M3-PN120008
Revision 0 Issued:
31 October 2012
Revision 1 Issued:
20 December 2012

ARCHITECTURE
ENGINEERING
CONSTRUCTION MANAGEMENT

Nieves Project

Form 43-101
Technical Report
Preliminary Economic Assessment

Zacatecas, Mexico

REVISION 1

Prepared For:

Quaterra Resources Inc.

M3 Engineering & Technology Corporation ● 2051 West Sunset Road, Tucson, AZ 85704 ● 520.293.1488

DATE AND SIGNATURES PAGE

This report is current as of 31 October 2012.

Signature	Date
"Signed" Joshua Snider, P.E.	31 October 2012

Note: Revision 1 was issued on 20 December 2012 with the following edits:

1. **A sentence was added to the end of Section 13.4 describing recovery improvement through reagent and flotation optimization.**
2. **The lead and zinc grades were adjusted in Table 22-4 due to a decimal place error.**

These modifications did not change project economics.

NIEVES PROJECT
FORM 43-101F1 TECHNICAL REPORT
PRELIMINARY ECONOMIC ASSESSMENT

TABLE OF CONTENTS

SECTION **PAGE**

LIST OF FIGURES AND ILLUSTRATIONS

FIGURE DESCRIPTION PAGE

LIST OF TABLES

TABLE DESCRIPTION PAGE

LIST OF APPENDICES

1 SUMMARY

M3 Engineering and Technology of Tucson, AZ was contracted by Quaterra Resources Inc. ("Quaterra") of Vancouver, British Columbia, Canada, to prepare a Preliminary Economic Assessment (the "PEA) and Independent Technical Report (the "Report"), compliant with National Instrument 43-101 ("NI 43-101") on the Nieves Property (the "Property").

This section briefly summarizes the findings of the PEA. The proposed project is an open pit silver mine that delivers ore to a 10,000 tpd (metric tons per day) grinding and flotation facility. The project is located near Rio Grande, Zacatecas Mexico which has a balance of remoteness and proximity to infrastructure. Over the life of the project, 52,365,000 ounces (troy ounces) of silver and 25,000 ounces of gold are projected to be produced.

M3 Engineering & Technology Corporation (M3), and other Quaterra consultants, developed mine plans, process flow sheets and estimates for the project.

1.1 KEY DATA

Key project data are presented in Table 1-1 including a summary of the project size, production, operating costs, metal prices, and financial indicators.

Table 1-1: Key Project Data

Open Pit Mine Life (years)	10
Mine Type:	Open Pit
Process Description:	Crushing, Grinding, Flotation
Mill Throughput (Metric Tonnes Per day)	10,000
Initial Capital Costs ($US Millions)	$231.6
Sustaining Capital Costs ($US Millions)	$64.1
Reclamation Remediation Costs ($US Millions)	$10.0
Payable Metals	
Average Ore Grade, Ag (grams/tonne)	56.822
Average Ore Grade, Au (grams/tonne)	0.042
Average Mill Recovery % (silver and gold)	86
Average Annual Silver (ounces)	5,236,500
Average Annual Gold (ounces)	2,530
Unit Operating Cost:	
Mining Cost per total tonne material	$1.10
Mining Cost per processed ore tonne	$6.75
Milling Cost per processed ore tonne	$9.43
G&A per processed tonne ore	$1.41
Refining Cost per processed tonne ore	$4.59
Total cost per processed ore tonne	$22.18
Silver Price (price per troy ounce)	$27.0
Gold Price (price per troy ounce)	$1,300
Pre-Tax Project Internal Rate of Return (IRR)	21.9%
Pre-Tax NPV at 5% Discount Rate ($ Millions)	199.2
Pre-Tax Payback (years)	3.4
After Tax Project Internal Rate of Return (IRR)	15.7%
After Tax NPV at 5% Discount Rate ($ Millions)	123.0
After Tax Payback (years)	4.4

1.2 PROPERTY DESCRIPTION AND OWNERSHIP

The Property is located in the Francisco R. Murguía Municipality of the Zacatecas Mining District near the southeastern boundary of the Sierra Madre Occidental Physiographic Province in central Mexico (see Figure 1-1). The Property is centered approximately at 694856E, 2651009N (NAD27 Mexico, Zone13N), approximately 150 km northwest of the state capital of Zacatecas and 90 km north of the mining community of Fresnillo.

Figure 1-1: Nieves Property Location

The Property consists of 18 concessions covering approximately 12,064.0725 ha. The concessions are registered in the name Minera Cerro Gregorio, as of August 5, 2011, a Mexican company wholly owned by Quaterra. The Nieves Property is jointly owned by Quaterra and Blackberry Ventures 1, LLC. ("Blackberry"). In 2011, Quaterra and Blackberry (through Minera Cerro Gregorio) paid US $44,538 in taxes to maintain the concessions. In 2012, Quaterra and Blackberry paid US $33,854 and are required to pay an additional US $36,519 to maintain the Nieves Property. Taxes are payable every six months to the Mexican government. Net smelter return royalties remain outstanding on each of the concessions acquired from Kennecott (recently purchased by Royal Gold Inc.) and the Mexican concessionaires (Abelardo Garza Hernandez, Noel McAnulty and Bill Shafer) (Table 4-3).

1.3 GEOLOGY AND MINERALIZATION

The Nieves project is a low sulfidation epithermal silver deposit hosted in three east-northeast trending, steeply south dipping vein systems with alteration and mineralization bearing strong similarities to the Fresnillo silver deposit.

The most economically significant mineralization occurs in anastomosing carbonate-quartz-sulphide veins that have been defined over a total strike length of 3.8 kilometers by 54,814 meters of drilling in 187 holes. The system develops to a maximum true width of in excess of 200 meters and has a proven down dip extent of approximately 525 meters.

The carbonate-quartz-sulphide veins contain the best grades of silver, gold, lead and zinc. This vein type consists of calcite that is partially to totally replaced by grey to white, chalcedonic, fine-grained quartz veins and veinlets. Individual veins vary in size from a few centimetres in width with a few up to 1.5 m wide with up to 50% sulphide minerals. Sulphides include pyrite, stibnite, sphalerite, galena, chalcopyrite and the silver sulphosalts: proustite, pyrargyrite, jamesonite and scarce tetrahedrite.

The central and most important of the three vein systems is the Concordia-San Gregorio-Dolores system which includes both the La Quinta and Gregorio North zones. Mineralization along the Concordia-San Gregorio-Dolores vein has a known total strike length of 1,300 meters and a true width up to 100 meters. The mineralized zone in the Gregorio North area is approximately 1,200 meters long and up to 200 meters wide. The La Quinta and Gregorio North zones are the subject of the resource estimate in this report. Only the La Quinta zone has a designed open pit for the economic assessment.

The attitude and size of the mineralized zones along the Santa Rita zone to the south and California vein system to the north are not well understood at this stage of exploration. Drilling along the Santa Rita system suggests that the mineralized zone is at least 750 meters long and may be up to 340 meters wide. The mineralized zone along the California vein system is at least 550 meters long and may be up to 130 meters wide.

Recent drilling has expanded the size of mineralized zones along all vein systems and additional drilling may significantly enhance the resources and economics of the project. Many of the vein systems are open along strike and all remain open to depth. Because some zones may be terminated along strike by late vertical fault structures such as the one that offsets the Concordia from the San Gregorio vein systems, the discovery of strike extensions to the Nieves vein systems will only require continued drilling guided the promising results of surface geophysical surveys.

1.4 EXPLORATION STATUS

Between March 2010 and June 2012, Quaterra and Blackberry completed an exploration program on the Nieves Property consisting of a geophysical survey, mapping and sampling and drilling.

The geophysical survey consists of six lines, a total of 28.4 line-kilometers, of vector controlled source audio-magnetotellurics and induced polarization (CSAMT/CSIP) and nine follow-up lines of pole/dipole induced polarization (IP) totaling 16.5 line-kilometers. Nine anomalous zones were detected and validated with IP lines using 50 meter dipole spacings. Most of the anomalies appear to be westward extensions of mineralized veins previously drilled, including the Dolores, Santa Rita, Niño and Orion veins. The most interesting area identified to date is West Santa Rita, located 1,000 to 1,200 meters west of the main Santa Rita mine and over 500 meters from Quaterra's nearest drill hole.

Mapping and sampling was completed to follow up the geophysical anomalies. The most interesting area was identified in the West Santa Rita, where mapping identified two groups of narrow, sub-parallel 2 to 30 centimeter wide calcite-quartz veinlets, some of which contain strong gold and silver mineralization. Gold values are up to 8.11 g/t over 0.2 m and silver values are up to 253 g/t over 0.4 m.

Quaterra and Blackberry completed two phases of drill programs (VII and VIII) between March 2010 and October 2011, consisting of 73 drill holes and totaling 18,547.25 m. Most of the drilling concentrated on the Concordia-Dolores-San Gregorio vein system, but a significant amount of drilling is located in the California and Santa Rita vein systems as well.

The drill program was very successful at increasing the size of known mineralized zones along all the major vein systems. Mineralization along the Concordia vein system was extended an additional 400 m, to a total of approximately 1,300 m. The length of known mineralization along the California vein system was increased to a total of approximately 550 m and it remains open to the east. Phase VII and VIII drill programs were successful in doubling the strike length of the Gregorio North mineralized zone located north of the San Gregorio vein, extending the strike length of the mineralized zone to approximately 1200 m. A total of 15 drill holes systematically tested the Santa Rita vein system over 500 m along strike, and the total length of mineralization was extended to approximately 750 m and remains open to the west.

The best intersections include 149 g/t Ag and 0.11 g/t Au over 31.25 m, which includes 6320 g/t Ag and 1.82 g/t Au over 0.25 m in drill hole QTA123 along the Concordia West vein, 104 g/t Ag over 19 m, including 6410 g/t Ag over 0.1 m and 5960 g/t over 0.1 m in drill hole QTA137 along the California vein, and 152.2 g/t Ag and 0.12 g/t Au over 57 m in drill hole QTA144 in the Concordia West area.

1.5 OVERALL PROJECT

The Nieves project as evaluated in this PEA consists of a single open pit mine, mine mobile equipment, ore processing facilities, a tailing storage facility, waste storage and infrastructure. A general arrangement of these facilities is shown in Figure 1-2.

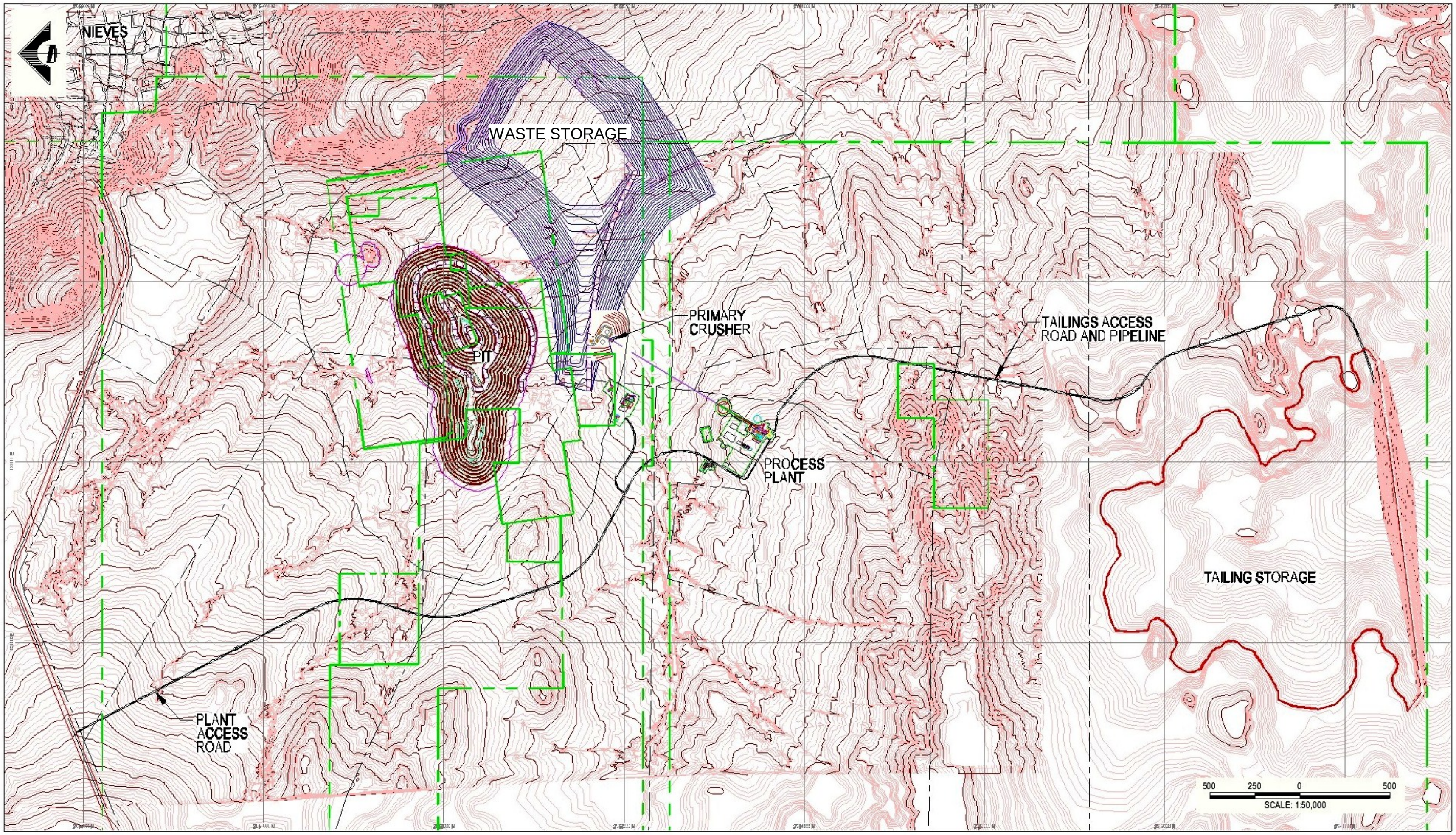


Figure 1-2: Overall Project Site Plan

1.6 MINERAL RESOURCE ESTIMATE

Independent, NI 43-101 compliant resources at the Quaterra Resources Nieves property were estimated by Jason Baker P.Eng. (APENS#9627), a Geological Engineer with Caracle Creek and an independent qualified person as defined by NI 43-101. The mineral resources are reported in accordance with National Instrument 43-101 and have been estimated in compliance with generally accepted CIM "Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines. Block model quantities and grade estimates for the Nieves property were classified according to the latest CIM Definition Standards for Mineral Resources and Mineral Reserves. The results of the updated mineral resource estimate are summarized in Table 1-2.

