares. Soil sampling will be at 25 meters x 25 meters and eventually narrowing down to 12.5 meters x 12.5 meters. Auger drilling on the highly anomalous areas, if warranted.

5.5.2.2 Estimated Number of Samples - 200

5.5.2.3 Mode of Analysis/Target Elements - this will be a multi-element geochemistry for Cu, Au, As, Mo, Zn, and Pb.

5.5.2.4 Duration – two months

5.5.2.5 Manpower Complement:

1 Geologist
1 Geological aide
1 Helper

5.5.2.6 Estimated Cost - P 200,000.00 inclusive of direct supervision, labor, materials and supplies.

5.5.2.7 Output - after completion of the detailed geochemical survey and interpretation, this will be collated with new information gathered from detailed geologic studies to determine where target testing by diamond drilling will be undertaken.

5.5.3Subsurface Investigation

5.5.3.1 Coverage – a determination of the lateral & vertical extent and grade of the ore body / bodies with the objective of producing a geological positive & minable reserves.

5.5.3.2 Drilling

5.5.3.2.1 Type: RC & Diamond drilling operations will be done on areas where mineralization has been confirmed.

5.5.3.2.2 The number of initial holes is estimated to be 7 with programmed depths ranging from 150 meters (*4 holes*), 300 meters (*1 hole*), 500 meters (*2 holes*). The four shallow holes will be drilled using an RC drill rig. The deeper holes will be completed using a diamond drill rig collared using PQ diameter rods and ultimately stepping down to HQ and NQ.

5.5.3.2.3 Estimated Cost – P 3,500.000.00 inclusive of direct supervision, labor, materials, supplies, services and capital expenditure (*six months*).

5.5.3.3 Trenching / test pitting

5.5.3.3.1 Additional test pits, if still required will be done for reserves calculations. Trenching may no longer be required here.

5.5.3.3.2 The over-all length of the test pits is estimated to be 1,800 meters comprising of approximately 600 test pits at 3 meters depth per test pit.

5.5.3.3.3 Estimated number of samples - 2,400

5.5.3.3.4 Estimated cost - P 400,000.00

5.5.3.4 tunneling or aditing

This phase may not be necessary.

5.5.3.5 Output – core, logs sections, chemical analyses of core samples and their correlations which will be the basis for the ore reserves computation. The sub-surface investigation will assure a level of confidence in the resource interpretation and estimation that will match the requirement of a pre-feasibility study and / or feasibility study.

5.6 Result Interpretation

Results from all the research work, geological mappings, geochemical surveys, geophysical surveys, test pitting, trenching, aditing, tunneling and drilling will be collated, correlated and interpreted and then put into a final report.

5.6.1 Duration – three months

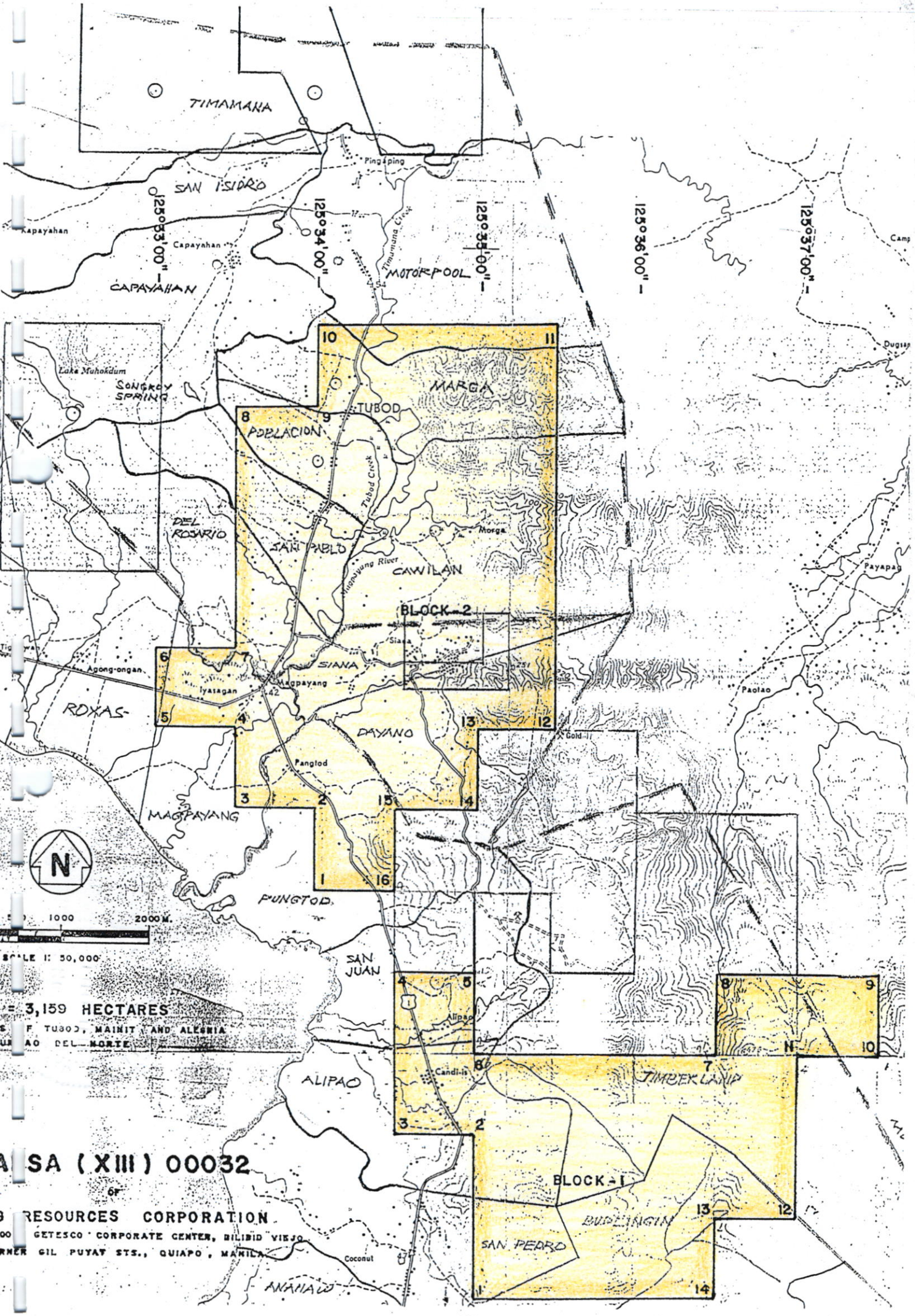
5.6.2 Estimated cost – P 100,000.00

6.0 TOTAL ESTIMATED EXPLORATION COST (*PESOS*)

6.1 Summary

ACTIVITIES	DURATION (*Month*)	COSTS (*Pesos*)
6.1.1 Research Work	1	P 100,000.00
6.1.2 Reconnaissance / Regional Survey or Studies		
6.1.2.1 Remote Sensing Studies	1	100,000.00
6.1.2.2 Regional Geological Survey	3	150,000.00
6.1.2.3 Regional Geochemical Survey	3	200,000.00
6.1.2.4 Regional Geophysical Survey	2	500,000.00
6.1.3 Semi-detailed survey or follow-up Studies		
6.1.3.1 Geologic mapping / alterations studies	5	250,000.00
6.1.3.2 Geochemical Survey	3	200,000.00
6.1.3.3 Geophysical Survey	4	500,000.00
6.1.3.4 Sub-surface investigation		
6.1.3.4.1 test pitting / trenching	3	100,000.00
6.1.3.4.2 aditing / tunneling	2	100,000.00
6.1.4 Topographic Survey	3	400,000.00
6.1.5 Detailed Survey / Studies		
6.1.5.1 Detailed Geologic mapping	3	200,000.00
6.1.5.2 Detailed Geochemical Survey	2	200,000.00
6.1.5.3 Sub-surface investigation		
6.1.5.3.1 Drilling	6	3,500,000.00
6.1.5.3.2 Test Pitting	6	400,000.00
6.1.6 Interpretation of Results	3	100,000.00
6.1.7 Total	**50**	**P 7,000,000.00**

8.0 MAP - TOPOGRAPHIC 1: 50,000 SCALE



6.2 Cost

6.2.1 Year 1 P 2,600,000.00

6.2.2 Year 2 P 4,400,000.00

7.0 SCHEDULE OF ACTIVITIES (*GANTT CHART*)

ACTIVITY	Mos	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. Research Work	1																								
2. Reconnaissance / Regional																									
2.1 Remote Sensing Studies	1																								
2.2 Geological Survey	3																								
2.3 Geochemical Survey	3																								
2.4 Geophysical (*Aeromag, EM*)	2																								
3. Semi-detailed Survey																									
3.1 Geological Mapping	5																								
3.2 Geochemical Survey	3																								
3.3 Geophysical (*Mag, EM, IP*)	4																								
3.4 Subsurface Investigation																									
3.4.1 Test Pitting / Trenching	3																								
3.4.2 Aditing / Tunneling	2																								
4. Topographic Survey	3																								
5. Detailed Survey																									
5.1 Geological Mapping	4																								
5.2 Geochemical Survey	4																								
5.3 Subsurface Investigation																									
5.3.1 Drilling	6																								
5.3.2 Test Pitting	6																								
6. Interpretation of Results	3																								

9.0 NAME AND SIGNATURE OF PERSON(S) PREPARING THE ExWP

CESAR O. ROMERO
Consulting Mining Engineer
Registration No. 882
PTR No. 30478241
January 31, 2002
Quezon City

RENALDO N. MACEDA
Consulting Geologist
Registration No. 323
PTR No. 30478217
January 31, 2002
Quezon City

December 4, 2002

THE HONORABLE DIRECTOR
Mines & Geosciences Bureau, DENR
North Avenue, Diliman, Quezon City

Sir:

This is in connection with the JCG Resources Corporation Application for Mineral Production Sharing Agreement denominated as APSA NO. 000032 XIII covering an area of 3288.7676 hectares located in the Municipalities of Tubod, Mainit, Alegria and Bacuag, Province of Surigao del Norte.

Please be informed that I hereby commit to undertake the implementation of the Exploration Work Program and the Environmental Work Program under the Mineral Production Sharing Agreement that may be issued to JCG Resources Corporation.

Very truly yours,

Cesar O. Romero
Mining Engineer Reg. No. 882
Geologist Reg. No. 359
PTR No. 30478241
January 31, 2002
Quez[illegible] City

Republic of the Philippines)
City / Municipality of QUEZON CITY) S.S. M.M.

SUBSCRIBED AND SWORN to before me this DEC 04
exhibited to me his Community Tax Certificate No. 00
March 08, 2002.

Doc. No. 452
Page No. 91
Book No. 314
Series of 2002

ANNEX – D

ENVIRONMENTAL WORK PROGRAM

ENVIRONMENTAL WORK PROGRAM

1.0 NAME AND ADDRESS OF THE APPLICANT

JCG RESOURCES CORPORATION
11th Floor, Gotesco Corporate Centre,
Bilibid Viejo corner Gil Puyat Streets,
Quiapo, Manila City

ATTN: MR. JOEL T. GO
President

2.0 TYPE AND NATURE OF PROJECT

2.1 Project Description

2.1.1 Objective

The primary objective for which the corporation was organized is mineral exploration especially for gold, copper, silver and other associated minerals with the objective of defining a commercially viable mineral deposit.

2.1.2 Exploration Schedule and Cost

ACTIVITIES	DURATION (*Month*)	COSTS (*Pesos*)
2.1.2.1 Research Work	1	100,000.00
2.1.2.2 Reconnaissance / Regional Survey or Studies		
2.1.2.2.1 Remote Sensing Studies	1	100,000.00
2.1.2.2.2 Regional Geological Survey	3	150,000.00
2.1.2.2.3 Regional Geochemical Survey	3	200,000.00
2.1.2.2.4 Regional Geophysical Survey	2	500,000.00
2.1.2.3 Semi-detailed survey or follow-up Studies		
2.1.2.3.1 Geologic mapping / alterations studies	5	250,000.00
2.1.2.3.2 Geochemical Survey	3	200,000.00
2.1.2.3.3 Geophysical Survey	4	500,000.00
2.1.2.3.4 Sub-surface investigation		
2.1.2.3.4.1 test pitting / trenching	3	100,000.00
2.1.2.3.4.2 aditing / tunneling	2	100,000.00
2.1.2.4 Topographic Survey	3	400,000.00
2.1.2.5 Detailed Survey / Studies		
2.1.2.5.1 Detailed Geologic mapping	3	200,000.00
2.1.2.5.2 Detailed Geochemical Survey	2	200,000.00
2.1.2.5.3 Sub-surface investigation		
2.1.2.5.3.1 Drilling	6	3,500,000.00
2.1.2.5.3.2 Test Pitting	6	400,000.00

2.1.2.6	Interpretation of Results	3	100,000.00
2.1.2.7	**Total Exploration Cost**	**50**	**PHP 7,000,000.00**

2.2 Type and Nature of Mineral Deposits to be Explored and minerals to be Derived

Exploration will be for vein and other types of gold ore; copper porphyry ore with associated gold, silver and other secondary minerals. The search for gold, silver and other valuable minerals will cover both the primary vein and disseminated types of ore deposits.

3.0 GENERAL LOCATIONS AND AREAS TO BE COVERED

3.1 Location and accessibility

The area of interest is generally located in the municipalities of Tubod, Mainit, Alegria and Bacuag - Surigao del Norte Province.

Tubod Municipality which is about 36 kilometers south of Surigao City is accessible by land both from Surigao City in the north and is 88 kilometers from Butuan City to the south. Both cities are accessible by regular trips via land, sea and air from Manila City and Cebu City. National and municipal roads from Alegria, Mainit and Tubod traverse the property. Alegria Municipality is 48 kilometers from Surigao City and around 75 kilometers from Butuan City.

The areas directly affected by this MPSA application are barangays Motorpool, Marga, Poblacion, San Pablo, Del Rosario & Cawilan of Tubod Municipality; barangays Magpayang, Siana & Dayano of Mainit Municipality; barangays Pongtud, San Juan, Alipao, San Pedro & Budlingin of Alegria Municipality and barangay Payapag of Bacuag Municipality.

3.2 Total area covered by the application

The MPSA application consists of thirty nine 81-hectare meridional blocks covering an area of approximately 3,288.7676 hectares more or less. It is bounded by the following coordinates:

CORNER	LATITUDE	LONGITUDE
Block I (*Area: 1,265.0309 Has*)		
1	9°28'30"	125°35'00"
2	9°29'30"	125°35'00"
3	9°29'30"	125°34'30"
4	9°30'30"	125°34'30"
6	9°30'00"	125°35'00"
7	9°30'00"	125°36'30"
8	9°30'30"	125°36'30"
9	9°30'30"	125°37'30"
10	9°30'00"	125°37'30"
11	9°30'00"	125°37'00"
12	9°29'00"	125°37'00"
13	9°29'00"	125°36'30"
14	9°28'30"	125°36'30"

Block II (*Area: 2,023.7367 Has*)

1	9°31'00"	125°34'00"
2	9°31'30"	125°34'00"
3	9°31'30"	125°33'30"
4	9°32'00"	125°33'30"
5	9°32'00"	125°33'00"
6	9°32'30"	125°33'00"
7	9°32'30"	125°33'30"
8	9°34'00"	125°33'30"
9	9°34'00"	125°34'00"
10	9°34'30"	125°34'00"
11	9°34'30"	125°35'30"
12	9°32'00"	125°35'30"
13	9°32'00"	125°35'00"
14	9°31'30"	125°35'00"
15	9°31'30"	125°34'30"
16	9°31'00"	125°34'30"

4.0 DESCRIPTION OF EXISTING ENVIRONMENT WHERE WORK IS PROPOSED TO BE UNDERTAKEN

The various environmental data that are reflected in this report are excerpts taken from published reports (*Alegria Comprehensive Land Use Plan / Jan. 1999; Tubod Comprehensive Land Use Plan / May 2002; Mainit 2000 Socio Economic Profile; Bacuag Comprehensive Land Use Plan / Aug. 1999*).Addtional environmental baseline studies may be undertaken on the various subjects, by the proponent during the course of its exploration activities in preparation for a full blown Environmental Impact Assessment (*EIA*), as a requirement for an Environmental Compliance Certificate (*ECC*).

4.1 Land Environment

4.1.1 Topography / physiography

The mainland portion of the province is characterized by rugged and mountainous relief. An unbroken ridge, rising to 1,000 meters extends along the western side of the province, walling-in the lake (*Mainit*) to the east and dropping to the coast. The mainland topography reflects tectonic influence arising from the province's location on the tip of the Philippine Fault Zone. The area is prone to earthquakes. The eastern side of Dinagat Island is mountanous with elevations reaching over 900 meters but the western side of Dinagat and the whole Surigao and the numerous islands are characterized by broken relief or relatively low elevation.

The northern block of the property covering barangays Motorpool, Marga, Poblacion, San Pablo, Del Rosario & Cawilan of Tubod Municipality; barangays Magpayang, Siana & Dayano of Mainit Municipality and barangay Pongtud of Alegria Municpality is characterized by flat to gently rolling area in the west and low but fairly rugged topography in the east. The flat area which is about 60% of the northern block has elevations ranging from 0 to 40 meters. The eastern portion (*7% or 372 hectares with 30 to 50% slope in Tubod*) is characterized by rugged and karst topography with elevations ranging from 40 to 320 meters. The southern block of the property

covering barangays San Juan, Alipao, San Pedro & Budlingin of Alegria Municipality and barangay Payapag of Bacuag Municipality has moderate to rugged topography (*heavily dissected with gullies & high slopes*) with elevations ranging from 40 meters to 772 meters (*the highest peak within the application area*).

4.1.2Land Use / capability

Of the total project area of 3,288.7676 hectares, it is estimated that about 60% is logged over forest and 40% as brushland / grassland and / or agricultural areas. A great percentage of the logged-over forest trees have been classified as lesser known species, meaning having minimal commercial value. The complete absence of primary and secondary regrowth could have been the result of past logging activities followed by slash-and-burn farming.

The eastern and southern portions of the property are generally logged-over characterized by second growth trees with much "kaingin" open areas. The western part is planted with coconut, root crops, corn, rice, bananas, fruit trees, other shrubs and wild cogon. The mountainous south block was known before as the vegetable bowl of Surigao del Norte Province while its north eastern part is still classified as timberland (*2,329 hectares in Alegria Municipality*).

Whatever small clearings that will be required during exploration to give way to spur roads, drill rigs, leveling of drill pads, test pits and IP sampling holes, etc., will not exacerbate the already denuded nature of the area.

Tubod Municipality has 3,319 hectares of agricultural lands (*coconut – 53.3%, rice – 11.8%, fruit trees – 3.9%, bananas – 3.3%, root crops – 2.5%*).

Alegria Municipality has 3329 hectares of arable land (*50% of its total area*) with coconuts covering 1,795 hectares; rice – 820 hectares, bananas – 193 hectares; root crops – 52 hectares leaving 469 hectares unutilized.

4.1.3Pedology

Chemical analysis of hill, flat land soil and sediments from surface water systems will be done as part of a baseline data study. Farm management practices – ussually the absence or the application of fertilizers, pesticides and herbicides will affect the sediment quality which may be brought about by the natural high levels of agricultural soil leached out into the river systems. Analysis will be made on samples of total carbonates, total organic matter, nutrient contents and silt-clay fractions.

4.1.3.1 Tubod Municipality has four soil types:

4.1.3.1.1 River wash - sand and pebbles deposited by flood water along the river banks and some portion near the rivers. This is found along Bgys. Timamana and Motorpool.

4.1.3.1.2 Clay - a malleable variety of earth which is plastic when wet and hardens when dry (*used for making bricks and pottery*). Primarily located at Bgy. Cawilan.

4.1.3.1.3 Silty Clay Loam - soil that is also mixed with clay and fine sand. The rice, corn and coconut lands in the lowlands of Bgys. Marga, Poblacion, San Pablo, Del Rosario and part of Bgys. Cawilan and Motorpool are composed of this type of soil.