Table 1-2: Mineral Resource Estimate on the Nieves Property

Vein	Area	Category	Quantity (tonnes)[2]	Grade[3] Ag g/t	Grade[4] Au g/t	Ounces[5] Ag	Ounces[5] Au
Concordia	La Quinta	Indicated	33,040,000	50.1	0.04	53,220,000	42,500
Concordia	La Quinta	Inferred	39,260,000	32	0.02	40,390,000	25,200
San Gregorio	North	Inferred	18,770,000	27	0.08	16,293,900	48,300

[1]Reported at a cut-off grade of 15 g/t Ag. Mineral resources are not mineral reserves and do not have demonstrated economic viability.
[2] Tonnes have been rounded to the nearest 10,000.
[3]Ag grade has been rounded to one (1) significant digit.
[4]Au grade has been rounded to two (2) significant digits.
[5]Ounces have been rounded to the nearest 100. One (1) troy ounce = 31.103 grams

1.7 MINING

The Nieves silver deposit contains mineralization at or near the surface and is distributed in continuous veins that is ideal for open pit mining methods. The open pit is mined in three pit phases designed on the Concordia zone. The San Gregorio zone resulted in minimal mining in the pit optimization studies so this zone was not included in the mine plan but may become viable with additional drilling. The open pit operation was designed for a 10,000 tpd throughput resulting in a ten year mine life with 35.4 Mt of ore grading 56.82 gpt silver and 0.04 gpt gold resulting in a 5.4:1 (waste to ore) strip ratio. The pit will be mined primarily using two 16.5 m^3 hydraulic shovels loading 90 t haul trucks. A 12 m^3 front end loader will be used as backup to the shovels and two diesel powered rotary drills will be used for production. The major support equipment will include three dozers, a grader, a pre-shear drill and a water truck. The ore will be loaded into 90-tonne haul trucks and transported to the primary jaw crusher, which will be set up at the toe of the waste dump. The plan assumes that the project operator owns, operates, and maintains all equipment. Table 1-3 below lists the resources used in the mine production plan.

Table 1-3: Resources Inside Pit Design

Pit Phase	Classification	Ore Tonnes X 1,000	Ag (g/t)	Au (g/t)	AgEq (g/t)	Ag (oz.)	Au (oz.)	AgEq (oz.)
Phase 1	Indicated	10,617	65.2	0.06	67.4	22,268,479	19,608	23,009,813
Phase 1	Inferred	1,139	38.4	0.03	39.6	1,405,732	1,203	1,450,498
Phase 2	Indicated	8,872	57.5	0.04	58.9	16,394,161	11,869	16,801,719
Phase 2	Inferred	2,215	46.2	0.03	46.9	3,287,717	1,830	3,339,898
Phase 3	Indicated	8,114	52.8	0.04	54.0	13,777,644	9,335	14,085,645
Phase 3	Inferred	4,402	52.7	0.03	53.5	7,463,505	3,830	7,564,356
Total All Phases	**Indicated**	**27,603**	**59.1**	**0.05**	**60.7**	**52,440,284**	**40,811**	**53,897,177**
Total All Phases	**Inferred**	**7,756**	**48.8**	**0.03**	**49.5**	**12,156,954**	**6,863**	**12,354,752**

1) Prepared by Jeff Choquette, P.E., Mining Engineer, an independent Qualified Person within the meaning of NI43-101, using a reporting cut-off grade of 21.3 g/t AgEq.
2) AgEq values were calculated using a $26/oz. silver price $1375/oz. Au price, 81% Ag recovery 80% Au recovery, 95% metal payable, 1.5 oz./t Ag deduct and 0.05/oz. Ag deduct, $1/oz. silver refining charge and $10/oz. Au refining charge $300/wet tonne treatment charge and a $50/wet tonne shipping charge.

1.8 METALLURGY

In May, 2010, G&T Metallurgical Services Ltd. completed a metallurgical assessment on behalf of Quaterra and Blackberry. The tests were performed on a composite sample consisting of approximately 100 kg of crushed material. The main objectives of the tests were to determine the chemical and mineral content of the composite, assess the ore hardness and develop an outline of a treatment process to recover silver using conventional mineral processing techniques.

The sample contained 79 g/t silver with minor amounts of copper (0.08%), lead (0.14%) and zinc (0.1%). The minerals included quartz, micas, feldspar, pyrite, goethite, sphalerite, galena, silver sulphides (0.07%) and chalcopyrite, in decreasing order of abundance. The silver minerals were polybasite, freibergite and stromeyerite. The ore hardness was determined to be 10.8 kWh/tonne (moderately soft) using a Bond ball mill work index test procedure.

Open circuit flotation testing indicated that about 86% of the silver can be recovered into a final concentrate containing 2.3 kg/tonne silver. It was recommended that future test work should investigate coarser primary grind sizes.

The test also suggested that regrinding the rougher concentrate to a nominal 20 µm K80 had no significant benefit on concentrate grade or silver recovery. Increasing the pH level of the cleaner circuit to 10 significantly improved the grade of silver in the final concentrate.

Gravity concentration and cyanidation were ruled out as potential processing methods for the PEA due to the low silver recovery. The results of the open circuit kinetic rougher and batch cleaner tests were performed on ore with a silver grade of 79 grams per tonne and indicated that a silver recovery of 86% was achievable.

1.9 PROCESS FACILITIES

The proposed treatment method and preliminary processing parameters are based on preliminary testwork completed to date and industry standards. M3 developed an overall process flowsheet as shown in Figure 1-3.

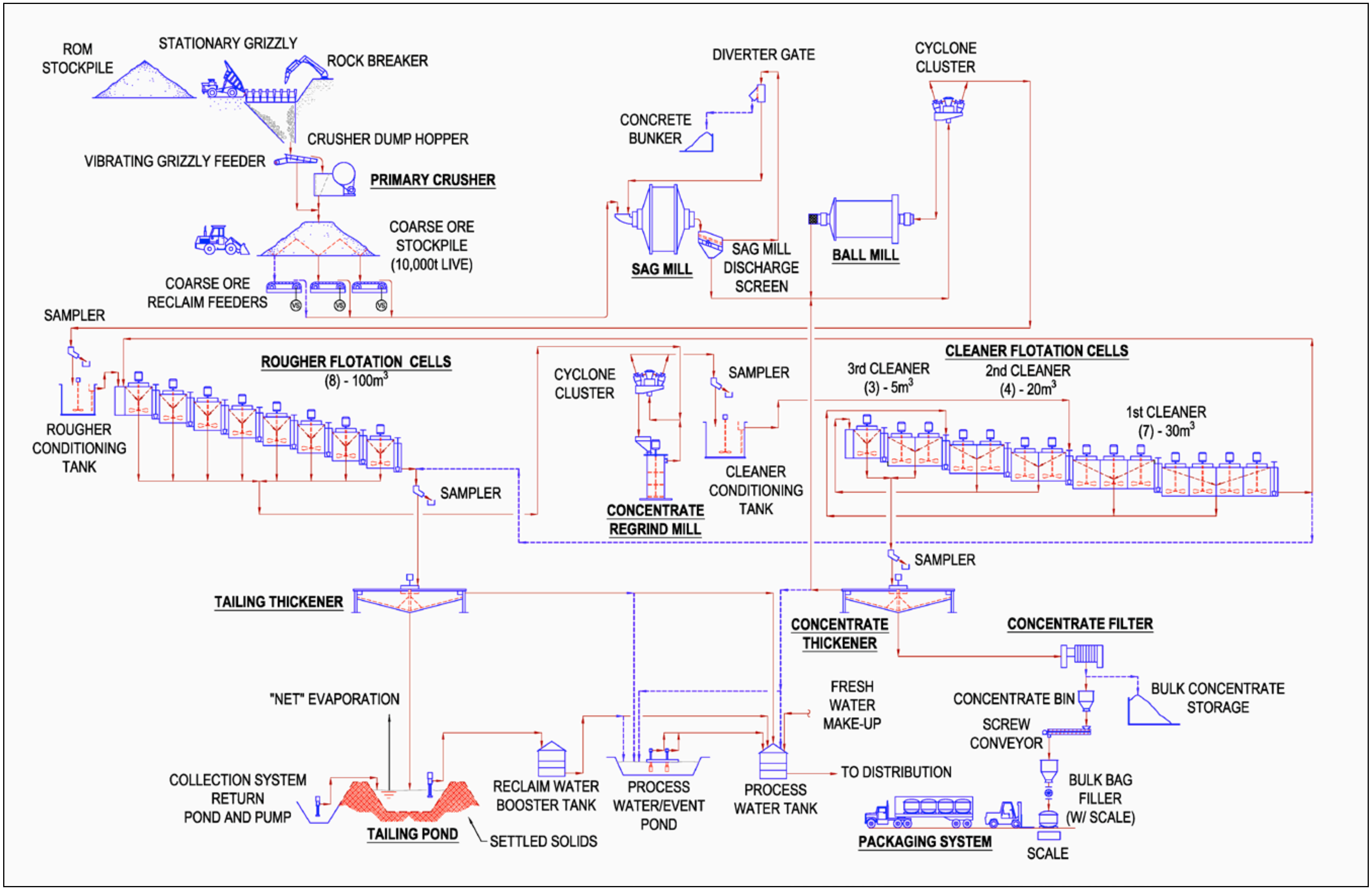


Figure 1-3: Overall Process Flow Sheet

The plant utilizes conventional process and unit operations. Run-of-mine (ROM) ore will be crushed in a jaw crusher, and conveyed to a stockpile. The crushed ore will be reclaimed and conveyed to a grinding circuit. The grinding circuit consists of one SAG mill and one ball mill. The SAG mill will operate in closed circuit with a vibrating screen. The ball mill will operate in closed circuit with hydrocyclones. Hardness of the mineralized rock has not been precisely tested at this time. The mill sizes are therefore estimated based on preliminary tests. Cyclone overflow is feed to the flotation plant.

The flotation plant will consist of rougher flotation and three stages of cleaner flotation with concentrate regrinding between the rougher and cleaner stages. Final concentrate will be thickened, filtered, bagged, and loaded in trucks for shipment.

The auxiliary systems such as the reagent mixing and storage, air and water systems, maintenance and office requirements are listed but not necessarily detailed for this study. Estimates for such items are based on other similar projects. The reagent consumption is estimated from the laboratory flotation tests and data from other properties. The grinding media consumption is estimated from other similar operations.

1.10 INFRASTRUCTURE

The property is within close proximity to highway 49 that runs north-south between Rio Grande and Juan Armada Municipality. From highway 49, a two-lane paved road that goes to the town of Nieves passes within 3 km of the property.

A new unpaved road will be constructed to access the main processing and tailing facility. The mine will construct haul roads with mining equipment to transport ore and waste.

Comisión Federal de Electricidad (CFE) is the regional supplier of power in Mexico. This power is carried largely on Mexico’s high voltage transmission systems. The project is located near a high voltage transmission line that run runs parallel to Highway 45. A new substation will be constructed and a new 115 kV power line will be run a short distance from highway 45 to the site.

Water exploration was not performed as part of the PEA. Deep regional groundwater aquifers can typically be found in this area. It was assumed that a well field could be located within 5 km of the processing facility.

A new tailing storage facility (TSF) utilizing downstream dam construction will be placed south of the processing facility. Topography dictated the location of the dam, which is approximately 2.5 km from the processing facility. Tailing material will be pumped from the process area tailing thickener and spigotted into the facility. The facility will be constructed in phases. The initial phase will hold approximately 3 years of mill production; the dam will then be raised incrementally until the end of the mine life.

Ancillary facilities will be constructed to support the mine and processing operations. These facilities include an administration building, mine equipment maintenance shops, mine equipment wash, laboratory, explosives storage, warehouse and gatehouse.

1.11 CAPITAL COSTS

The project costs were estimated using a combination of project specific data and historical and in house data on similar projects. The accuracy of the estimate is PEA or scoping level, which is +/- 30%. Contingency was included at 20% of Process and Infrastructure contracted costs. All costs are in Q3, 2012 US Dollars.

Table 1-4: Initial Capital Costs

Item	Estimated Cost (USD, Millions)	Description
Infrastructure	$56.00	General Site, Tailing Dam, Tailing Handling, Power, Electrical, Water Systems, Ancillary Buildings
Processing Facilities	$59.50	Primary Crushing, Stockpile, Grinding/Classification, Flotation/regrind, Concentrate Thickening/Filtration, Reagents
Mining Costs	$44.40	Mine Equipment and Pre production Operating Costs
Indirect Level Costs	$71.70	Contractor Camp Costs, Mobilization, EPCM, First Fills, Owner's Costs, Commissioning, Contingency
Total Cost	**$231.60**	

1.12 OPERATING COSTS

Operating costs were built up based on anticipated labor and estimated consumption rates and presented below.

Table 1-5: Operating Cost Summary

Mining Cost ($/tonne milled)	$6.75
Concentrator Operating Cost ($/tonne milled)	$9.43
General Administration Cost ($/tonne milled)	$1.41
Total Operating Costs / tonne milled	**$17.59**

1.13 FINANCIAL MODEL

The Nieves Project economics were done using a discounted cash flow model. The financial indicators examined for the project included the Net Present Value (NPV), Internal Rate of Return (IRR) and payback period (time in years to recapture the initial capital investment). Annual cash flow projections were estimated over the life of the mine based on capital expenditures, production costs, transportation and treatment charges and sales revenue. The life of the mine is 10 years. Metal price assumptions are $27/ounce silver and $1,300/ounce gold. The after tax financial indicators based on a 100% equity case are summarized as follows:

Table 1-6: Financial Model Indicators

	Before Taxes	After Taxes
NPV @ 0% ($000)	$333,968	$232,372
NPV @ 5% ($000)	$199,224	$122,989
NPV @ 8% ($000)	$142,319	$77,116
IRR %	21.9%	15.7%
Payback – years	3.4	4.4

The project is most sensitive to metal prices, capital costs and operating costs as shown below.