4.1.3.1.4 Mountain soil - undifferentiated and found in the hills of Bgy. Capayahan and San Isidro.

4.1.3.2 Mainit Municipality has four soil types:

4.1.3.2.1 San Manuel Sandy Loam (*688.4 hectares*) around Lake Mainit.

4.1.3.2.2 Malimono Clay Loam (*3,699.6 hectares*) in the west.

4.1.3.2.3 Taganaan Clay Loam (*7,126.9 hectares*) in the north.

4.1.3.2.4 Malalag Clay Loam (*1,675.1 hectares*) in the northeast.

4.1.3.3 Alegria Municipality has three thick, organic and fertile soil types:

4.1.3.3.1 Anao-Aon Clay Loam covers 25.47% of the whole municipality.

4.1.3.3.2 Bolinao Clay occupies 63.11% of the municipal area.

4.1.3.3.3 Kicharao Clay Loam is found in 11.42% of the southern municipal area.

4.1.3.4 Bacuag Municipality in Barangay Payapag only has undifferentiated mountain soil.

4.2 Water Environment

4.2.1 Water quality

No records on the monitoring of the water quality of the river systems in the area are available. During the conduct of environmental baseline studies, a detailed water-sampling program will be launched on strategic sampling points for the detection of metals such as Al, As, Au, Bi, Ca, Cd, Cl, Cu, Cr, Fe, Hg, Mg, Mo, Na, Ni, Pb, S_1, Se, Zn. The studies will also include a more important indicator of water quality – the biological oxygen demand (*BOD*) among other things. Samples will also be taken for quality analysis of:

4.2.1.1 Total suspended solids (*TDS*)

4.2.1.2 Acidity (*pH*) limits as compared to standards set by the Environmental Management Bureau (*EMB*), DENR under DAO 34 & 35, Series of 1990; EC; Alkalinity; CO_3; HCO_3; Turbidity; Conductivity; Temperature.

4.2.1.3 Total settleable solids (*TSS*)

4.2.1.4 Copper content based upon World Health Organization (*WHO*) standards (*.05 mg/1*) as well standards set by EMB.

4.2.1.5 Iron content based on WHO and EMB standards.

4.2.1.6 COD, oil, grease and total colliforms in comparison to standards set by EMB.

4.2.1.7 Cyanide (*mg / l*)

Water source in the project site is from artesian wells and springs which are portable and used by residents and livestock for drinking without any treatment procedures. The environmental baseline studies will involve all the river systems and tributaries in the MPSA area.

4.2.2 Hydrology

Beyond the eastern boundary of the property, the area is cut and traversed by the headwaters and tributaries (*the Payapag River in Bgy. Payapag, Bacuag Municipality*) of the Campo river which ultimately drains into the Hinatuan Passage. The western part of the area is traversed by the Timamana & Tubod creeks; Magpayang River; the Siana, Dayano, Alipao and Legaspi creeks. All creeks & river ultimately drain westward into Lake Mainit.

Alegria contains 5 rivers (*Magpayang, Alimpatayan, Candi-is, Magtiaco and Tigbawan*); 6 creeks (Alipao, Tugbungon, Anislagan, Legaspi, Magdungao); 2 water falls (*Lemundo, Paraganon*); 1 hot spring (*Pongtud hot spring – with discharge rate of 8 LPS*) and all draining westward into Lake Mainit. Alegria has an annual average rainfall of 3,639.5 mm. The driest month is May (*lowest precipitation of 62 mm.*) and the wettest month is December.

4.3 Climatology / meteorology

Surigao del Norte falls under type II climate with no pronounced dry season, but with very pronounced rainfall from November to February. The average monthly maximum is 600 mm in December to February and monthly minimum is about 500 mm in August to September. However, the incidence of rainfall during the same months in different years appears highly variable. The average number of rainy days per month is 20 to 25 from November to March and 13 to 16 from April to October. Although open to the Pacific Ocean on the eastern coast, the province is prone to typhoons only at far north which is exposed to about 7% of all typhoons hitting the Philippines.

4.3.1 Predominant Climate Type	Type II (*No dry season but with a very pronounced maximum rainfall from November to February*)

4.3.2	WET SEASON	November to February
4.3.3	DRY SEASON	No definite season
4.3.4	TYPHOONS MONTHS	November to January
4.3.5	Average Annual Rainfall	144.72 in. or 3,673.8 mm.
4.3.6	Average Annual Temperature	80.4 F
4.3.7	Average Annual Relative Humidity	85%
4.3.8	Wind Velocity: Monsoon Tradewinds	8 kilometers per hour 5 kilometers per hour
4.3.9	Prevailing Wind Direction	Northeast ("*Habagat*") Southwest ("*Amihan*")
4.3.10	No. of rainy days in a year	216 Days

In Tubod Municipality, the average number of rainy days per month is 20 to 25 from November to February and 15 to 18 from April to October.

In Bacuag Municipality, climate is type III category with rainy months from October to February (*January precipitation – 1,085.3 mm.*). Temperature ranges from 24.3 to 32.3°C. Warmest period is April to May, while coolest months are January to February. Average humidity is 83%.

4.4 Geological / geomorphological environment

The geology and the geomorphology of the region continues to influence the hydrological, seismological and sedimentation pattern not only of the area of interest but in the whole Surigao Region. The types of rocks and their structural configuration, control, to a large degree, the manner in which surface run-offs erodes the weathered rock.

4.4.1 Structural Geology

The deformation of the district is related to the recurrent movement along the north-northwest trending Philippine Rift Zone. As a consequence, sub parallel fault systems were formed which played significant roles in the structural control of intrusive bodies and mineralization. The significant north-north-easterly trending structures include:

4.4.1.1 The Cadbadaran Fault (*also called the Butuan Fault by Santos-Yñigo, 1979*) that is located along the western shoreline of the Surigao Peninsula.

4.4.1.2 The Jabonga Fault (*also called the Mainit Fault by Santos-Yñigo, 1979*) that is located along the western shore of Lake Mainit.

4.4.1.3 The Surigao Valley Fault along which the Siana and Mindanao Mother Lode Deposits are located.

Mineralized fractures in the district seem to follow conjugate fault systems. The major gold mines in the district are situated either on or to the east of the north-north-westerly and vertical to steeply dipping Surigao Valley Fault in areas dominated by Mabuhay type andesite intrusives. Examples of the mineralization trend are Mindanao Mother Lode (*the Tabon-tabon trend*), Wichman's Prospect and part of Siana.

There is a common structural pitch element between the Siana massive sulphide zone which pitches south at 30, the Tabon-tabon Vein which has a pitch length of 750 metres and strike length of 240 metres with a southerly pitch of 30, and the parallel 50-vein with a pitch length of 480 metres and a strike length of 150 metres with a 40 southerly pitch (*Santos-Yñigo, 1979*).

Complementary northeasterly structures splaying off the Surigao Valley Fault are also important hosts to mineralization, including the East Mindanao, Mapaso and Masapelid (*Lakandula or Km 73*) Deposits.

Some prominent east-west trends in East Mindanao and Siana are thought to represent mineralized tension fractures (*Santos-Yñigo, 1979*).

4.4.2Stratigraphy

The stratigraphy is derived from Mercado et al, 1980 and other sources.

4.4.2.1 Pre-Cretaceous Basement Complex: Sohoton Formation. Basin deposition of clastic sediments and limestone was followed by the intrusion of ultrabasic rock essentially of peridotite, dunite, pyroxenite, gabbros, diabase, and later diorite. These events resulted in initial extensive metamorphism of the sediments and the intrusions were followed by the extrusion of basalt and dacite. The sediments were transformed into schist, marble, hornfels and slate while the igneous rocks formed metadiorite, metadacite, gneisses and schists. The metamorphosed sedimentary rocks and various types of amphibolitic schists are collectively known as the Basement Complex or Sohoton Formation.

4.4.2.2 Paleocene-Cretaceous: San Isidro Formation. The continued intrusion of basalts and andesites in the western range formed the San Isidro Formation. The basalt and andesite facies largely correlate with the Pangulangan basalt delineated by United Nations Development Program (*UNDP*) / Mines & Geosciences Bureau (*MGB*) geologists at northern Agusan Province. The basalt consists of pillow lavas, locally vesicular with calcite filled amygdules, and with aphyric to plagiophyric textures. It is commonly chloritised and may pass to greenschist facies metamorphics. Andesite is dark to greenish-grey, fine to medium grained and some lighter coloured varieties are distinctly porphyritic. It generally consists of plagioclase, augite, and hornblende, with magnetite, ilmenite, apatite, titanite and other accessories.

Common alteration products include chlorite, epidote and zeolite minerals. The basalt and andesite are possibly related to the later phases of basalt and andesite in the Sohoton Formation.

4.4.2.3 Late Eocene: Humandum Serpentinite. The ultramafic complex consists essentially of peridotite and dunite, which was later serpentinized. These ultramafics commonly form linear sill-like bodies closely associated with the major structures and are possibly derived from underlying ophiolite.

4.4.2.4 Upper Eocene: Madanlog Formation. The Madanlog Formation consists of conglomerate, sandstone and shale with inter-bedded white to pinkish limestone with occasional serpentinite clasts. It overlies the older formation with an angular unconformity.

4.4.2.5 Lower-Upper Oligocene: Bacuag Formation. Deposition of the Bacuag Formation probably occurred in the Lower to Upper Oligocene. The main features are the inter-bedded basalt flows, basalt-derived conglomerate, and shale with lenses of conglomerate. Extensive occurences are found in Payapag, Bacuag.

4.4.2.6 Upper Oligocene to Lower Miocene: Siana Formation. This sequence consists of the following from the base upwards with an approximate thickness of two hundred meters:

4.4.2.6.1 Fine grained felspathic sandstone,

4.4.2.6.2 Limy mudstone and thin-bedded limestone,

4.4.2.6.3 Massive grey to dark grey limestone with inter-bedded coarse calcirudite, calcarenite, calcisiltite and finely laminated felspathic sandstone.

4.4.2.7 Lower to Middle Miocene: Timamana Limestone. Deposition of sediments continued consisting of conglomerate, shale and sandstone, thin coal seams felspathic sandstone and the characteristic white limestone with an estimated thickness of two hundred meters. During the middle Miocene, major movement along the Philippine Rift Faults was active which was followed by slow but continuous uplift and block faulting.

This was followed by intrusion of the early Ipil type andesites in the western range together with dacite porphyry in the Bad-as and Alegria areas. In late Miocene, there was a period of major structural re-adjustment that resulted in the intrusion of the Mabuhay type andesite. This later intrusion was followed by extensive fracturing and brecciation within the andesites and limestones that was an important factor for subsequent gold-copper mineralization.

4.4.2.8 Pliocene: Tugunan Formation-Maniayao Andesite. Extensive erosion of the Ipil Andesite and other rocks supplied materials for the Tugunan Formation. Volcanism initiated intrusion and deposition of tuffaceous sediments and

volcaniclastics. The intrusion of Maniayao andesite sealed off Lake Mainit's northern outlet causing the lake to outflow to the south.

4.4.2.9 Pleistocene: Placer Conglomerate. Deposition of the coarse Placer Conglomerate took place in the coastal regions of Surigao and nearby islands. The eroded materials were derived from elevated Ipil and Mabuhay Andesite intrusives.

4.4.2.10 Quaternary to Recent: Clastic and gravel deposits. Continuous erosion of the existing landmass and beach gravels took place along the western and northern coastlines of the Surigao Peninsula.

4.4.3 Geologic Hazards

4.4.3.1 Suricon mining operations resulted in the formation of three waste dumps located adjacent to the northeast, west and south of the Siana open pit. Waste dump # 1 is now covered with grasses and shrubs where residents of nearby areas allow their cows and carabaos to graze. Lush vegetation is now present in waste dumps # 2 & # 3. Secondary plant growth (*banana, ipil-ipil, acacia*) has naturally covered the dump sites.

4.4.3.2 Suricon mining operations also left three tailings ponds located to the northwest of the Siana open pit. TP # 1 and TP # 2 are nearly dried up and already vegetated by grasses and shrubs. TP # 3 is currently filled with water. A pipeline is used to discharge water from the pond to prevent overflow but may also create instability along the pond's dike. Adjacent to the dike wall are located some houses of residents in Barangay Siana.

4.5 Biological Environment

4.5.1 Terrestrial plants and animals

4.5.1.1 Plants: The present vegetation in the project area which used to be a primary forest and still retain some remnants of this can be classified homogeneously into three palnt community types, viz., the forest community, the understorey plant community and the agricultural community.

In the agricultural communities, two types of farming sysytems are prevalent, i.e., the lowland farming system and the upland farming system which included sedentary farming and shifting cultivation (*kaingin*). Coconut plantations, rice, bananas, corn and various fruit trees, sweet potato, cassava, gabi, etc., are the most extensive agricultural products produced by both upland and lowland farmers making that their major source of income.

The area, although heavily encroached by "Kaingeros", still retains some small remnants of its primary forest consisting mainly of mossey forest and mid-mountain forest. It has barely enough second growth and secondary forest habitats

to support the few existing wildlife species that are occassionally seen in these areas particularly during rain periods. Vegetation cover generally consists of cogon, nipa patches, shrubs, tropical grasses and some root crops.

4.5.1.2 Animals: Seasonal variation in the number of bird genus in various locations of the area were recorded. Some wildlife consisting of a few species of amphibians, reptiles, birds (*wild ducks*), and mammals (*cows, carabaos, goats, pigs, chickens*) have been commonly seen in the MPSA area. More than half (*60%*) of the number of these species are several varieties of birds are diurnally active. Of the other wildlife species, lizards and snakes are the most common. Relatively, there are more diurnally active lizards and snakes than frogs and mammals. Frogs and mammals which are noctural animals were the least observed species except in areas near rivers and creeks.

4.5.2Marine plants and animals (*including protists*)

Preliminary information gathered about the benthic fauna in the area demonstrate the presence of diverse assemblage of organisms in varying stages of their life cycle. Mollusks and segmented worms are common in the Magpayang and Dayano rivers. Diatoms dominate in areas downstream of the rivers while blue green algae abound upstream where water depth are shallow and slow flowing particularly in points of confluence of two or more tributaries. The dominant zooplanktons are the copepods. The rivers and various creeks including the Siana open pit (*now filled with water*) are known to host fresh water fishes like tilapia, carp, mudfish (*hito*) and cyprinidges.

4.6 Socio-Economic Environment

4.6.1Tubod Municipality (*fifth class*) with 9 barangays has a total population of 10,318 in 2,022 households as recorded by the 1995 National Statistics Office (*Bgys. Cawilan – pop. 1,243; Del Rosario – pop. 1,221; Motorpool – pop. 1,214; Marga – pop. 1,199; San Pablo – pop. 1,009; Poblacion – pop. 1,515*) registered a population of 1,243. Average population density is 189 (*persons per sq. km.*) with an annual population growth rate at 10.03%.

- Most of the inhabitants are Roman Catholics (*86.28%*); Aglipayan Church (*7.79%*); UCCP (*2.18%*); Jehovah's Witnessess (*1.15%*); Seventh Day Adventist (*0.89%*); INC (*0.78%*).

- Major dialect is Boholano (*70.92%*). Other dialects include Surigaonon (*21.96%*), Cebuano (*1.97%*), Mamanwa (*0.88%*), Butuanon (*0.77%*), Kamiguin (*0.56%*), Dabaweño (*0.51%*). Literacy is 93.79%.

- The main source of livelihood are farming, fisheries and livestocks. Agricultural crops produced include corn; coconut; legumes; root crops such as camote, cassava; bananas and vegetables. Noted fishes are tilapia, carp, mudfish & cyprinidges. Livestock include carabao, cows, pigs, chicken, goats and duck.

- Commercial establishments include 5 rice mills, 140 sari-sari stores, 9 copra buyers, 3 bakeries, 7 welding shops, 3 cockpits, 5 billiard halls, a plant nursery, 2 pharmacies & a stone cutting shop. Market day (*"Tabo"*) is every Wednesday only.

- There are four elementary schools (*75 teachers and 1,933 students*) and two national high schools (*31 teachers and 905 students*).

- Houses are singles made of wood and nipa as the roofing (*31.43%*). Those who can afford have houses of concrete and GI sheet roofing (*39.15%*); half concrete (*22.98%*); houses with no toilet (*6.47%*); houses with Antipolo system (*3.36%*).

- Most common illnesses are influenza, bronchitis, pneumonia, tuberculosis, diarrhea, anemia, parasitism, hypertension, schistozomiasis, chicken pox, malaria, measles and heart diseases. Leading causes of death are accidents / violence, cardio-vascular diseases, septicimia, pneumonia, tuberculosis, cancer and renal diseases. There is a high incidence of malnutrition (*7.8%*).

- Every barangay has a day care and health center and 1 very dilapidated municipal health center.

- Most roads have gravel surface and are considered to be in fair condition. The main public transport service utilized are tricycles.

- There is municipal telegraph office; private telephone company; cellphone cell site; icom radio system; post office; 2 national TV channels have good reception.

- Electricity is provided by SURNECO (*82.88% of households*) with all barangays fully energized. Water supply is generally classified as level III (*97.23% of households*).

- Recreational facilities include a 9 basketball courts, 1 volleyball court, 2 playgrounds and 1 gymnasium.

4.6.2Mainit Municipality (*fifth class*) with 21 barangays has a total population of 21,780 in 4,090 households as recorded by the National Statistics Office (*Bgys. Magpayang – pop. 1,569; Siana – pop. 848; Dayano – pop. 357*). Average population density was recorded at 141.845 per square kilometer and an average annual growth rate of 0.25%.

- Most inhabitants are Roman Catholics (*69.8%*) with significant number of Aglipayans (*10.76%*), UCCP (*10.14%*), Protestant Groups (*2.2%*), INC (*1.27%*) and Seventh Day Adventists (*1.42%*).

- Major spoken dialect is Surigaonon (*92.39%*); but many understand Tagalog; other dialects include Boholano (*2.1%*), Cebuano (*1.65%*), Mamanwa (*0.76%*); Dabaweño (*0.46%*). Literacy is 91.82%.

- Main sources of livelihood are fishing and farming (*85.91%*); some are employed by the LGU and other gov't. agencies like the schools. Farmers are mostly in rice (*2,594 hectares*); coconuts (*5,842 hectares*) root crops like cassava (*41 hectares*) and camote (*39 hectares*); poultry (*7,470 heads*) and livestock (*8,334 heads*).

- Commercial establishments include 2 bakeries, 2 pharmacies, 1 gas station, 15 major retail stores, 1 eatery, 1 copra buyer, I trucking service, 1 video store, 1 jewelry store, 2 furniture shops.

- Elementary schools are found in each barangay (*150 teachers and 4,652 students*). Five national & 1 private high schools are in Mainit (*42 teachers and 1,869 students*); one national arts & trade school (*25 teachers and 698 students*).

- Most residents have single houses made of wood (*29.07%*), bamboo / sawali (*9.39%*). Some wealthy residents have concrete houses with GI sheet roofing (*7.20%*); half concrete – half wood (*3.21%*).

- Common illnessess include cough, cold, influenza, bronchitis, pneumonia, skin disease, diarrhea, fever and hypertension. Most common causes of death are tuberculosis (*19.5%*), pneumonia (*26.08%*), heart disease (*21.74%*), violence (*13.04%*) and old age. There is a high incidence of moderate malnourishment (*14.42%*).

- There are four barangay health centers and a 15-bed community hospital equipped with minor operating set, nebulizer & various medicines. Feeding centers are found in all barangays.

- Most roads have gravel surface and are in fair condition. Tricycles are the main public transport service. There are some jeepneys & trucks. Non-motorized bancas are also commonly used.

- Common mode of communication are cellphones (*generally only around the poblacion*), VHF bases & 25 hand held radios, 5 telephone stations, 1 postal station, 1 telegraph station, 1 LBC cargo service.

- Electricity is provided by the local electric company. Water supply is classified as level II.