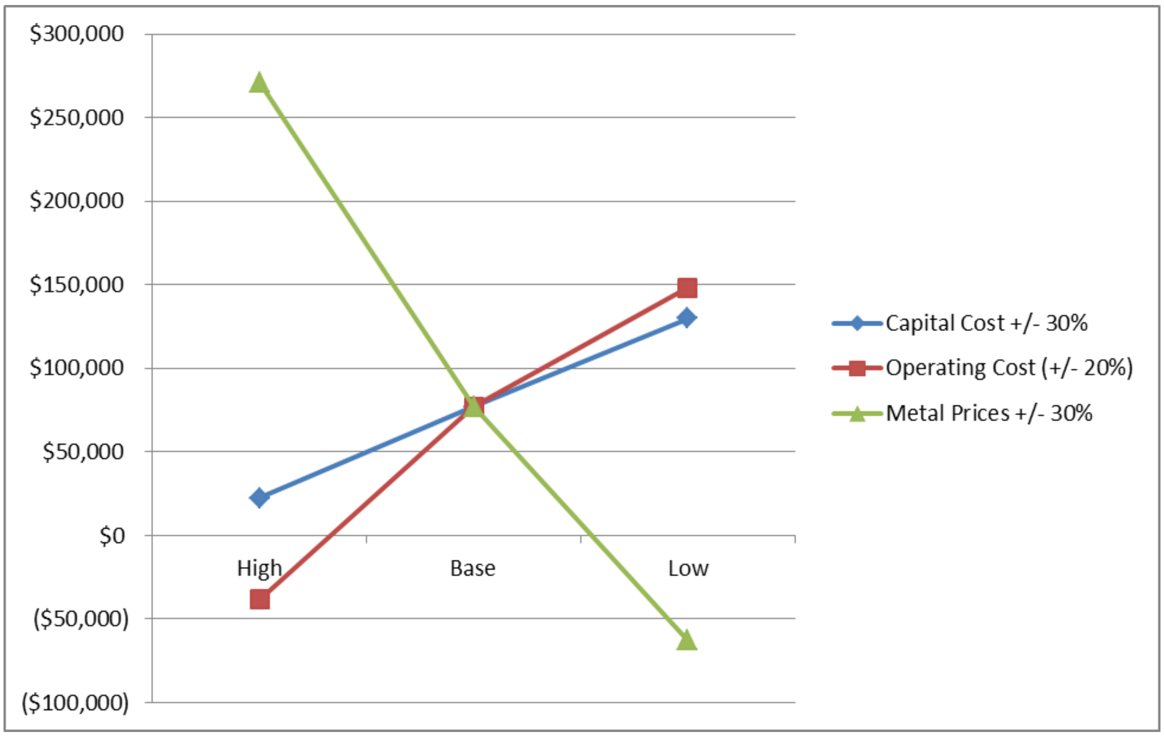


Figure 1-4: NPV 8% After Tax Sensitivity Table

1.14 RESULTS, CONCLUSIONS AND RECOMMENDATIONS

The Nieves project is located in a region of Mexico familiar with mining. A workforce exists in the area that is capable of operating the property. The processing facilities described in this report can be considered conventional in nature and do not require specialized, high risk processes. M3 recommends further metallurgical testing. The project should be further evaluated as a pre-feasibility study.

2 INTRODUCTION

2.1 PURPOSE

This document was prepared in order to provide a technical evaluation consistent in format with the NI 43-101 standard and to present data and information developed to substantiate technical and economic viability of the Nieves Project in Zacatecas, Mexico.

This report provides an independent Technical Report, compliant with the Canadian National Instrument 43-101 – Standards of Disclosure for Mineral Projects (NI 43-101).

This report was prepared by M3 Engineering & Technology Corporation (M3) at the request of Quaterra Resources, Inc.

Quaterra Resources Inc.
Head Office
Suite 1100 - 1199 West Hastings Street
Vancouver, B.C.
V6E 3T5
Canada

Toll Free: 1 (855) 681-9059
Tel: 1 (604) 681-9059
Fax: 1 (604) 641-2740

This report is current as of 31 October 2012.

2.2 AUTHORS

Quaterra contracted a team of qualified consultants to assemble the PEA.

Table 2-1: Qualified Persons for this Report

Responsibility	Qualified Person	Registration	Company	Sections of Responsibility	Site Visit
Process Plant Cost & Principal Author	Joshua Snider	PE	M3	Section 1, 2, 3,4, 18, 19, 20, 21, 22, 23, 24, 25, 26	October 2012
Mine Design and Planning	Jeff Choquette	PE	HRC	Sections 16, 25, 26 and portions of Section 1, 25 and 26	None
Process & Metallurgy	Thomas L. Drielick	PE	M3	Section 13 and portions of Section 1, 25 and 26	None
Geology	Zsuzsanna Magyarosi	P.Geo	CC	Sections 5, 6, 7, 8, 9, 10, 11, 12, 15, jointly responsible for sections 25 and 26 (for geology)	None
Resource	Jason Baker	P.Eng.	CC	Section 14 and portions of Section 1, 25 and 26	None
Geology	Doris Fox	P.Geo	CC	Section 12.1 (Site Visit) and jointly responsible for sections 5, 7, 8, 10.2 (Sampling procedures), 11.1 (Sample security) and portions of Section 1, 25 and 26	March 2012

The companies listed above included the following:

- M3 Engineering & Technology Corporation, Tucson AZ (M3)
- Caracle Creek International Consulting, Sudbury, Ontario Canada (CC)
- Hard Rock Consulting, Golden CO (HRC)

2.3 SOURCES OF INFORMATION

This report is based in part on internal company technical reports, previous feasibility studies, maps, published government reports, company letters and memoranda, and public information as listed in the references section in the conclusion of this report.

2.4 UNITS AND TERMS OF REFERENCE

This report uses metric units expressed in metric tonnes, meters, and liters consistent with metric standards. The monetary units are expressed in US Dollars. The important terms used in this report are presented in Table 2-2.

Table 2-2: Terms and Abbreviations

Full Name	Abbreviation
AMEC Environment & Infrastructure (a division of AMEC Americas Ltd.)	AMEC E&I
AMEC E&C Services Inc.	AMEC E&C
Canadian Institute of Mining, Metallurgy and Petroleum	CIM
Catch per Unit Effort	CPUE
centimeter	cm

Full Name	Abbreviation
Copper	Cu
cubic meter	m^3
degrees	°
degrees Celsius	°C
Feasibility Study	FS
Global Discovery Laboratory	GDL
Global Positioning System	GPS
Gold	Au
grams per tonne	g/t
hectare	ha
Inductively Coupled Plasma	ICP
International Finance Corporation	IFC
Iron	Fe
kilogram	kg
kilometer	km
kilotonnes	kt
Labor Secretariat	STPS
Labour Party	PT
Licencia Ambiental Unica	LAU
Local Study Area	LSA
M3 Engineering and Technology Corp.	M3
Manifestación De Impacto Ambiental (or Environmetnal Impact Statement)	MIA
Mean Sea Level	MSL
Metal Leaching	ML
Meter	m
metric tonnes per day	MTPD or t/d
metric tonnes per year (or per annum)	MTPY or t/a
Mexican National Water Commission (Comisión Nacional de Agua)	CONAGUA
Minera Media Luna S.A. de C.V.	MML
Minera Nukay	Nukay
Miranda Mining Development Corporation	MMC
National Action Party	PAN
National Council for Evaluation of Social Development Policy	CONEVAL
National Population Council	CONAPO
National Water Commission	CNA
Neutralization Potential Ratios	NPRs
Normas Oficiales Mexicanas	NOMS
North American Free Trade	NAFTA
ordinary kriging	OK
Particulate Matter	PM
parts per billion	ppb
parts per million	ppm
Pre-Feasibility study	PFS
Qualified Person	QP
Quality Assurance and Quality Control	QA/QC
Reverse Circulation	RC
Silver	Ag
Square meter	m^2
Universal Transverse Mercator	UTM
Zinc	Zn

3 RELIANCE ON OTHER EXPERTS

M3 Engineering and Technology Corporation has completed this Report in accordance with the methodology and format outlined in National Instrument 43-101. This Report was prepared by competent and professional individuals from M3 and other consulting companies on behalf of the Company and is directed solely for the development and presentation of data with recommendations to allow the Company and current or potential partners to reach informed decisions.

M3 relied upon contributions from a range of technical and engineering consultants as well as Quaterra. M3 has reviewed the work of the other contributors and finds this work has been performed to normal and acceptable industry and professional standards. In conclusion, M3 is not aware of any reason why the information provided by these contributors cannot be relied upon.

An independent verification of land title and tenure was not performed. M3 has not verified the legality of any underlying agreement(s) that may exist concerning the licenses or other agreement(s) between third parties. Likewise, Quaterra has provided data for and verified water rights, land ownership, and claim ownership.

A draft copy of the report has been reviewed for factual errors by Quaterra. Any changes made as a result of these reviews did not involve any alteration to the conclusions.

M3 relied upon José Nieto Caraveo for input on Section 20, Environmental Studies, Permitting and Social or Community Impact.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 LOCATION

The Nieves Property is located in the Francisco R. Murguia Municipality of the Zacatecas Mining District near the southeastern boundary of the Sierra Madre Occidental Physiographic Province in central Mexico (Figure 4-1 and Figure 4-2). The Property is centered approximately at 694856E, 2651009N (NAD27 Mexico, Zone13), approximately 150 km northwest of the state capital of Zacatecas and 90 km north of the mining community of Fresnillo.

Figure 4-1: Location of the Nieves Property

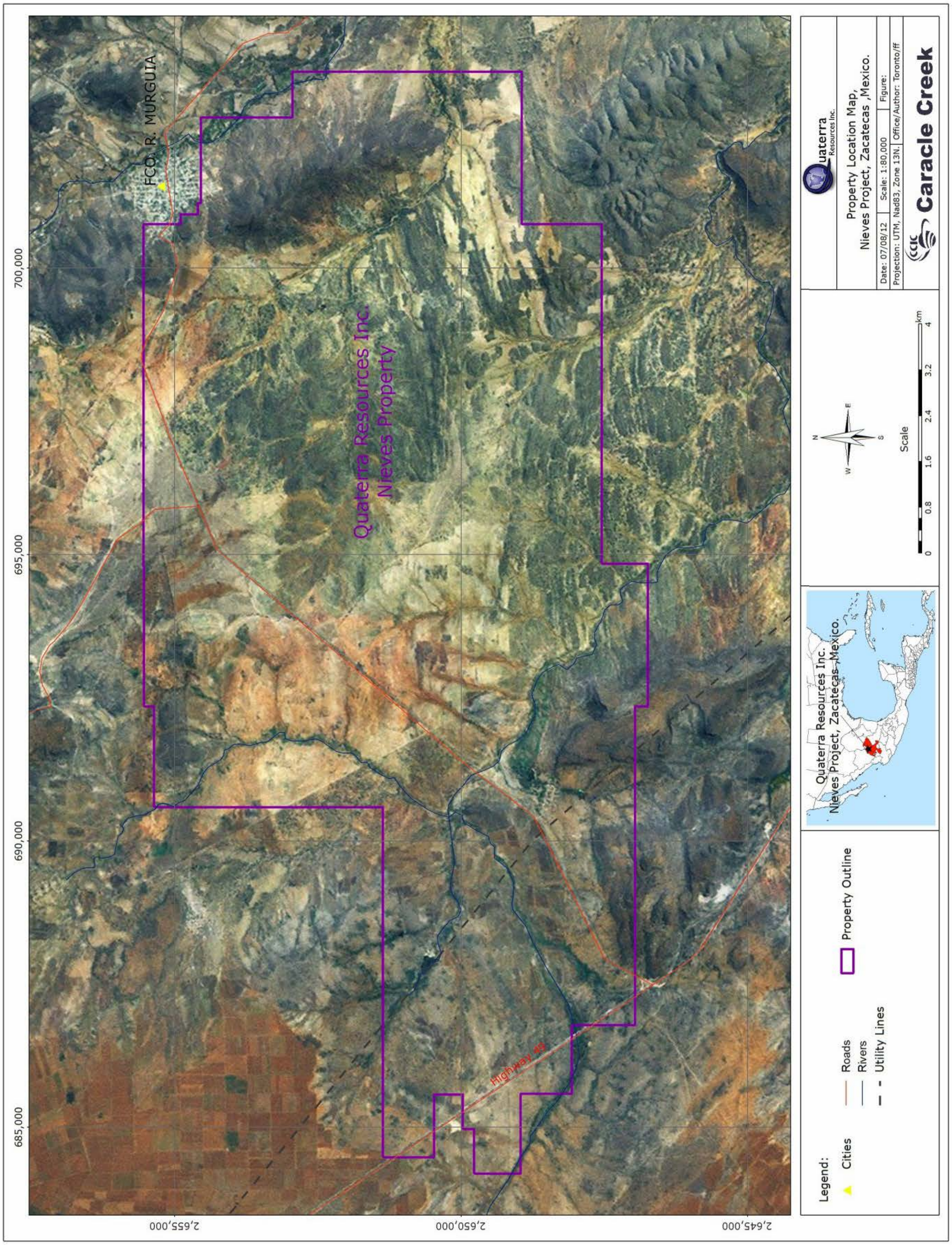


Figure 4-2: Location of the Nieves Property Showing Major Roads and Waterways

4.2 DESCRIPTION AND OWNERSHIP

The Nieves Property consists of 18 concessions, issued for 50 years, covering approximately 12,064 ha (Table 4-1 and Figure 4-3). These concessions are registered in the name Minera Cerro Gregorio, as of August 5, 2011, a Mexican company wholly owned by Quaterra. Minera Cerro Gregorio does not own the surface rights on the concessions. The location of a concession is determined from the position of a single claim monument ("mojonera"). The corners are all located based on surveyed distances and bearings from that monument by a registered Mexican Mineral Concession Surveyor.

The Nieves Property is jointly owned by Quaterra and Blackberry. In 2011, Quaterra and Blackberry (through Minera Cerro Gregorio) paid US $44,538 to the Mexican government in taxes to maintain the concessions (Table 4-2). In 2012, Quaterra and Blackberry paid US $33,854 and are required to pay an additional US $36,519 to maintain the Nieves Property. The taxes are payable every six months. Net smelter return royalties remain outstanding on each of the concessions acquired from Kennecott (recently purchased by Royal Gold Inc.) and the Mexican concessionaires (Abelardo Garza Hernandez, Noel McAnulty and Bill Shafer) (Table 4-3).

On January 16th, 1995, Kennecott entered into an option agreement with Mexican concessionaires that allowed Kennecott to explore and acquire the Nieves Property by making specified option payments over five years, and advance minimum royalty payments.

On March 13th, 1998, Kennecott transferred its rights under the Nieves option to Western in consideration for an uncapped 2% NSR on certain core concessions and a 1% NSR on others.

Western subsequently assigned its rights to the Nieves Project as specified in the "Underlying Agreement" to Quaterra on March 26th, 1999, in consideration for 1,444,460 common shares of the Company at a deemed price of CDN$0.20 per share (CDN$288,892). In addition, the Company issued 360,000 common shares at a deemed price of CDN$0.20 per share (CDN$72,000) to the concessionaires in lieu of the US$50,000 option payment otherwise due under the terms of the Underlying Agreement.