4.6.3Alegria Municipality

In 1999, this fifth class municipality reached a total population of 13,122 in 2,091 households; population density is 111.13 per square kilometer in Bgy. San Pedro (*pop. 2,323*) while the rural Bgys. of San Juan (*pop. 985*), Alipao (*pop. 1,549*) Pongtud (*pop. 1,457*) and Budlingin (*pop. 543*) have only an average population density of 14.38 per sq. km. comprising mostly farmers.

- Most widely spoken dialect is Surigaonon (*87.51%*). Other dialects are Cebuano (*7.58%*) and Boholano (*1.27%*). The major religion is Roman Catholic (*70%*); Aglipay - Phil. Independent Church (*13%*); INC (*10%*); UCCP (*5%*).

- The sources of livelihood are mainly agricultural (*22% of the work force*): farming (*lands by type: coconut - 27%; rice -16%; banana - 3%; root crops – 1%*); livestock (*2,745 heads*) & poultry (*4,655 heads*); fishing (*202 MT annually*)
- There are 1,890 housing units built of coco-lumber, cogon and nipa roofs; houses with access to sanitary toilets (*97.5%*); houses with access to piped water (*17%*) with level II water service in only 5 barangays while the rest are dependent on springs (*Bgys. Pongtud, Alipao, Budlingin*), shallow wells (*Bgys. Alipao – 6; Pongtud – 6; San Juan – 2; San Pedro – 35*) and deep wells (*Bgy. Pongtud – 1*); houses with electricity (*67%*); houses with kerosene gas (*20%*); Bgy. Budlingin has no electrical connection. Seventy percent of households use wood / bamboo as cooking fuel.

- Most common illnesses are upper respiratory tract infections, bronchitis, acute gastroenteritis. Mortality resulted from pneumonia, schistosomiasis, pulmonary, tuberculosis, septicemia, and pre-maturity. There is high incidence of malnutrition.

- One elementary school each is present in Bgys. Pongtud, San Juan, Alipao, San Pedro & Budlingin with a total of 69 elementary teachers and 2,286 students.There is one high school in the municipality (*37 teachers & 986 students*).

- There are 11 day care centers, 6 pre-school learning centers, 11 basketball courts, 3 volleyball courts.

- There is 1 rural bank, 1 cable TV company, 1 public calling office, 1 telephone / telegraph office, 1 SSB radio service, 1 postal station with 1 letter carrier; 129 sari-sari stores, 5 welding / vulcanizing shops, 10 rice mills / post harvest facilities, 1 bakeshop, 1 photoshop, 2 billiard halls, 2 mini hardwares, 2 ice cream makers, 3 groceries wholesellers, 1 copra buyer, 1 beauty parlor, 1 Coca-Cola sales office, 1 art shop. Market days are every Monday and Thursday only.

- Most municipal and barangay roads have gravel surfacing. The 2.5 km. provincial road to Bgy. Budlingin is a rugged gravel road with poor maintenance & no proper drainage. Most timber bridges are dilapidated & need to be converted to steel or concrete.

- Public transport service is via tricycles.

4.6.4Bacuag Municipality

In 1995, the total population was 12,309 in 2,133 households (*Bgy. Payapag – pop. 978 in 170 households*). Bacuag population density is 1.28 (*Bgy. Payapag – pop. Density 0.40*)

- Most inhabitants are Roman Catholics (*76%*); Aglipay (*12%*); INC (*6%*); UCPP (*3%*).

- Major dialects are Surigaonon (*59.77%*), Boholano (*36.6%*), Cebuano (*2.5%*), Mamanwa (*0.4%*). The literacy rate stands at 89%.

- The main source of livelihood are agriculture (*6,193 hectares – coconut 50.4%, rice 9.47%, Banana 1.51%*), fisheries and forestry (*292 hectares of timberland*) which involves 77.88% of the males work force and 33.57% of the female work force. The service sector provides livelihood for 63.1% of the female work force and 15.12% of the male work force.

- Commercial establishment include 28 sari-sari stores, 17 copra buyers, 4 bakeries, 8 rice mills, cockpit, 3 billiard halls, 2 eateries, 1 welding shop, 5 rice retailers, 3 hollow block makers, 2 dry goods stores, 1 funeral parlor, 1 telegraph office, 4 food processors, 6 piggeries.

- There are 13 elementary schools (*91 teachers and 2,767 students*); 2 national and 1 private high schools (*48 teachers & 1,157 students*).

- Houses are singles made of bamboo / sawali (*59.95%*); half concrete (*20.26%*); concrete (*10.96%*) and wood (*8.81%*); houses with no toilet (*7.4%*).

- Most common illnesses are pulmonary tuberculosis, pneumonia, cardio-vascular diseases, hypertension, asthma, diabetes, liver cirrhosis. Leading causes of death are tuberculosis, accidents / violence, pneumonia, cardio-vascular diseases. There is a high incidence of moderate malnutrition among children ranging from 13% to 38%.

- There are 4 barangay health centers and 1 municipal health center.

- Most roads have gravel surface but road conditions are generally poor. Bridges are made of wood and need replacement. The main public transport service utilized are motorcycles and light vehicles.

- There is a 1 national telecoms (*telegraph*) and 1 private office – both for long distance telephone services; postal service with one employee; a SSB radio municipal facility; cellphone service in the poblacion is erratic.

- 71.68% of households use electricity while 28.32% use kerosene for light. 80% of households use wood for cooking. Water supply is classified level III in the poblacion; level II communal water system exists in Barangay Payapag.

- Recreational facilities are mostly located in the poblacion.

5.0 DESCRIPTION OF EXPLORATION WORK

5.1 Description of Exploration Work

5.1.1 Geological mapping

Involves the plotting in maps of appropriate scale, field observations of geologic impressions such as hydrothermal alteration, weathering, zoning, mineralization, silicification, sericitization, layering, rocks types; geologic structures as faults, folds, fractures, shear zones, outcrops, etc. for systematic correlation and interpretation of major geological events that occur in a particular area(*s*). The equipment to be used are simple brunton compass and tape, hand lens, aerial photographs, GPS, etc.

5.1.2 Geophysical methods

5.1.2.1 Ground magnetometer survey - involves the use of a magnetometer. A magnetometer is a device that is capable of measuring the earth's magnetic field to an accuracy of a few gammas (*where the gamma is defined as 10-5 oersted*). The earth's magnetic field varies from about 0.35 oersted in a horizontal direction at the magnetic poles. Rocks possessing ferromagnetic susceptibility become magnetized in the direction of the earth's field and some rocks exhibit permanent magnetization that may be independent of the earth's present field. The presence of such rocks distorts the normal magnetic field in their vicinity. It is generally known

that intrusions have a magnetic signature of relatively less amplitude than volcanics. A map or profile is prepared showing how the magnetic intensity varies over the area that are being investigated. The map can be used to a) define the presence of intrusions and faulting on a regional scale, and b) define hydrothermal altered rocks. In the case of a potassium radiometric survey, the results can be used to define potassic alteration around deposits, normally applicable to phorphyry copper-gold deposits.

5.1.2.2 Induced polarization (*IP*) is one form of geophysical survey making use of an artificial and controlled source and electrical energy being applied to the earth and the resulting electrical behavior of the ground is observed at the various detecting stations.

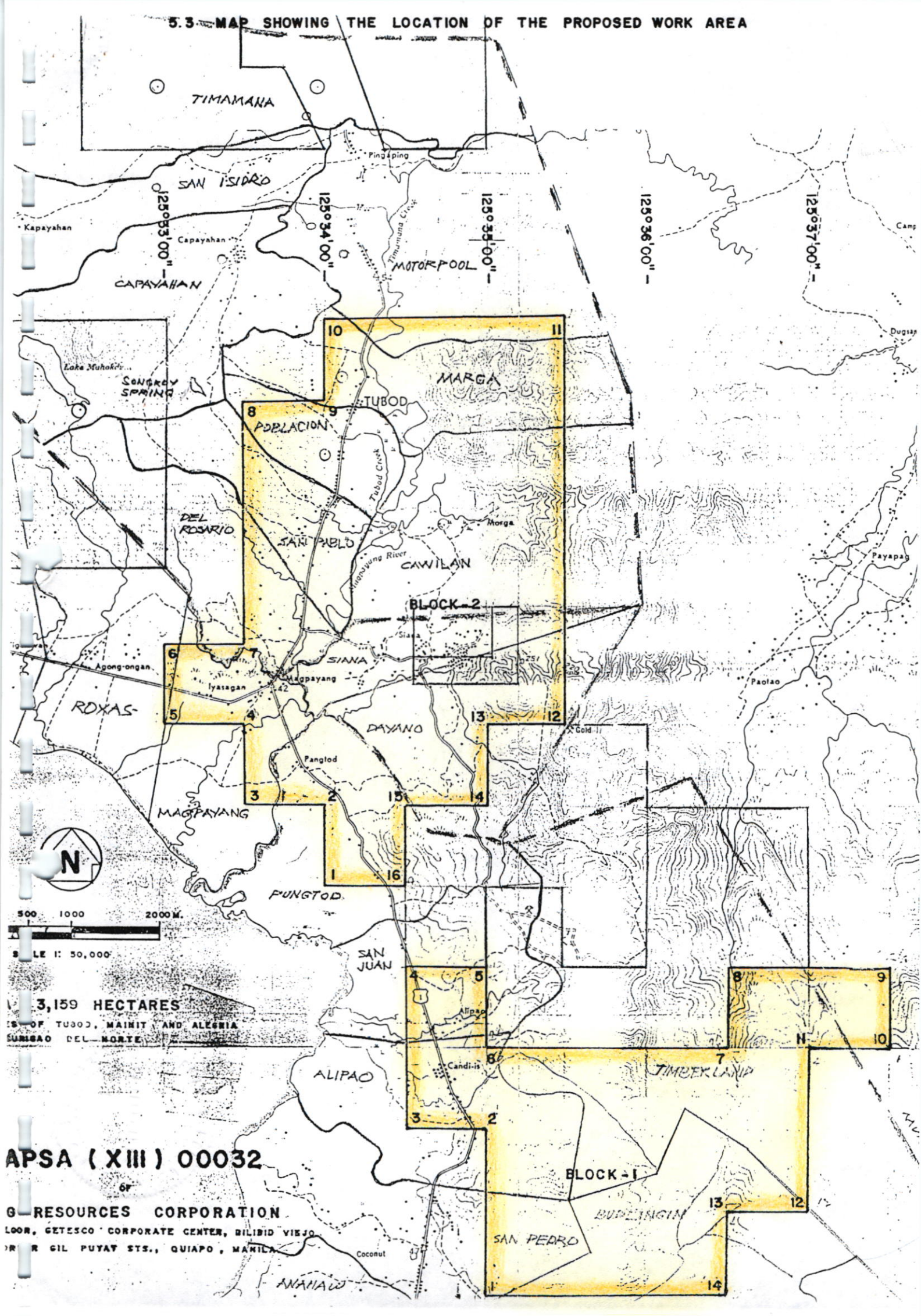
A special conductivity-related phenomenon which is the basis for the induced-polarization method, occurs when there are mixed modes of conduction, both ionic and electronic, in a volume of earth materials. In such cases, the ground will conduct alternating current better than direct current. The electrical conductivity of mineralized ground will change with the frequency of the applied current, while the conductivity of the barren ground will be constant as the frequency is varied.