The payment schedule in the Underlying Agreement was amended on November 22nd, 1999, February 11th, 2000 and May 2002, such that US$30,000 was paid in January 2000, US$15,000 in May 2002 and US$25,000 in January 2003, for a total of US$70,000. In addition, to acquire the interest in the claim fractions the Company paid US$40,000 to the concessionaires. Advanced minimum royalty (AMR) payments of US$75,000 are due on or before the 26th of January each year from 2004 until the commencement of commercial production. The Nieves concessions are subject to a maximum 3% NSR to the original concession holders, which the Company may purchase at any time for US$2 million (Table 4-3).

On April 10th, 2003, Quaterra completed a US$1.5 million limited partnership financing with Blackberry, whereby Blackberry could earn a 50% interest in the Property by funding two exploration programs of US$750,000 each. The initial payment of US$750,000 received in the 2003 Fiscal Year was expended on a 5,300-metre drill program on the Nieves Property. During the 2004 Fiscal Year, Blackberry elected to continue by advancing a further US$750,000 towards a follow-up drill program completed in May 2005, thereby earning a 50% interest in the Property. The partners signed a joint venture agreement in 2006 and have jointly contributed to all exploration costs subsequently incurred.

On January 24th, 2007, Kennecott's royalty was purchased by Royal Gold Inc.

On August 5, 2011, the Nieves asset was transferred into a single purpose company, Minera Cerro Gregorio.

The author is not aware of any significant environmental liabilities related to the current exploration of the Nieves Property. The areas of primary mineral exploration are generally flat-lying, sparsely populated with a few cultivated areas and the remaining land area used for the periodic grazing of livestock. Minimal rehabilitation measures such as stabilizing slopes and planting local flora (Buffell grass) in areas of disturbance is usually sufficient to satisfy the ecological authorities, the Instituto de Investigaciones Forestales, Agricolas y Pecuarias ("INIFAP"), a government office based in Calera, Zacatecas. There is little to no surface water for exploration or mining activities but an abundance of ground water exists and the ownership of mineral rights generally allows access to ground water as needed.

Dispersed tailings from historic operations are present and a number of the historic workings have old waste dumps associated with them. It is recommended that Quaterra locate and document all of the historic dumps (ore and tailings), mark and fence off or otherwise make secure all open holes and workings, and initiate baseline environmental studies.

To the extent known to the author, there are no significant factors or risks that may affect access, title, or the right or ability to perform work on the property. Exploration drilling has been conducted under a permit issued by the Secretaria de Medio Ambiente y Recursos Naturales (SEMARNAT). The permit expired on October 15, 2012, but may be extended by request received prior to September 14, 2013.

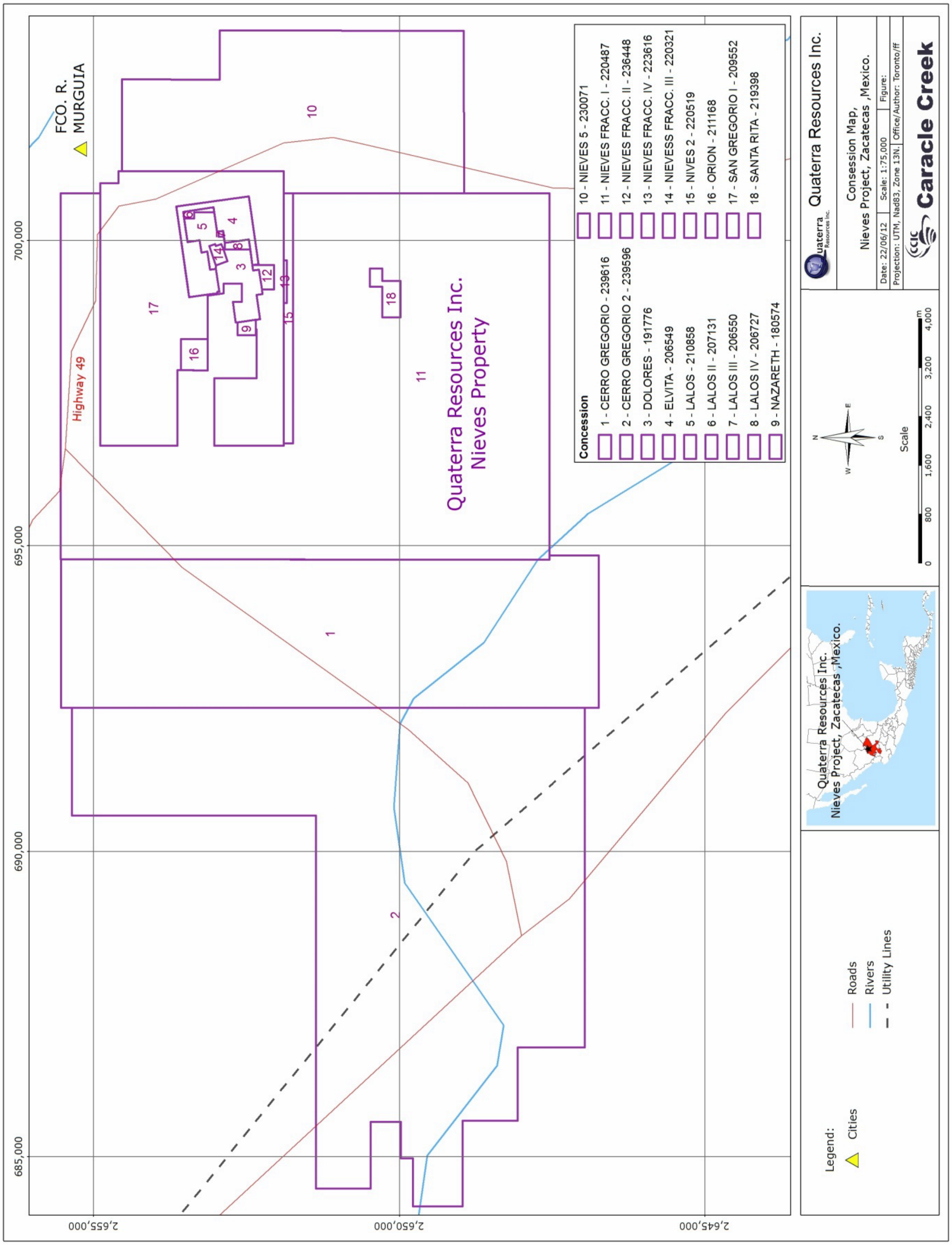


Figure 4-3: Concessions on the Nieves Property

Table 4-1: List of Concessions on the Nieves Property

	Concession	Title	Area (ha)	Date Issued	Expiry Date
1	SAN GREGORIO I	209552	944.4291	03/08/1999	02/08/2049
2	LALOS	210858	30.1924	16/12/1999	15/12/2049
3	LALOS II	207131	3.9268	29/04/1998	28/04/2048
4	LALOS III	206550	0.7370	23/01/1998	22/01/2048
5	(GPO) ELVITA	206549	92.7895	23/01/1998	22/01/2048
6	LALOS IV	206727	5.6194	12/03/1998	11/03/2048
7	ORION	211168	21.8825	11/04/2000	10/04/2050
8	NIEVES F. II	236448	6.4577	11/10/1995	10/10/2045
9	SANTA RITA	219398	24.0000	04/03/2003	03/03/2053
10	NIEVES F. I	220487	3638.0359	12/08/2003	11/08/2053
11	NIEVES F. III	220321	6.3400	11/07/2003	10/07/2053
12	NIEVES 2	220519	59.2114	14/08/2003	13/08/2053
13	NIEVES F. IV	223616	3.7494	21/01/2005	20/01/2055
14	DOLORES	191776	61.0047	19/12/1991	18/12/2041
15	NAZARET	180574	7.1302	13/07/1987	12/07/2037
16	NIEVES 5	230071	1266.5766	17/07/2007	16/07/2057
17	CERRO GREGORIO	239616	2200.0000	31/01/2012	30/01/2062
18	CERRO GREGORIO 2	239596	3691.9899	31/01/2012	30/01/2062
	TOTAL		**12064.0725**		

Table 4-2: Details of Tax Payments to the Mexican Government on the Nieves Property

Concession	Title	Taxes paid in 2011		Taxes paid in first half of 2012		Taxes to be paid in second half of 2012	
		Mexican Pesos	US$	Mexican Pesos	US$	Mexican Pesos	US$
SAN GREGORIO I	209552	$210,176	$17,423	$117,809.00	$8,599.00	$117,809.00	$9,233.00
LALOS	210858	$6,722	$557	$3,767.00	$275.00	$3,767.00	$295.00
LALOS II	207131	$876	$73	$491.00	$36.00	$491.00	$38.00
LALOS III	206550	$166	$14	$93.00	$7.00	$93.00	$7.00
(GPO) ELVITA	206549	$20,652	$1,712	$11,576.00	$845.00	$11,576.00	$907.00
LALOS IV	206727	$1,252	$103	$702.00	$51.00	$702.00	$55.00
ORION	211168	$4,872	$404	$2,731.00	$199.00	$2,731.00	$214.00
NIEVES F. II	236448	$68	$6	$56.00	$4.00	$56.00	$4.00
SANTA RITA	219398	$3,036	$251	$1,702.00	$124.00	$1,702.00	$133.00
NIEVES F. I	220487	$230,072	$19,072	$257,865.00	$18,822.00	$257,865.00	$20,209.00
NIEVES F. III	220321	$402	$34	$450.00	$33.00	$450.00	$35.00
NIEVES 2	220519	$3,746	$311	$4,198.00	$306.00	$4,198.00	$329.00
NIEVES F. IV	223616	$240	$20	$134.00	$10.00	$134.00	$10.00
DOLORES	191776	$13,578	$1,125	$7,611.00	$556.00	$7,611.00	$596.00
NAZARET	180574	$1,588	$132	$890.00	$65.00	$890.00	$70.00
NIEVES 5	230071	$39,824	$3,301	$22,318.00	$1,629.00	$22,318.00	$1,749.00
CERRO GREGORIO	239616			$11,053.00	$856.00	$12,541.00	$983.00
CERRO GREGORIO 2	239596			$18,550.00	$1,436.00	$21,045.00	$1,649.00
TOTAL		**$537,270**	**$44,538**	**$461,996.00**	**$33,854.00**	**$465,979.00**	**$36,519.00**

Table 4-3: Details of NSR on the Nieves Property

Concession	Title	Area (Hectares)	Date Issued	Expiry Date	% NSR to Mexican Conc.	% NSR to Kennecott (Royal Gold)	Total % NSR
SAN GREGORIO I	209552	944.4291	03/08/1999	02/08/2049	3	2	5
LALOS	210858	30.1924	16/12/1999	15/12/2049	3	2	5
LALOS II	207131	3.9268	29/04/1998	28/04/2048	3	2	5
LALOS III	206550	0.7370	23/01/1998	22/01/2048	3	2	5
(GPO) ELVITA	206549	92.7895	23/01/1998	22/01/2048	3	2	5
LALOS IV	206727	5.6194	12/03/1998	11/03/2048	3	2	5
ORION	211168	21.8825	11/04/2000	10/04/2050	3	2	5
NIEVES F. II	236448	10.0043	11/10/1995	10/10/2045	3	2	5
SANTA RITA	219398	24.0000	04/03/2003	03/03/2053	1	2	3
NIEVES F. I	220487	3512.2773	12/08/2003	11/08/2053	3	2	5
NIEVES F. III	220321	6.3400	11/07/2003	10/07/2053	3	2	5
NIEVES 2	220519	59.2114	14/08/2003	13/08/2053	1	2	3
NIEVES F. IV	223616	3.7494	21/01/2005	20/01/2055	1	2	3
DOLORES	191776	61.0047	19/12/1991	18/12/2041	3		3
NAZARET	180574	7.1302	13/07/1987	12/07/2037	3		3
NIEVES 5	230071	1266.5766	17/07/2007	16/07/2057			
CERRO GREGORIO	239616	2200.0000	31/01/2012	30/01/2062			
CERRO GREGORIO 2	239596	3691.9899	31/01/2012	30/01/2062			
TOTAL		**11941.8605**					

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 ACCESS

Quaterra/Blackberry exploration activities are co-ordinated from the small town of Nieves (now re-named Francisco R. Murguia) where they maintain an office and a house. The town of Nieves is accessed via Highway 49, a paved, two-lane toll highway approximately 200km north of the city of Zacatecas. The town of Nieves is accessed via a 17 km paved road from Highway 49. The nearest major population and service centre to Nieves is the mining town of Fresnillo located ~90 km to the south. Fresnillo has a population of approximately 75,000 and services the Fresnillo Mine run by Peñoles. Fresnillo offers a substantial professional work force experienced in mining and related activities in addition to most other supplies and services. International airports are located within approximately a three hour drive of the Property in the city of Zacatecas to the south, and in Torreõn (Coahuila state) to the north. Road access to the Property is excellent with the main paved highway to Nieves running along the northern portion of the Property (Figure 4-1 and Figure 4-2). A network of dirt roads and trails provide access to the historical mining operations and extend southward to all areas of the Property. Drill and access roads can be easily built as most of the Nieves Property is flat-lying with only a few dry creek beds (Figure 5-3).

Figure 5-1: Dirt Road Accessing Nieves Property (Photo from Doris Fox)

5.2 PHYSIOGRAPHY, CLIMATE AND VEGETATION

The Nieves Property lies within the Mexican Altiplano or Mesa Central region. This region is flanked to the west by the Sierra Madre Occidental and to the east by the Sierra Madre Oriental mountain ranges (Figure 5-2). The Altiplano in this region is dominated by broad alluvium filled plains between rolling to rugged mountain ranges and hills reaching up to 3,000m above mean sea level ("AMSL") and average elevations in valleys of approximately 1,700m. Elevations on the Nieves Property range from 1,900 m to 2,000 m AMSL. The terrain is generally flat-lying with a prominent north-south trending ridge along the eastern portion of the Property with moderate to vertical slopes (Figure 5-3). There is very little human habitation on the Property, with only a few widely scattered farm houses, although the town of Nieves directly borders the Property to the northeast.

The climate in the region is continental, warm and arid with temperatures ranging from $0^{o}C$ to $41^{o}C$, averaging ~$21^{o}C$ and less than 1,000 mm of annual precipitation. Due to the limited precipitation, vegetation is sparse and hardy consisting mainly of grasses, low thorny shrubs (including mesquite) and various cacti, with scattered oak forests at higher elevations. Surface water is rare but ground water is readily available. Drilling is feasible year round. Rain in the wet season, May to October, can make drilling conditions difficult due to muddy ground conditions, but not impossible.

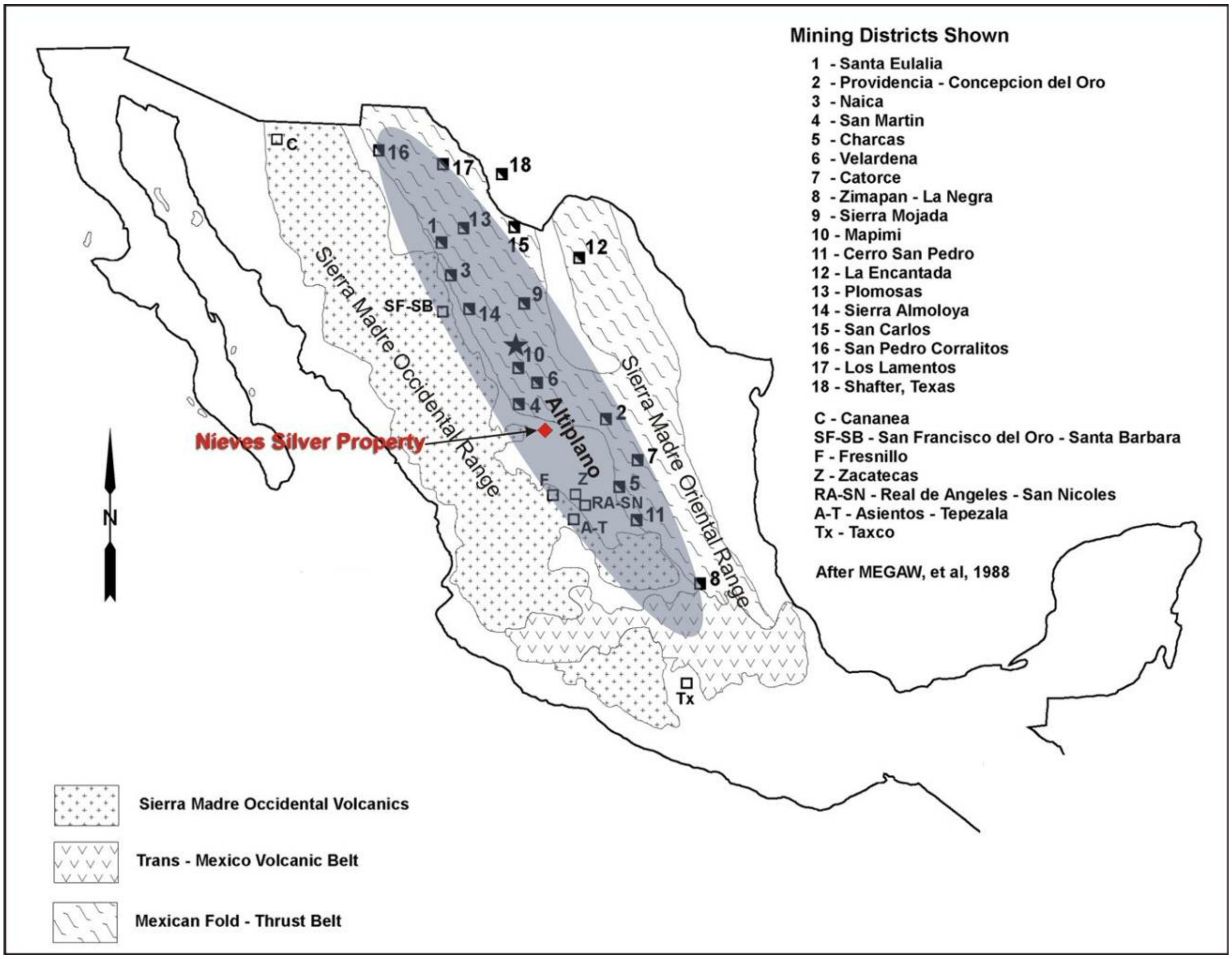


Figure 5-2: Major geological and physiographical regions and mining districts in Mexico (after Stone 2010)

Figure 5-3: Typical Landscape on the Nieves Property Looking North

(photo from Doris Fox)

6 HISTORY

6.1 EXPLORATION ACTIVITIES BETWEEN 1560 AND 1994

The first discovery on the area covered by the Nieves Property was the Santa Rita Vein in 1560 by Spanish explorers (Turner, 1999; Cavey, 1999). Soon after in 1574 the Concordia vein was discovered. The Santa Rita and Concordia- San Gregorio-Dolores veins were the focus of mining by the Spanish and Mexican miners until 1880.

Most of the activity in the Nieves District occurred between 1880 and 1910, when an English company, the Mexican Rosario Mining Company, and two Californian companies, the Almaden Mining Company and the Concordia M. and M. Company, worked in the area. These companies worked on the Concordia vein primarily while a small independent miner Gonzáles Piñera worked concurrently on the San Gregorio vein (Turner, 1999; Cavey, 1999). The location of the old mines are shown in Figure 6-1.

Prior to the 1910 revolution, which halted all production in the Nieves District, total ore production in the District was estimated at 50,000 tonnes (Turner, 1999). The only production reported is from the Concordia Mine where 5,414 tonnes at a grade of 4,065 g/t silver were produced (Figure 6-1). This production data cannot be relied upon and has not been verified by the qualified person. The qualified person has not done sufficient work to classify the historical production as current mineral resource and is not treating the historical estimate as current mineral resource.

Between 1910 and 1978 several companies (including Fresnillo Mining: 1936; Scurry-Rainbow: mid-1960's to 1978) attempted to de-water, sample, and re-open the historical workings in the Concordia and Santa Rita mines, and were largely unsuccessful (Figure 6-1). However, underground drilling from this period intersected and confirmed the presence of the Santa Rita Vein 100 m below the 8th level. Included in this time period, is a site visit by D.B. Dill for Peñoles Mining, in 1954, who compiled and preserved much of the historical data for the Nieves District. Dill (1954) reported 21,500 tonnes of probable ore at a width of 0.92 m and a grade of 0.92 g/t Au, 1131 g/t Ag, and 2-4% Sb, still remained in the Concordia Vein and a prospective 120,000 additional tonnes. This resource estimate cannot be relied upon, has not been verified by the qualified person, nor is it NI43-101 compliant resource estimate. The qualified person has not done sufficient work to classify the historical estimate as current mineral resource and is not treating the historical estimate as current mineral resource.

The Santa Rita vein and refurbished mill and flotation plant were purchased by Fomento Minero in 1978, who operated the mine until 1987. Fomento Minero also sank three shafts and deepened a historic shaft along the Concordia- San Gregorio vein system during the 1970's (Figure 6-1). The flotation mill was capable of running 100 tonnes/day during this time and was fed 50% tailings and 50% ore with an average head grade of 130 g/t silver, 2% lead, 2.4% zinc and 2.5% antimony, according to Consejo Recursos Minerales (CRM) (Cavey, 1999). Today, all that remains are the building foundations, abandoned shafts and power lines.

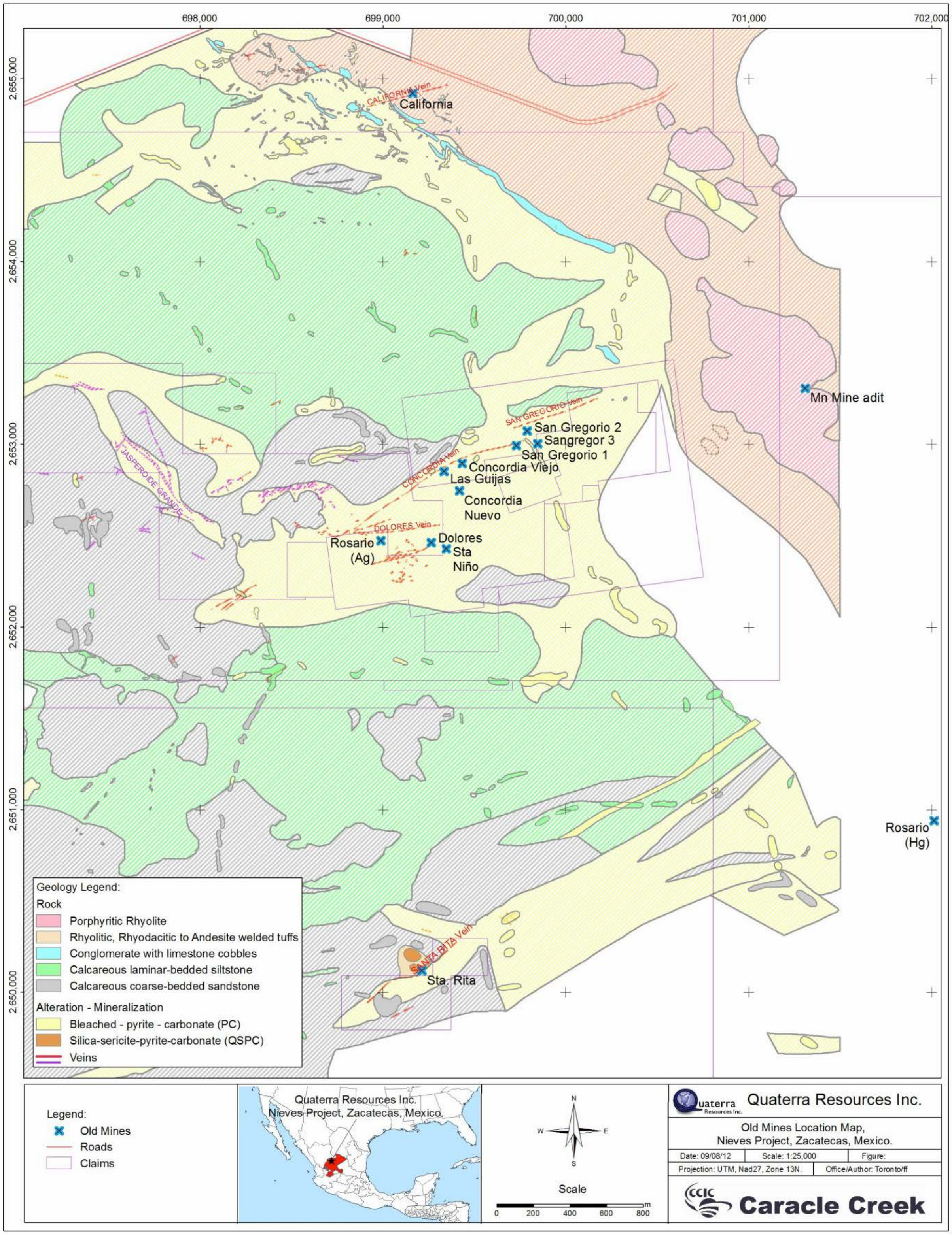


Figure 6-1: Location of Old Mines on the Nieves Property

6.2 EXPLORATION ACTIVITIES BETWEEN 1994 AND 2010

Exploration activities between 1994 and 2010 included mapping, rock and soil sampling, several geophysical surveys and a total of 9 drill programs (Table 6-1). The companies performing the work included Kennecott, Western Copper, Quaterra and the joint venture of Quaterra and Blackberry.

Table 6-1: Summary of Exploration Activities Between 1994 and 2010

Company	Year	Exploration Activities
Kennecott	1994-1996	Reconnaissance geologic mapping at 1:25,000 scale
		535 rock samples assayed for gold, silver, arsenic, antimony, mercury, copper, lead, zinc and molybdenum
		131 rock chip samples analyzed for gold, silver, arsenic, antimony, mercury, copper, lead, zinc, molybdenum, tin and tungsten
		completed three (3) soil sampling surveys
		geophysical surveys including airborne and ground magnetics, a single dipole-dipole induced polarization-resistivity (IPR) line, and seven controlled source audio-frequency magneto-telluric (CSAMT) lines
		drilled 8 RC holes
Western Copper	1997-1998	drilled 5 RC holes
Quaterra	1999-2000	geological mapping at 1:10,000 scale over an area of 6 x 8 km
		detailed mapping at 1:20,000 scale over the Concordia vein system (approximately 2 km x 800m area)
		205 rock chip samples were analyzed for gold, silver, arsenic, antimony, copper, lead and zinc
		drilled 10 RC holes and deepened 4 holes by diamond drilling (QTA03, QTA07, QTA08, NV05)
Quaterra-Blackberry	2003 to 2006	air photograph interpretation
		established a property wide grid
		CSAMT and IP geophysical surveying
		surveying of historic drill collars
		surface sampling and assaying
		drilled 32 diamond drill holes (total = 16,369.94m; Phases I-III)
		Independent Technical Report (Wetherup, 2006)
	2007 and 2008	air photograph interpretation
		field checking possible geochemical/geophysical/geological anomalies
		drilled 40 diamond drill holes (total = 11,562.80m; Phases IV and V)
	2009	Initial Mineral Resource Estimate and Independent Technical Report (Stone, 2009)
	2009 and 2010	Drilled 29 holes (6,118.70m; Phase VI)
		Geophysical surveying Updated Mineral Resource Estimate and Independent Technical Report (Stone, 2010)

6.2.1 Kennecott exploration between 1994 and 1996

In the early 1990's, a group of Mexican concessionaires (Abelardo Garza Hernandez, Noel McAnulty and Bill Shafer) assembled a land position in the area and presented it to Kennecott who signed the option agreement on January 16th, 1995. Exploration work completed by Kennecott included geologic mapping, surface sampling (535 rock samples and 131 rock chip samples), three soil surveys, geophysical surveying (airborne and ground magnetic surveys, IPR survey, controlled source audio-frequency magneto-telluric survey) and reverse circulation (RC) drilling of the San Gregorio, California and Orion West veins (Figure 6-2 and Table 6-2).

In 1995 and 1996, 8 drill holes (NV01 to NV08) were drilled totaling 1532.5 m. The drilling intersected several zones of significant silver mineralization hosted by two distinct styles of mineralization. Drill hole NV08 in the California area intercepted two separate 2m intervals of high grade silver vein mineralization that returned assay values of 367 g/t and 795 g/t of silver at depths of 108m and 116m, respectively. In contrast, drill hole NV03 intersected a large low grade zone of silver mineralization at a depth of 180 m depth that averaged 82 g/t silver over 28 m. Drill hole NV03 also encountered a high grade silver vein at 148 m depth that returned 254 g/t silver over 2 m. Drill hole NV06 also encountered a large zone of low-grade silver mineralization that returned 67 g/t silver over 68 m.

Kennecott conducted several geophysical surveys including airborne and ground magnetic surveys, a single dipole-dipole induced polarization and resistivity (IPR) line and seven controlled source audio- frequency magneto-telluric (CSAMT) lines. No results were available to the author.