5.1.2.3 Remote sensing is based on a concept that all objects above absolute zero temperature radiate electromagnetic energy due to atomic and molecular oscillations. External radiant energy reaching an object is either reflected or absorbed and then re-radiated at a different wavelength. It follows that all natural objects display a characteristic spectrum of emitted, absorbed and reflected radiation. In actual practice, however, the spectra are not as distinct as would be desired because of variations in emissions and reflectivity and the variations in its transmission through the atmosphere. It has a very limited depth penetration and only shallow features are revealed by both infrared and microwave imagery, a feature that cannot be seen in conventional photographs. Interpretation is accomplished by the same technique used in photogeology with remote sensing, giving due allowance for the wavelength recorded. From the satellite, the ground is illuminated by radar pulses at fairy low angles to the horizontal, and an image is created of the reflected energy not unlike that from low sun angle aerial photography which losses resolution due to longer wavelength. Synoptic imagery from very high altitude satellites produces an instantaneous "view" of very large areas which has important applications in structural geology.

5.1.3Geochemical methods

Involves the systematic collection of 1 kilogram stream sediments across river and creeks for Bulk Leach Extractable Gold (*BLEG*) analysis. In addition, 50-gram magnetic concentrates will be collected for gold and base metal analysis. The chemical analysis most commonly made in exploration is for traces of the ore metals. The materials sampled are usually rocks, soils, stream sediments, surface

5.3 MAP SHOWING THE LOCATION OF THE PROPOSED WORK AREA



or ground waters, vegetation and air. The sulfide ores of copper, lead, zinc, nickel and molybdenum are the most amenable to geochemical methods of exploration however precious metals such as gold and silver also respond well.

5.1.4 Others

5.1.4.1 Geochemical soil sampling - requires digging a 10-cm diameter x 15-cm deep hole using a post-hole digger. About one kilogram of soil is taken from the "B" horizon (*subsoil*) of the soil profile for analysis in a geochemical laboratory for copper, gold, lead and zinc and possibly other pathfinder elements.

5.1.4.2 Test pitting - requires digging a rectangular pit about 1.20 meters x 1.0 meter with a depth of about 10 - 15 meters. A one to two-kilogram rock sample over 3-meter sample intervals will be collected from a vertical channel cut along the side of the test pit. The objective is to determine the vertical persistency of the mineralization, which has been detected by the geochemical soil samples.

5.1.4.3 Trenching requires digging a small canal about 0.60 meters x 2.0 meter deep with variable lengths. A one to two-kilogram rock sample will be collected on the floor of the trench at a 3-meter sampling interval.

5.1.4.4 Diamond drilling - is simply the recovery of core samples that are recovered at a pre-determined depth from drill casings, usually every 3 meters. The core samples are split and sent to the laboratory for chemical analysis for Au, Ag, Cu, Mg, etc. The remaining core samples are kept in core boxes for safekeeping after cores logging, petrographic analysis, structural interpretation, etc. A total of 9 diamond drill holes are programmed with an aggregate of 2250 meters.

The drill rig is usually skidded to the drill hole site using its own power winch which normally eliminates the need to construct an access road. Drill pads will occupy an area of 5 meters by 5 meters only. Setting ponds and/or sediment traps are put up adjacent to the drill hole. Bentonite and/or portland cement are commonly utilized during the course of drilling. The drill rig consumes only diesel fuel. The diameter of the drill hole may range from four to ten centimeters.

5.2 Preliminary processing of samples

Samples that are collected will be dried, bagged and sent to Manila for geochemical, mineragraphic, fire assay and AAS analyses.

5.4 Estimated exploration costs

The total estimated exploration cost for two years amounts to PHP7,000,000.00

6.0 IDENTIFICATION OF POTENTIAL ENVIRONMENTAL EFFECTS

6.1 On Land

6.1.1 Surface disturbance OFF the mineral property

6.1.1.1 Road construction - Earth moving activities during road construction will displace rocks and soil along road cuts which could later be transported by run-offs into existing watercourses.

6.1.1.2 Dusts coming from motor vehicles that travel along roads in built-up areas can pose health hazards to people who have taken up residences nearby.

6.1.1.3 Silts and other forms of sediments that are carried by surface run-offs may be deposited in watercourses which could adversely affect water quality and increase turbidity. This could also affect the groundwater recharge and/or percolation thus adversely affect drinking water supply, in the nearby community, as well as bring harmful effects on the agricultural productivity of lands downstream.

6.1.1.4 Photosynthetic processes of the useful aquatic flora in the affected waterways may be reduced and could negatively affect whatever benthic activities of marine organisms and other aquatic habitats that could still be present.

6.1.1.5 Migration of forests habitats as a result of the noise and other disturbances created by equipment and exploration activities.

6.1.1.6 The construction of exploration access roads to various sites could increase accessibility to the remaining forest cover and thus open these areas to the exploitation of man, i.e., slash-and-burn kaingin farmers.

6.1.1.7 Temporary camps can generate organic and inorganic wastes which may contaminate nearby creeks and/or rivers.

6.1.2 Surface disturbance ON the mineral property

6.1.2.1 Road construction - Earth moving activities during road construction will entail removal of the vegetative cover, no matter how limited. The affected area will then be subjected to the erosion processes by torrential rains and/or run-offs. However, during exploration, the clearing and brushing of foot trails will create only minimal disturbance on vegetation.

Short & narrow access roads for diamond drill rig machine may be constructed during the 1st year. This will connect from the existing barangay roads into the drill sites. Access roads will facilitate easy travel of exploration equipment from one station to another and for manpower mobilization.

6.1.2.2 Holes and/or depressions are created in the ground during trenching, test-pitting, geochemical sampling (*approx 0.3 meter deep & about 1 to 5 kilograms samples per hole*) and IP sampling (*1 square meter & 0.3 meter deep*). However, only a minimal number of test pits and trenches will be introduced during the exploration period.

6.1.2.3 Survey traverse and stations

A survey program to locate the boundaries, monuments and drill sites will be implemented. This activity will involve the brushing and clearing of leaves and branches of trees which will render minor negative environmental effect on the vegetative covers.

6.1.2.4 Field camp facilities

Temporary campsites will be located at least 100 meters away from creeks and/or river systems and will be provided with proper latrine facilities. A waste segregation scheme will be introduced to encourage recycling and to lessen the volume of waste generation. Bio-degradable waste will be dumped in pits which will be covered with soil and revegetated before site abandonment.

6.1.2.5 Drilling pads and sumps

Sumps (*1 meter x 1 meter x 0.5 meter*) and pads (*10 meters x 10 meters*) will be constructed during the 1st year since 7 diamond drill holes will be sunked in the project area. Every drill station shall have its corresponding drilling sump and provided with drums for water supply. Ground leveling over small areas and limited clearing of vegetation will be implemented in setting up these 100 square meters drilling pads. Vegetation will be removed for the purpose. Sludge materials, mud, additives, polymers from diamond drilling operations, although contained in sumps and rehabilitated, may still pose minimal adverse effect due to surface run-offs.

The use of environmentally friendly bio-degradable additives, chemicals and effluents in diamond drilling operations will be promoted if necessary. However, it is foreseen that only bentonite and/or portland cement will be used during drilling.

6.1.2.6 Waste/rock dumps

During the course of exploration, very minimal amounts of rock or waste will be produced. It is projected that only in the channeling, trenching or test pitting activities shall rock/waste dumps be produced. Since these activities will be introduced in the area on a limited basis, there will be slight to no adverse effects on land during the exploration period.

6.2 On Hydrology and water quality

6.2.1 Trenching and driving of exploration adits/tunnels in highly pyritic zones below water tables could be potential source of acid rock drainage. No chemical substances are planned to be used during exploration. We shall minimize stockpiling and accumulation of unwanted debris or waste. Immediate backfilling of excavations will be done upon work completion.

6.2.2 Silts and other forms of sediments that are carried by surface run-offs may be deposited in watercourses, which could adversely affect water quality and increase turbidity. We shall put up settling ponds and/or sediment traps where necessary.

6.2.3 Silts carried by run-offs could be deposited in shallow water channels to form deltas that will act as obstruction to the free flow of water which will result in changes to the drainage patterns and even induce minor flash floods in some low lying areas. We shall provide proper drain channels and direct the flow to siltation/sediments traps.

6.3 On the ecology

6.3.1 Road construction activities, site preparation of diamond drill sites, test pitting and other excavation exercises will change the original land form which could adversely affect the natural aesthetic view of the area.

6.3.2 Migration of forests habitats as a result of the noise and other disturbances created by equipment and exploration activities.

6.3.3 Dusts coming from motor vehicles that travel along roads in built-up areas can pose health hazards to people that have taken up residences nearby.