6.2.2 Western Copper exploration in 1997 and 1998

On March 13th, 1998, Kennecott transferred its rights under the Nieves option to Western Copper in consideration for an uncapped 2% NSR on certain core concessions and a 1% NSR royalty on others. Before assigning its rights to the Nieves Project to Quaterra on March 26th, 1999, Western Copper drilled 5 RC holes testing the California vein system (Figure 6-2 and Table 6-2). The holes were drilled in the area around hole NV08. Western Copper also twinned hole NV08 and reproduced similar assay values for the intercepts reported by Kennecott including 890 g/t Silver over 1.0 m in drill hole WCNV01. Holes drilled to intercept mineralization below drill hole NV08 returned assay values of 841 g/t silver over 0.45 m, 109 g/t silver over 0.8 m, and 1,081 g/t silver over 0.35 m in drill hole WCNV04.

6.2.3 Quaterra exploration in 1999 and 2000

Western Copper transferred its rights to the Nieves Property to Quaterra on March 26, 1999. In 1999 and 2000 Quaterra completed an exploration program consisting of geological mapping, sampling and drilling (Figure 6-2 and Table 6-1). Quaterra completed 10 drill holes on the Concordia and Gregorio North veins in conjunction with surface mapping and sampling programs during 1999 and 2000 and deepened four holes (Table 6-1 and Table 6-2). Table 6-3 shows significant drill results.

Table 6-2: Drill Programs Completed by Kennecott, Western and Quaterra

Company	Year	Phase	Area	Number of holes	Hole Type	Total drilled (m)	Holes
Kennecott	1995	I	Gregorio North	2	RC	388	NV02, NV03
	1996	I	Dolores/Ojito	2	RC	302	NV01, NV04
			California	1	RC	202	NV08
			Gregorio North	3	RC	1009.3	NV05 to NV07
			Total Drilled	**8**		**1901.3**	
Western	1997	I	California	5	RC	921.6	WCNV01 to WCNV05
			Total Drilled	**5**		**921.6**	
Quaterra	1999	I	Concordia	4	RC, except QTA03 (extended by diamond drilling)	1071.21	QTA01-QTA03, QTA05
	2000	I	Gregorio North	6	RC, except QTA07 and QTA08 (extended by diamond drilling); NV05 (extended by diamond drilling)	2058.1	QTA04, QTA06-QTA10
			Total Drilled	**10**		**3129.31**	

Table 6-3: Significant Drilling Results Completed by Quaterra in 1999 and 2000

Area	Hole number	RC (m)	DDH (m)	Total drilled (m)	From (m)	To (m)	Interval (m)	Ag (g/t)
Concordia	QTA-1	173		173	65.53	74.67	9.14	204
					74.67	77.72	3.05	23
					97.53	99.06	1.53	273
					99.06	100.58	1.52	29.8
Concordia	QTA-3	213	337	550	33	36	3	243
					386	420	34	21.26
					426	434	8	23
					446	452	6	26
Gregorio	QTA-4	238		238	80.75	97	16.25	48.25
North					116	123	7	17
					195.6	232.1	36.5	98.18
Concordia	QTA-5	140		140	61	68.5	7.5	40.2
Gregorio North	QTA-7	280	232	512	346	354	8	23.7
Gregorio North	QTA-9	348		348	276	278	2	115

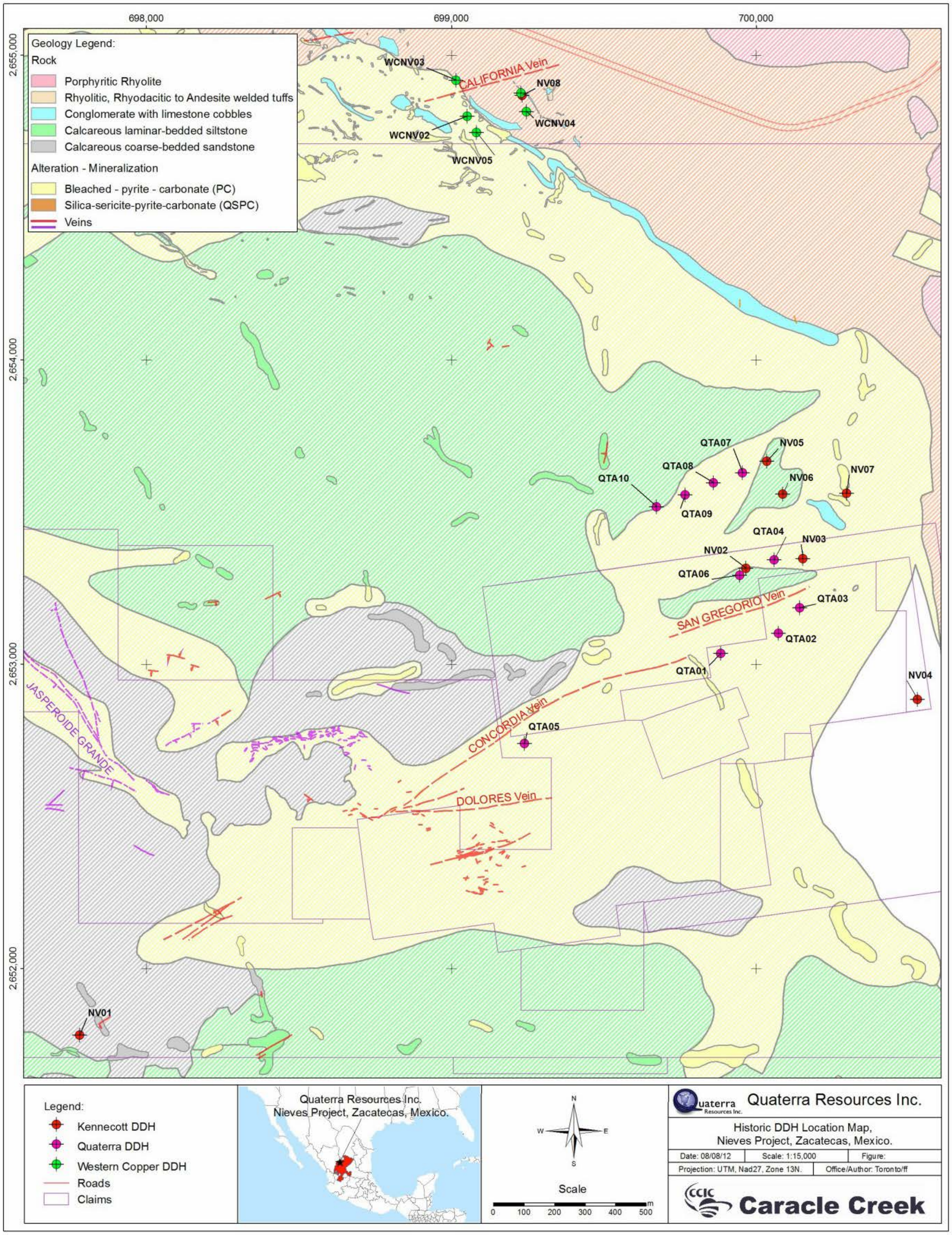


Figure 6-2: Location of holes drilled by Kennecott, Western and Quaterra between 1994 and 2000

6.2.4 Quaterra and Blackberry 2003-2010

On April 10th, 2003, Quaterra completed a US$1.5 million limited partnership financing with Blackberry, whereby Blackberry could earn a 50% interest in the Property by funding two exploration programs of US$750,000 each, which was fulfilled. In 2006 Quaterra and Blackberry signed a joint venture agreement and have jointly contributed to all exploration costs subsequently incurred.

Exploration between 2003 and 2010 by Quaterra and Blackberry included air photograph interpretation, surface sampling, field work, two geophysical surveys, six drill programs and three 43-101 independent technical reports, two of which include 43-101 compliant resource estimations.

6.2.4.1 Drilling

Drilling by Quaterra and Blackberry started in 2004 and included six drill programs consisting of 72 drill holes, totaling 34,048.43 m (Figure 6-3 to Figure 6-5 and Table 6-4). Holes were drilled on every vein system on the property, but most of the veins concentrated on the Concordia vein system, where the resource was estimated.

Most of the drill holes were planned to target geophysical anomalies, to extend the known mineralized zones in length and depth and for in-fill drilling to increase the confidence in the resource estimation.

The drill programs were very successful and extended the known mineralized zones in several areas. The Concordia vein system was extended to at least 1,100 m along strike and 400 m down dip. Drill highlights are summarized in Table 6-5.

Table 6-4: Drilling Summary on the Nieves Property between 2004 and 2010

Year	Phase	Area	Number of holes	Total drilled (m)	Hole(s)
2004	I	California	2	851.61	QTA11, QTA12
		Concordia/Dolores	8	3,075.38	QTA13-15, QTA19-23
		Mn Mine	1	431.90	QTA18
		Orion	1	343.51	QTA17
		Santa Rita	1	599.54	QTA16
		Total Drilled	**13**	**5,301.94**	
2005	II	California	1	450.49	QTA24
		Chicharrona	1	513.89	QTA34
		Concordia/Dolores	5	2,430.77	QTA27-QTA30, QTA33
		Gregorio North	2	696.47	QTA31, 32
		Santa Rita	2	1,079.30	QTA25, QTA26
		Total Drilled	**11**	**5,170.92**	
2006	III	Concordia/Dolores	4	3,329.69	QTA35, QTA36, QTA40, QT41
		Majada East	1	651.05	QTA42
		Manto 4	1	459.03	QTA39
		Concordia/Gregorio North/Orion	1	650.54	QTA38
		Santa Rita	1	803.76	QTA37
		Total Drilled	**8**	**5,894.07**	
2007	IV	Concordia/Dolores	14	4,611.80	QTA43-QTA55, QTA57
		Santa Rita	1	402.00	QTA56
		Jasperiode Grande	1	376.00	QTA58
		Total Drilled	**16**	**5,389.80**	
2008	V	Concordia	23	5,744.00	QTA59-QTA81
		Gregorio North	1	429.00	QTA82
		Total Drilled	**24**	**6,173.00**	
2009	VI	Concordia	13	2,902.70	QTA83-QTA95
		Total Drilled	**13**	**2,902.70**	
2010	VI	Concordia	16	2,778.00	QTA95-QTA111
		Total Drilled	**16**	**3,216.00**	
		Total	**72**	**34,048.43**	**QTA11-QTA111**

Table 6-5: Drill Highlights on the Nieves Property between 2004 and 2010

Vein system	Hole	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Pb (%)	Zn (%)	Phase
Concordia	QTA-13	202.3	203.3	1	0.28	545	0.61	0.5	I
	including	203.1	203.3	0.2	0.66	2590	3.02	2.41	I
	QTA-19	207.6	209.1	1.5	1.39	4020	3.42	2.8	I
		425.2	426	0.8	0.49	915	0.92	0.31	I
	QTA-20	198.2	199.2	1	0.43	463	0.41	0.3	I
	QTA-21	281.41	283.85	2.44	0.47	224	0.63	0.39	I
	including	283	283.85	0.85	0.84	471	1.29	0.75	I
	QTA-22	85.61	89.57	3.96	<0.05	203	0.25	0.29	I
		129.5	131.65	2.15	0.09	201	0.07	0.16	I
	QTA-27	161.3	161.5	0.2	0.9	928	1.79	2.58	II
		172	174	2	<0.05	173	0.27	0.33	II
		174	174.73	0.73	0.07	337	0.37	0.33	II
		182.3	182.6	0.3	0.32	488	1.58	1.72	II
		191.79	192.5	0.71	0.61	932	0.64	0.57	II
		197.57	197.77	0.2	0.58	1105	1.17	2.57	II
		208	208.9	0.9	<0.05	260	0.21	0.22	II
	QTA-28	243.15	243.25	0.1	<0.05	1835	2.11	2.25	II
		243.8	243.9	0.1	0.07	894	1.45	1.17	II

(Continued on next page.)

Vein system	Hole	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Pb (%)	Zn (%)	Phase
		256.8	257.08	0.28	1.13	750	5.65	4.46	II
	QTA-29	337.45	337.65	0.2	0.2	648	0.7	1.45	II
		185.8	186.3	0.5	0.07	275	0.39	1.06	II
		226.5	226.6	0.1	0.17	888	0.27	0.33	II
		226.6	227.1	0.5	0.43	392	0.26	0.21	II
		238.8	239.1	0.3	0.93	799	1.05	2.69	II
		427.7	427.85	0.15	0.2	1550	10.75	0.47	II
	QTA-30	609.4	609.5	0.1	0.19	584	5.52	2.08	II
		615.1	615.2	0.1	0.13	971	9.12	9.84	II
		619.3	619.45	0.15	0.06	773	6.95	5.04	II
		643.5	643.6	0.1	0.06	782	7.37	4.1	II
		653.95	654.2	0.25	0.07	677	6.5	3.89	II
		758.5	758.7	0.2	0.05	443	4.35	4.87	II
		761.5	761.7	0.2	0.24	313	2.23	1.89	II
	QTA-33	333.3	333.8	0.5	<0.05	1795	1.33	0.44	II
	QTA-36	413.32	413.41	0.09	0.4	1030	0.34	1.27	III
		475.5	478	2.5	0.1	82.8	0.06	0.08	III
		878.05	891.8	13.75	0.03	17.92	0.14	0.13	III
	QTA-48	115.97	163.45	47.48	0.13	142	0.37	0.37	IV
	QTA-50	262	268.7	6.7	0.13	128	0.66	0.38	IV
	including	268.05	268.4	0.35	0.93	536	8.65	2.49	IV
		272.45	272.65	0.2	0.27	1085	3.8	2.88	IV
	QTA-53	351.13	352.35	1.22	0.32	1802	2.06	0.69	IV
	including	351.13	351.5	0.37	0.65	5240	4.81	1.83	IV
	QTA-54	381.28	381.9	0.62	1.13	480	1.98	6.16	IV
	QTA-55	62	99.6	37.6	0.15	108	0.1	0.14	IV
	QTA-59	171	228	57	0.05	135	0.14	0.19	V
	QTA-61	70	112	42	0.08	106	0.07	0.08	V
	QTA-65	62	104.35	42.35	0.17	149	0.13	0.2	V
	QTA-66	72	96	24	0.18	106	0.09	0.12	V
	QTA-73	80.5	82.9	2.4	0.45	136	0.06	0.07	V
	QTA-74	96	134	38	0.1	157	0.13	0.15	V
	QTA-80	256.5	270	13.5	0.08	254	0.21	0.23	V
		283.27	296.85	13.58	0.16	213	0.19	0.35	V
		256.5	270	13.5	0.08	253.97	0.21	0.23	V
		283.27	292	8.73	0.23	312.55	0.24	0.48	V
	QTA81	129	130.35	1.35	0.07	151	0	0.04	VI
		204.43	204.74	0.31	0.5	322	2.38	2.43	VI
		206.46	207.07	0.61	1.25	806	4.01	3.67	VI
	QTA82	208	210	2	0.18	289	0.16	0.14	VI
		290	292	2	0.14	68.3	0.05	0.18	VI
		318	324	6	0.21	155	0.13	0.08	VI
		334.05	346	11.95	0.08	107.43	0.12	0.16	VI
		362	364	2	0.13	118	0.3	0.27	VI
		380	384	4	0.17	234	0.22	0.24	VI
		391.4	393.8	2.4	0.29	155.3	0.37	0.52	VI
	QTA83	34.6	34.7	0.1	0.61	1640	0.17	0.09	VI
		72.56	72.8	0.24	0.18	172	0.13	0.21	VI
		100.54	104	3.46	0.06	126.64	0.06	0.12	VI
	QTA84	58	60	2	0.07	62.9	0.01	0.02	VI
		72	84	12	0.15	119.14	0.09	0.14	VI

Vein system	Hole	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Pb (%)	Zn (%)	Phase
		102	104	2	0.98	2254.07	0.43	1.69	VI
	QTA87	112	114	2	0.16	54.1	0.04	0.07	VI
		126	128	2	0.1	173	0.09	0.15	VI
		138.25	146	7.75	0.07	92.41	0.11	0.16	VI
		167.7	206.85	39.15	0.06	60.58	0.09	0.09	VI
		216.35	216.5	0.15	0.78	1005	1.39	1.43	VI
		222.2	222.45	0.25	3.41	1385	1.94	2.53	VI
		225.4	226.2	0.8	0.58	857	0.58	0.79	VI
	QTA88	106	112	6	0.04	229.53	0.09	0.15	VI
		118.65	119.1	0.45	0.43	475	0.59	0.54	VI
		121.7	122.25	0.55	0.2	290	0.29	0.28	VI
		143.5	143.8	0.3	0.59	964	0.8	0.39	VI
		163.65	164.25	0.6	0.07	287	0.94	0.42	VI
		170.6	176	5.4	0.15	135.63	0.1	0.12	VI
		180.5	180.7	0.2	0.16	258	2.24	1.33	VI
		182.5	182.6	0.1	1.71	6090	5.5	7.45	VI
		210	214	4	0.17	317.5	0.24	0.23	VI
	QTA89	144.7	164	19.3	0.25	310.7	0.28	0.38	VI
	QTA91	119.8	120	0.2	0.17	572	0.34	0.06	VI
		135.55	169.53	33.98	0.04	91.62	0.11	0.12	VI
	QTA92	118	120.85	2.85	0.06	195.23	0.11	0.13	VI
		195.4	196.6	1.2	0.11	308	0.14	0.25	VI
		223.7	223.8	0.1	3.2	2190	0.79	4.28	VI
	QTA93	71.35	71.45	0.1	1.23	1005	0.54	0.52	VI
		91.1	94.22	3.12	0.04	44.01	0.06	0.07	VI
		100.1	100.23	0.13	0.14	339	3.63	0.74	VI
	QTA94	96	98	2	0.14	90.6	0.02	0.03	VI
		124.6	148	23.4	0.09	129.34	0.14	0.16	VI
	QTA95	72	74	2	0.07	98	0.06	0.07	VI
		84	86	2	0.07	83.5	0.06	0.08	VI
		92	94	2	0.07	100	0.11	0.12	VI
		114	116	2	0.07	54.9	0.01	0.03	VI
		127	128.55	1.55	0.09	143.52	0.19	0.15	VI
		140	143.07	3.07	0.07	81.08	0.23	0.19	VI
		152	154	2	0.03	141	0.1	0.1	VI
		169.8	175.1	5.3	0.11	275.26	0.28	0.3	VI
		152	154	2	0.03	1545	0.46	1.89	VI
	QTA96	80	94.6	14.6	0.07	80.79	0.16	0.19	VI
		109.7	109.88	0.18	1.4	583	3.02	1.82	VI
		112.12	114	1.88	0.05	108.96	0.19	0.22	VI
	QTA97	66.4	88.95	22.55	0.14	261.74	0.23	0.29	VI
	QTA98	69.25	69.45	0.2	0.84	808	0.51	0.77	VI
	QTA99	56	58	2	0.1	387	0.13	0.05	VI
		66	71.7	5.7	0.07	109.18	0.06	0.1	VI
		104.8	105.5	0.7	0.52	392	0.25	0.82	VI
	QTA100	80	110	30	0.07	164.76	0.13	0.17	VI
		122.3	122.65	0.35	0.3	462	1.98	1.37	VI
		129.2	130.95	1.75	0.19	343.68	0.27	0.29	VI
	QTA101	42.1	42.8	0.7	0.21	305	0.19	0.08	VI
		80	86	6	0.06	124.2	0.07	0.08	VI
		98	116	18	0.07	122.23	0.09	0.14	VI

Vein system	Hole	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Pb (%)	Zn (%)	Phase
		144	144.85	0.85	0.31	250.35	0.61	0.63	VI
		193	194.1	1.1	0.03	98.4	0.05	0.06	VI
	QTA102	100	101.2	1.2	0.15	92.9	0.04	0.06	VI
		114	126	12	0.21	227.8	0.16	0.25	VI
		142	142.2	0.2	0.98	929	2.51	1.66	VI
		151.15	151.9	0.75	1.41	315	0.31	0.43	VI
	QTA103	131.4	148	16.6	0.12	153.73	0.14	0.19	VI
		174.93	175.6	0.67	0.21	413	0.24	0.36	VI
	QTA104	113	114.9	1.9	0.03	92.6	0.12	0.1	VI
		130	135	5	0.08	206.81	0.22	0.28	VI
		152.55	152.7	0.15	2.73	2760	1.14	4.55	VI
		158.15	158.85	0.7	0.56	569	0.54	2.61	VI
	QTA105	108	110	2	0.03	63.7	0.03	0.04	VI
		128	129.25	1.25	0.15	1189.04	0.62	1.03	VI
		133.5	133.85	0.35	0.07	511	1.41	0.84	VI
		136	138	2	0.03	77.3	0.04	0.09	VI
		144	151	7	0.13	135.06	0.11	0.13	VI
		157.2	163	5.8	0.07	64.34	0.07	0.07	VI
		167.45	167.75	0.3	1.46	388	0.47	0.55	VI
	QTA106	75.4	75.5	0.1	0.42	1510	0.34	4.32	VI
		105.7	106.35	0.65	0.03	180	0.31	0.17	VI
		111.7	120	8.3	0.1	170.31	0.18	0.21	VI
		177.15	178	0.85	0.15	214.12	0.01	0.12	VI
	QTA107	122	122.45	0.45	0.13	222	0.16	0.3	VI
		128	148	20	0.03	105.39	0.14	0.15	VI
		177	178.7	1.7	0.58	606.91	0.09	0.34	VI
	QTA108	101.95	127.9	25.95	0.08	154.37	0.17	0.22	VI
		140.9	141.05	0.15	0.86	1800	0.92	1.64	VI
		144	144.35	0.35	1.45	2610	0.39	2.25	VI
	QTA111	271.9	272.15	0.25	0.33	530	0.18	0.43	VI
		279.25	279.7	0.45	1.37	317	0.31	0.87	VI
Gregorio North	QTA-04	80.75	97	16.25		48.25			I
		116	123	7		17			I
		195.6	232.1	36.5		98.18			I
	QTA-07	346	354	8		23.7			I
	QTA-09	276	278	2		115			I
	QTA-31	102	102.21	0.21	0.28	151	0.33	0.31	II
		143	144.7	1.7	0.1	136	0.05	0.08	II
		153.2	153.33	0.13	0.45	121	0.2	0.06	II
		157.38	158.1	0.72	1.06	262	0.9	2.47	II
		158.1	158.3	0.2	0.85	620	1.7	1.63	II
		159.9	160.1	0.2	1.53	1105	1.29	2.2	II
		237.4	237.6	0.2	1.21	556	0.6	1.2	II
		241.3	241.5	0.2	0.31	575	0.74	0.83	II
		241.8	242.2	0.4	0.61	1750	2.59	1.96	II
		307.25	307.45	0.2	0.07	492	0.3	0.37	II
		307.45	307.75	0.3	0.07	206	0.16	0.1	II
		324.35	324.45	0.1	0.28	668	2	0.6	II
	QTA-82	189.15	210	20.85	0.06	53	0.02	0.03	V
		382.4	393.8	11.4	0.13	110	0.14	0.19	V
California	QTA-12	342.44	342.54	0.1	<0.05	406	0.26	0.24	I

Vein system	Hole	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Pb (%)	Zn (%)	Phase
Santa Rita	QTA-16	456.4	459.5	3.1	<0.05	70	0.57	0.91	I
	including	456.4	458	1.6	<0.05	107	0.81	1.44	I
	QTA-25	204.7	205.26	0.56	<0.05	317	1.62	1	II
		239.6	239.7	0.1	<0.05	223	1.13	1.22	II
		284.71	285	0.29	0.89	405	3.42	4.54	II
		351.1	352.9	1.8	0.19	190	2.94	3.94	II
		361.1	362.3	1.2	<0.05	129	0.26	0.69	II
		396.3	396.7	0.4	<0.05	299	2.54	1.41	II
		439.4	439.5	0.1	1.09	360	2.75	3.82	II
		505.5	505.8	0.3	<0.05	184	0.7	0.66	II
		507.2	508	0.8	<0.05	153	0.46	0.44	II
		544.1	544.3	0.2	0.26	206	0.19	0.01	II
	QTA-26	119.8	199.9	0.1	0.13	1415	0.39	2.08	II
		142.2	142.4	0.2	0.53	479	0.3	0.25	II
		382.83	383.1	0.27	<0.05	140	0.03	0.22	II
		505.6	506	0.4	<0.05	166	0.19	0.31	II
	QTA-37	462.28	462.85	0.57	0.77	90	3.8	0.44	III
		466.1	472	5.9	<0.05	104	0.23	0.55	III
		719.15	719.3	0.15	0.32	20	0.72	1.19	III
Orion	QTA-38	101.4	101.55	0.15	1.02	53	0.03	0.21	III
		170.35	170.55	0.2	<0.05	308	0.23	0.27	III
		345.95	349.2	3.25	<0.05	116	0.16	0.14	III