6.3.4 Displacement and/or loss of flora and fauna may occur as a result of clearing operations and noise generation.

6.4 On socio-economic effects

6.4.1 The project could infuse some involuntary modification in the present lifestyle of the residents in the area. In this regard, avenues of change in living conditions could be opened with the creation of new opportunities like employment and other income generating activities with accompanying provisions for education, health, business and other mobility-related activities which overall carries a positive environmental effect.

7.0 ENVIRONMENTAL MANAGEMENT MEASURES AND COSTS

7.1 Progressive rehabilitation/restoration of areas subject to exploration

7.1.1 Maintenance of roads and embankments

As a management measure, adequate design will be implemented for any new road construction require giving emphasis to soil conditions, drainage and proximity to waterways. Roads that are properly laid out and constructed on moderate gradient will result in fewer incidences of soil disturbance. Planning of new roads will give consideration to those areas to be accessed first. New and existing roads will be permanently monitored during rain periods, so that appropriate measures can immediately be implemented to protect and/or minimize erosion and siltation of water courses. Whenever necessary, roads sections that are likely to be eroded by surface run-off will be amply protected by rip-rap or retaining walls to prevent erosion. Trees will also be planted at roadsides. We shall use existing access tracks as much as possible.

7.1.2 The construction of appropriate-sized pits will be done adjacent to every diamond drill hole to serve as catchments for drill refuse such as silt, mud, sludge, additives, effluents and other drilling ingredients, thereby preventing its inadvertent transport to the existing waterways. After every drilling operation, we commit to immediately backfill the

area and the areas affected will be planted with grass species as tiger grass; ipil-ipil wildings, creeping vines, falcata or other varieties of fast growing trees to restore vegetative cover and/or original ground condition and aesthetics.

7.2 Management of stockpiled rocks/wastes

7.2.1 After data gathering and sampling, test pits and other exploratory holes will be backfilled up with soil if not the original excavated material and subsequently planted with grass species as tiger grass; ipil-ipil wildings, creeping vines, falcata or other varieties of fast growing tree to restore the vegetative cover and/or original ground condition and aesthetics.

The top soil will be stockpiled separate from the subsoil for proper backfilling and revegetation. Each stockpile will be maintained at minimal heights and low angles.

7.2.2 We will maintain contour terrace barriers or hedgerows across bare or unvegetated high-gradient slopes which will be planted with closely spaced madre de cacao and creeping vines as a meas of erosion control and avert soil erosion.

7.2.3 Access roads to drill sites will be kept to the absolute minimum and sufficiently protected from erosion by maintaining an effective drainage. After drilling, these roads will be planted with grass species as tiger grass, ipil-ipil wildings, creeping vines, falcata or other varieties of fast growing trees to restore the vegetative cover and/or original ground condition and aethestics.

7.3 Drivers of company contractor and other authorized vehicles entering the mining property will be cautioned against speed driving particularly in built-up areas, both for safety and dust control measures.

7.4 Handling of toxic and hazardous materials

Only environmentally friendly and biodegradable drilling additives, polymers and other ingredients will be used. Refueling will be carefully done to prevent soil contamination by using bunds with impervous linings. Water recycling will be implemented thru the use of tanks and ponds in each drill site.

7.5 Accommodation of other economic activities

7.5.1 We will maintain a fair and equitable employment program giving priority to the indigenous members and/or residents of the community without necessarily sacrificing the need to employ qualified technical personnel.

7.5.2 We will always respect the rights, culture, traditions and lifestyle of the cultural/ethnic minorities, if applicable.

7.5.3 Certain retail business such as sari-sari stores, carinderia or "tabo-sa-banay" is foreseen to slightly increase.

7.6 Alternative plans for affected flora and fauna

Most exploration activities only creates minor and adverse effects on flora and fauna. There are no rare or endangered species existing in the area. Vegetation clearing will be avoided as much as possible and noise generation will be kept its barest minimum.

7.7 Socio-economic mitigating measures

7.7.1 After approval of the MPSA, a program of information campaign concerning the Company's exploration agenda will be launched among its employees and the local population through the local government units (*LGU's*) and non-governmental organizations (*NGO's*) to make them aware of the environmental protection and other mitigating measures that will be implemented in the course of the exploration activities. The campaign will be conducted prior to the start of exploration activities.

7.7.2 Environmental awareness will be promoted to all employees and contractors. Accepted safely practices will be observed in all exploration activities and appropriate safety equipment, e.g., safety glasses, helmets, boots, raincoats, canvass covers, etc.

7.7.3 We will encourage the general public's participation in monitoring environmental degradation and/or potential hazards to life, property and ecosystem as a means of safeguarding the environment.

7.7.4 We will maintain close community relations with the local population through the local government units (*LGU's*) and non-governmental organizations (*NGO's*) with the aim of gaining their support by making them aware of the ultimate company objectives and the economic benefit that the project can bring to the community.

7.7.5 Just compensation will be provided to private property owners that may be disturbed by the project. Representatives from the local government units (*LGU's*) and local communities (*NGO's*) will be consulted on the merit of each claim and what proper compensation to make.

7.8 Abandonment measure

7.8.1 Acid rock drainage will not be generated during the exploration period. Extensive pyritic zones are not expected to be encountered. As a precautionary measure the immediate pugging by cap or drill plug of all drillholes will be done after completion of drilling.

7.8.2 Payment of just compensation will be made for any damaged crops. We will see to it that all liabilities have been addressed/cleared before leaving the area.

7.8.3 Backfilling, revegetation and/or planting of trees on drilling pads, sumps and roadsides will be done before abandoning the area.

7.8.4 Access roads will be turned-over to barangay for use by the community residents.

7.8.5 Pulling-out of exploration equipment, drill rig and accessories and cleaning of the site that were affected by the operation will be done.

7.8.6 We will meet the community after the project has been accomplished to give them the information with regards to the findings and future company plans involving the area, if there is any.

7.9 ENVIRONMENTAL MANAGEMENT COST ESTIMATES

7.9.1 YEAR 1

Cost Parameter	Amount (*Pesos*)
Labor	20,000.00
Materials and supplies	20,000.00
Revegetation	20,000.00
Environmental Baseline Sstudies	500,000.00
Community relations	10,000.00
Sub-total	P570,000.00

APPROVED
NOV 27 2002
BY:

7.9.2 YEAR 2

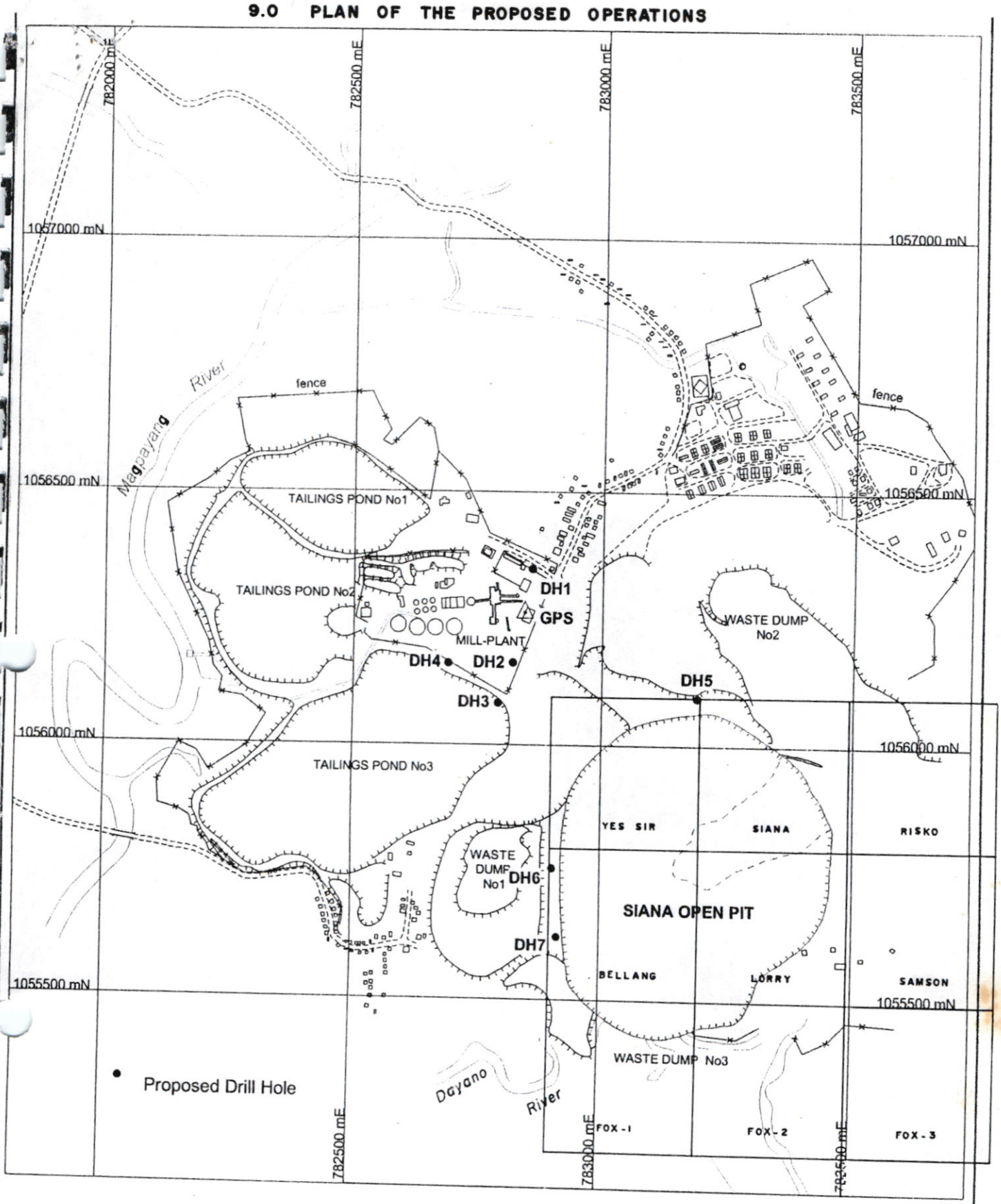
Cost Parameter	Amount (*Pesos*)
Labor	20,000.00
Materials/supplies	30,000.00
Erosion Control	25,000.00
Revegetation Program	25,000.00
Training/Seminars on Environment	20,000.00
Community relations	10,000.00
Sub-total	P130,000.00
Total Environmental Cost	P700,000.00

8.0 NAME AND SIGNATURE OF PERSON(S) PREPARING THE EWP:

Cesar O. Romero
Consulting Mining Engineer
Registration No. 882
PTR No. 30478241
January 31, 2002
Quezon City

Renaldo N. Maceda
Consulting Geologist
Registration No. 323
PTR No. 30478217
January 31, 2002
Quezon City

9.0 PLAN OF THE PROPOSED OPERATIONS



GREENSTONE RESOURCES NL

0 100 200 300 600
metres

GENERAL LOCATION MAP

PROJECT: SIANA MINE	PHILIPPINES
Originator: M.Wheeler Date: July 2002	Drawn: CAD Innovations
Projection: WGS84 Zone 51 Northern Hempishere	File: Siana_General_Location.WOR
Scale: 1 : 10,000	Figure 5

ENVIRONMENTAL SUMMARY MATRIX

AREA	SOURCE	POTENTIAL EFFECT	MITIGATING MEASURES (*COMMITMENT*)	BUDGET
Outside the Project Area	Construction, restoration or upgrading of access routes from the main highway or Barangay site	Loss of vegetation	□ use existing access tracks as much as possible	30,000.00
		Siltation / turbidity	□ put up setling ponds and / or sediment traps where it is deemed necessary	
		erosion	□ Minimize height of muck stockpiles along slopes	
			□ Provide proper drain channels and direct the flow to siltation / sediments traps	
			□ Minimize stockpiling and accumulation of unwanted debris or waste;	
			□ Promote the growth of grasses / shrubs along roadsides and over the stockpiles to prevent it from erosion;	
			□ Conduct regular road maintenance	
	Provision of basecamp / makeshift laboratory outside the project area	Domestic and laboratory waste generation	□ A waste segregation scheme will be introduced to encourage recycling and to lessen the volume of waste generation.	
			□ Biodegradable waste will be dumped in pits, which will be covered with soil and revegetated before site abandonment.	
On the Project Area	Excavation (*for settling ponds, camps construction, test pits, trenches, auger drilling, drill pad preparation*)	Depression of selected areas due to excavation	□ backfill the area immediately after the target completion	40,000.00
			□ Ripping shall be conducted at compacted areas	
			□ Immediate backfilling of excavation upon work completion.	
			□ Revegetation or reforestation after project completion but before abandonment to give ample time for rehabilitation measures maintenance.	
		Proliferation of insects particularly mosquitoes	□ Proper drainage shall be provided to prevent accumulation of water from any excavation	
			□ Immediate backfilling of excavations upon work completion	
		Entrapment of stray animals or accident site to passersby	□ Fencing of excavation using ropes and twigs	
			□ Provide warning devices / signs as safety reminders to passersby	
			□ Immediate backfilling of excavation upon work completion	
On the Project Area	Excavation (*for settling ponds, camp construction, test pits, trenches, auger drilling, drill pad preparation)*	erosion	□ The topsoil shall be stockpiled separate from the subsoil for proper backfilling and revegetation and each stockpile shall be maintained at considerable heights and low angles	50,000.00
			□ Stockpiles or erosion prone areas shall be provided with drain channels to prevent erosion;	
			□As much as possible the stockpile shall be put at the low-prone erosion areas or at the upper side of the excavation so that whatever will be eroded goes back to the excavated portion.	
			□ Enclosure of stockpile	
		soil compaction	□ Ripping the contour to promote natural plant growth and	
			□ To ensure that slopes are stabilized to prevent erosion and loss of vegetation, moon scrapes will be introduced.	
		loss of vegetation	□ Encourage the growth of natural vegetation by spreading the stockpiled topsoil;	
			□ Maintain and / or establish a nursery during the exploration program for progressive rehabilitation	
			□ As much as possible the natural specie of the area will be maintained	

ENVIRONMENTAL SUMMARY MATRIX

AREA	SOURCE	POTENTIAL EFFECT	MITIGATING MEASURES (*COMMITMENT*)	BUDGET
Hydrology and Water Quality	excavation	siltation	□ Immediate backfilling of test pits and trenches and plugging of drill holes immediately after the desired samples are taken or after the study are completed.	500,000.00
			□ Test pits and trenches during its active state will be provided with a canvass roof not only to prevent water from going into the excavation and disrupt the work schedule but also to protect the health of the workers.	
	use of drilling chemicals	Water and soil contamination	□ Biodegradable drilling fluids shall be used as much as possible;	
			□ Refueling areas shall be provided with bunds and lined with impervious material to prevent soil contamination	
			□ Water recycling will be implemented through provision of water tanks / ponds in each drill site.	
	clearing of vegetation	siltation / turbidity	□ Provide silt / sediments traps;	
			□ Provide temporary silt ponds and permit the release of clear water only. Desiltation shall be done regularly to make the said ponds efficient. Silt materials will be either mixed with the soil stockpile or be immediately used in the progressive rehabilitation of the project.	
	camping	contamination of river water due to generation of human related waste	□ Campsites will be located at least 100 meters away from creeks and / or river system and it will be provided with proper latrine facilities	
			□ A waste segregation scheme will be introduced to encourage recycling and to lessen the volume of waste generation.	
			□ Biodegradable waste shall be burned in pits while non-recyclable, non-biodegradable waste shall be brought out of the site for disposal at the Municipality's designated dumpsite.	
Ecology	Clearing of vegetation and noise generation	Displacement / loss of flora and fauna	□ Vegetation clearing will be avoided as much as possible and noise generation will be kept to its barest minimum	20,000.00
		Loss of rare species of flora and fauna	□ Areas identified as special habitat of flora and fauna will be avoided and its existence will be reported to concerned government agencies	
	Waste generation	Foul odor, health problem, water pollution, visual nuisance, may displace sensitive flora and fauna	□ A specific site away from any source of water will be designated for waste dumping; organic waste will be buried in pits while the inorganic waste will be collected and taken out of the site for possible recycling or disposal to Municipal dumpsite.	

ENVIRONMENTAL SUMMARY MATRIX

AREA	SOURCE	POTENTIAL EFFECT	MITIGATING MEASURES (*COMMITMENT*)	BUDGET
Socio-economic Effects	Project implementation	Displacement of socioeconomic activities	□ Promote employment opportunities by giving local residents priority on job available in relation to this project.	
			□ Provide a just compensation to provide property owners that may be disturbed by the project.	
	Misinformation on project implementation	Disharmonious relationships between the residents and the Contractor	□ Conduct IEC activities before the project implementation to keep the personnel, residents and the LGU well-informed of the programs of the company.	10,000.00
			□ Keep an open communication with the community through a conduct of regular meetings to give an update on the status of the project.	
			□ Meet the community after the project has been accomplished to give them the information with regard to the findings and future company plans involving the area, if there is any.	10,000.00
	Movement of vehicles	Dust generation	□ Vehicular traffic shall be restricted to existing roads as much as possible and their speed will be regulated especially at populated areas;	
			□ Roads shall be sprayed with water during the summer period;	
			□ Road maintenance shall be conducted regularly;	
			□ Table drains at water prone areas shall be provided and growth of vegetation shall be encouraged to prevent erosion.	20,000.00
			□ Trees shall be planted at roadsides deemed to be used even after the life of the project	
	Unsafe working condition	Health hazards to workers	□ All employees shall be provided with protective equipment and proper medical attention will be accorded to them regularly.	
			□ All workers prior to hiring will be required to submit to a medical examination as an assurance that they are indeed fit to work.	
			□ Training on safety and proper equipment handling shall be provided to all personnel	20,000.00
	Increase migration	Disharmonoius relationship with residents and loss of traditons / culture	□ Limit the hiring of non-resident workers to technical personnel;	
			□ Priorities for employment shall be given to all residents of the concerned Municipality / Province.	
Total Cost				**P 700,000.00**

Note: Budget for Baseline Information Gathering is included in the Hydrology and Water Quality Section

SIGNATURE OF PROPONENT AND / OR PREPARER

CESAR O. ROMERO
Consulting Mining Engineer
Reg. No. 882
Consulting Geologist
Reg. No. 359
PTR No. 30478241, 1- 31-02 QC

RENALDO N. MACEDA
Consulting Geologist
Reg. No. 323
PTR No. 30478217, 1-31-02 QC

JCG RESOURCES CORPORATION

ACTIVITY	Mos	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A. Exploration Activities																									
1. Research Work	1																								
2. Reconnaissance / Regional																									
2.1 Remote Sensing Studies	1																								
2.2 Geological Survey	3																								
2.3 Geochemical Survey	3																								
2.4 Geophysical (*Aeromag, EM*)	2																								
3. Semi-detailed Survey																									
3.1 Geological Mapping	5																								
3.2 Geochemical Survey	3																								
3.3 Geophysical (*Mag, EM, IP*)	4																								
3.4 Sub-surface Investigation																									
3.4.1Test Pitting / Trenching	3																								
3.4.2 Aditing / Tunneling	2																								
4. Topographic Survey	3																								
5. Detailed Survey																									
5.1 Geological Mapping	4																								
5.2 Geochemical Survey	4																								
5.3 Sub-surface Investigation																									
5.3.1 Drilling	6																								
5.3.2 Test Pitting	6																								
6. Interpretation of Results	3																								
B. Environmental Activities																									
1. IEC Campaign																									
2. Road Upgrading / Maintenance (*road watering*)																									
3. Setting up of Nursery																									
4. Construction & Maintenance of Settling Pond / Sediments Traps...																									
5. Slope Stabilization (*Rip-Rap, slope reduction...*)																									
6. Vehicle and Equipment Maintenance																									
7. Backfilling of Test Pit / Trenches																									
8. Maintenance of Excavated Materials																									
9. Rehabilitation / re-vegetation / reforestration																									
10. Monitoring and Maintenance of Environmental Activities																									
C. Baseline Information Gathering																									
1. Water Quality																									
2. Hydrology Study																									
3. Flora and Fauna																									
4. Community Studies																									
5. Air Quality																									