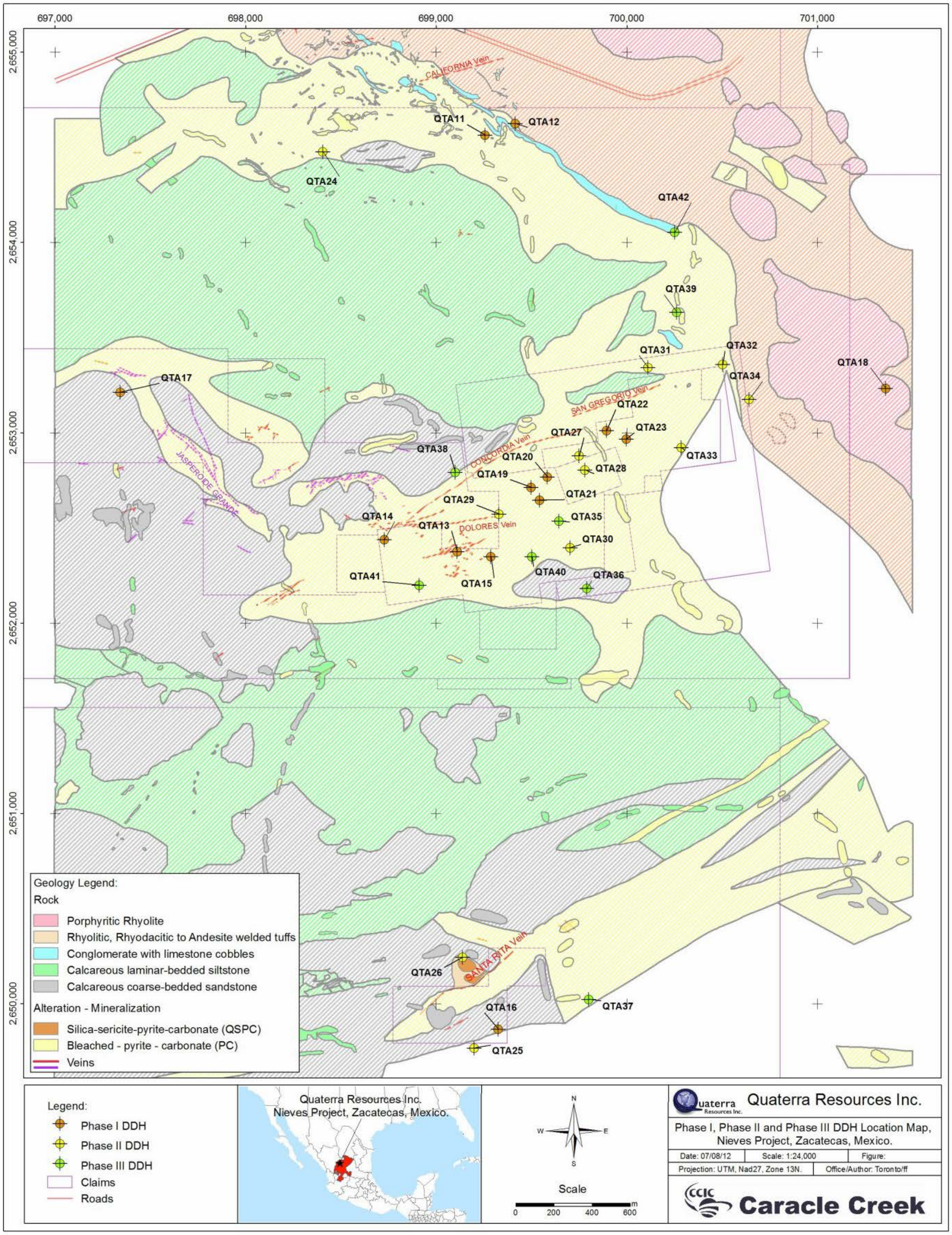


Figure 6-3: Location of drill holes in Phase I, II and III drill programs

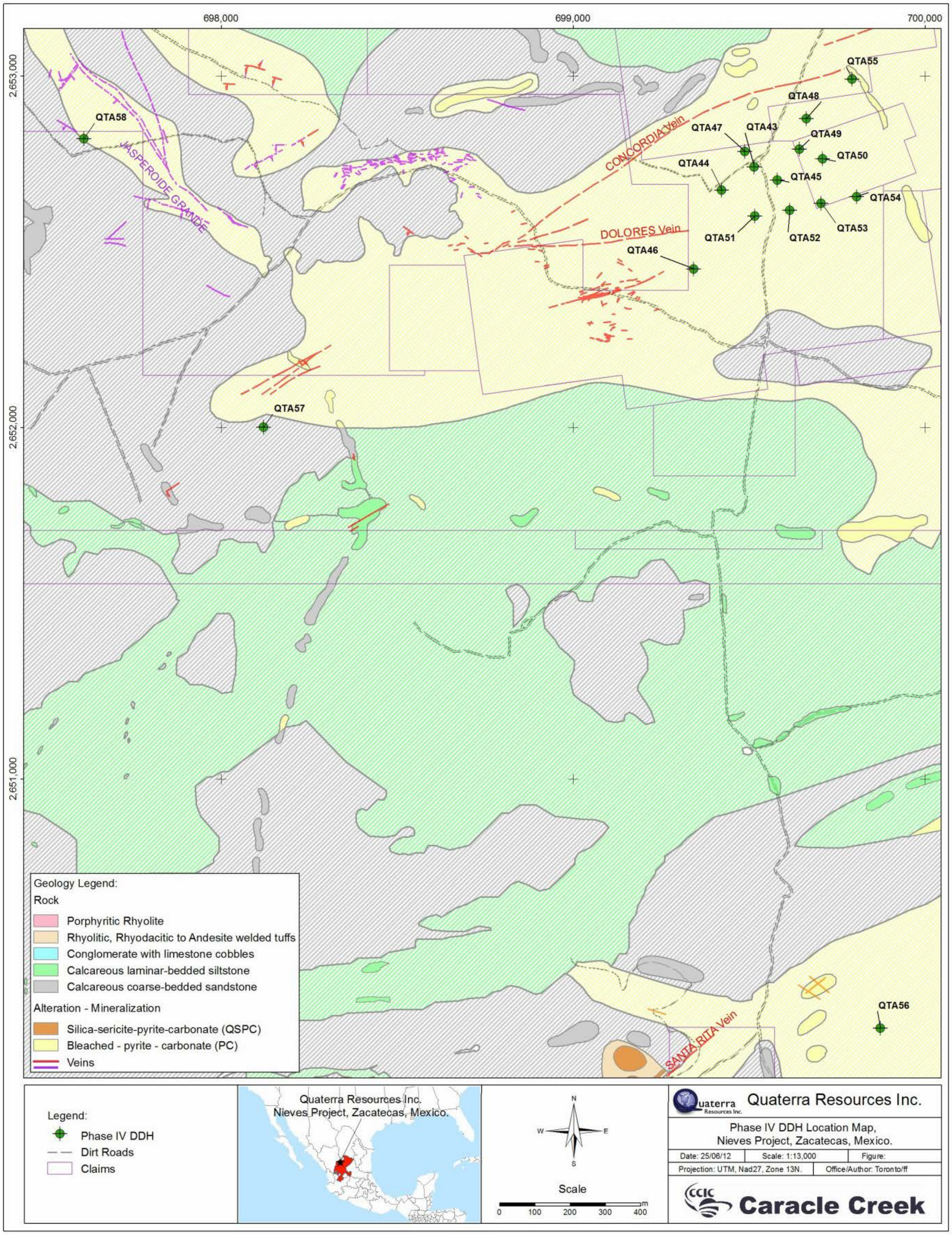


Figure 6-4: Location of drill holes in Phase IV drill program

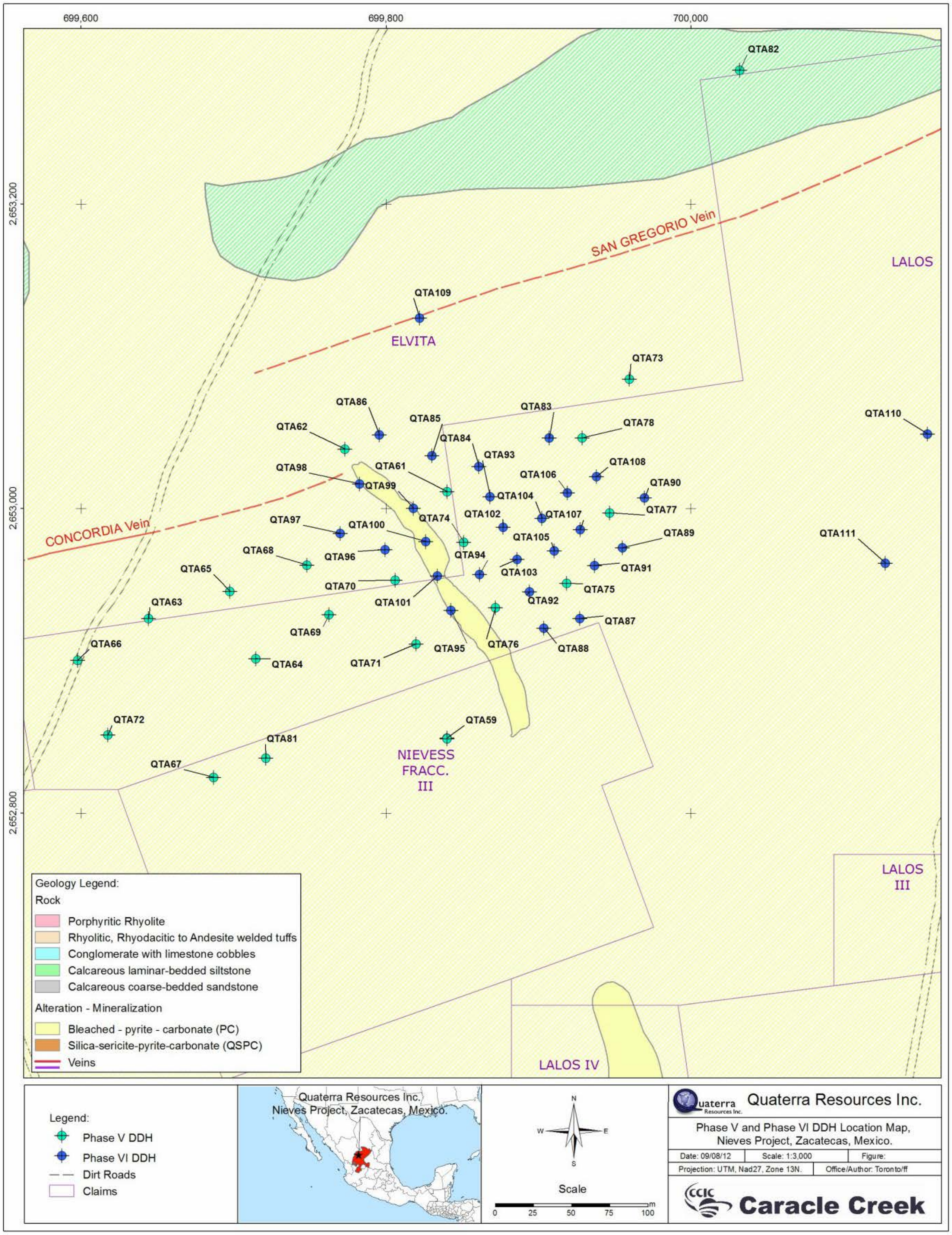


Figure 6-5: Location of drill holes in Phase V and VI drill programs

6.2.5 Geophysical Surveys

6.2.5.1 Geophysical survey 2003

In November and December 2003, Quaterra and Blackberry completed a geophysical survey consisting of 10 lines (6.6 km in length) of CSAMT and Controlled Source Induced Polarization (CSIP) for a total of 66 line-km. In addition, a Ground Magnetometer survey was completed consisting of 12 lines including the 10 lines surveyed with CSAMT for total of 76 line-km of magnetic surveying. The work was performed by Zonge Engineering and Research Organization of Tucson, Arizona (Job No. 0319). The CSAMT survey greatly extended coverage of the survey completed in 1995 and 1996 by Zonge Engineering on behalf of Kennecott. The survey identified several prospective anomalies, a number of which correspond to areas of known mineralization, but extend far beyond the limits of previous drilling (Quaterra News Release February 3, 2004).

The CSAMT survey identified six conductive features, three of which correspond to the areas of known mineralization along the Santa Rita, San Gregorio and Majada veins, the rest were previously unknown. These conductive zones coincide with some of the IP anomalies. The anomalies are interpreted to represent mineralization, have a southwest-northeast trend extending for distances up to 3.5 km and spaced at intervals of approximately 1000 m from north to south across the Nieves property.

The survey also identified a large undrilled IP anomaly west of San Gregorio and several smaller untested anomalies in the adjacent areas.

6.2.5.2 Geophysical survey 2010

Between May and August 2010, Quaterra and Blackberry conducted a geophysical survey performed by Zonge Engineering (Job No. 10094). The survey consists of 25 lines utilizing dipole-dipole or pole-dipole IPR (Induced Polarization and Resistivity) arrays, covering the Concordia-San Gregorio-Dolores vein system (14 lines); east extension of Santa Rita vein system (4 lines); the California vein system (4 lines); Manto-1 CSAMT target (1 line); and the El Rosario mercury occurrence (2 lines).

The results of the survey indicate the Concordia and San Gregorio are two separate veins and not fault offsets of the same vein, and identified strong anomalies along strike to the east and west of both veins that have not been drilled. The San Gregorio vein appears to be the eastern extension of the Orion vein, which is generally unexplored and under-explored for a distance of over 2500 meters.

The results of the survey east of the historic mine at Santa Rita vein indicate a zone of anomalies extending eastward a distance of 1000 m. The results from the two lines surveyed at the El Rosario mercury occurrence identified narrow zones of weak IP anomalies.

6.3 HISTORICAL MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

6.3.1 CRM 1992

In 1992, CRM estimated the resources and reserves remaining in the Santa Rita Vein system (Table 6-6). These resource estimates cannot be relied upon, have not been verified by the qualified person, nor are they NI 43-101 compliant resource estimates. The qualified person has not done sufficient work to classify the historical estimates as current mineral resource and is not treating the historical estimates as current mineral resources.

Table 6-6: Historic Santa Rita Resources Calculated by CRM (Cavey, 1999)

Resource Category	Tonnes	Ag (g/t)	Pb (%)	Zn (%)	Sb (%)
Positive	18,600	398	3	3.5	3
Probable	76,700	225	3.3	4.3	2.6
Possible	71,200	n/a	n/a	n/a	n/a
Tailings	20,000	90	n/a	n/a	n/a

6.3.2 Quaterra/Blackberry 2009 and 2010 resource estimates

Quaterra and Blackberry contracted Caracle Creek to complete 43-101 compliant resources on the Nieves Property (Stone, 2009, 2010). The results are summarized in Table 6-7 and Table 6-8. Caracle Creek is not treating these resources as current; the resource within this report is the current resource on the Nieves Property.

Table 6-7: 2009 Resource Estimate for the Concordia vein system at a 60 g/t cutoff grade

Category	Tonnes	Ag (g/t)	Au (g/t)	Ag (oz)[1]	Au (oz)[1]
Indicated	2,897,571	110.231	0.126	10,269,203	11,701
Inferred	2,256,596	96.562	0.115	7,005,797	8,373
[1]ounces calculated using 31.103 g/t					

Table 6-8: 2010 resource estimate for the Concordia and Gregorio North areas at a 45 g/t cutoff grade

Vein	Zone (Class)	Resource Tonnes (t)[1]	Au (g/t)[2]	Ag (g/t)[2]	Au (oz)[3]	Ag (oz)[3]
Concordia	La Quinta (Indicated)	4,590,000	0.1	103.4	14,757	15,259,171
Concordia	La Quinta (Inferred)	10,516,000	0.08	85.5	27,048	28,907,758
San Gregorio	North (Inferred)	4,005,000	0.15	79.4	19,315	10,223,998
[1] tonnes have been rounded up to the nearest 1,000. [2]gold is reported to 2 decimal places and silver to 1 decimal place [3] ounces calculated using 31.103 g/t						

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The Nieves Property lies on the western flank of the Central Altiplano in Mexico, just east of the Sierra Madre Occidental ranges (Figure 4-1). Basement rocks underlying the western Altiplano are a Mesozoic assemblage of marine sedimentary and submarine volcanic rocks belonging to the Guerrero Terrane (Simmons, 1991) that sit unconformably on Precambrian continental rocks. In the Nieves area, the boundary between the Guerrero Terrane rocks and younger Jurassic-Cretaceous sedimentary sequences (interpreted to be the Caracol Formation on the Property) is unclear.

The late Cretaceous to early Tertiary Laramide Orogeny folded and thrust faulted the basement rocks throughout the area and preceded the emplacement of mid-Tertiary plutons and related dykes and stocks (Ruvalcaba-Ruiz and Thompson, 1988). Mesozoic marine rocks are host to the San Nicolas VMS deposit (Wendt, 2002).

Unconformably overlying the Mesozoic basement rocks in the western Altiplano are units from the late Cretaceous to Tertiary, Sierra Madre Occidental magmatic arc (Figure 7-3). These rocks consist of a lower assemblage of late Cretaceous to Tertiary volcanic, volcaniclastic, conglomerate and locally limestone rocks, the “lower volcanic complex” and a Tertiary (approximately 25-45 Ma) “upper volcanic supergroup” of caldera related, rhyolite ash-flow tuffs and flows. Eocene to Oligocene intrusions occur throughout the Altiplano and are related to the later felsic volcanic event. Locally, these two units are separated by an unconformity (Ruvalcaba-Ruiz and Thompson, 1988).

A late NE-SW extensional tectonic event accompanied by major strike-slip fault movement affected the Altiplano starting approximately 35 Ma ago. This extension was most intense during the Miocene and developed much of the basin and range topography currently exhibited in the area. Subsequent erosion of the ranges has covered most of the valleys.

7.2 PROPERTY GEOLOGY

Rocks underlying the Nieves Property are of two distinct ages: (1) Mesozoic “argillite” (interpreted to represent a calcareous finely bedded turbidite flysch) as belonging to the Caracol Formation overlain by (2) Tertiary rhyolitic volcaniclastic rocks separated by a presumably Tertiary age basal conglomerate and conglomeratic sandstone sequence. At Nieves, the Caracol Formation is isoclinally folded with an axial plane cleavage. Nieves veins parallel the cleavage.

7.2.1 Mesozoic Rocks

The most common rock types underlying the Nieves Property form a thick sequence of fine laminar grey to dark green argillite beds up to 1m thick that hosts the silver mineralization (Figure 7-1. These rocks have been assigned to the Caracol Formation of the late Cretaceous age. Argillite beds are more abundant to the south in the Santa Rita area and to the west in the

Concordia area. The Caracol Formation is isoclinally folded with an axial plane cleavage, fold axes strike east-northeast to east and beds strike east- west and dip steeply south to near vertical.

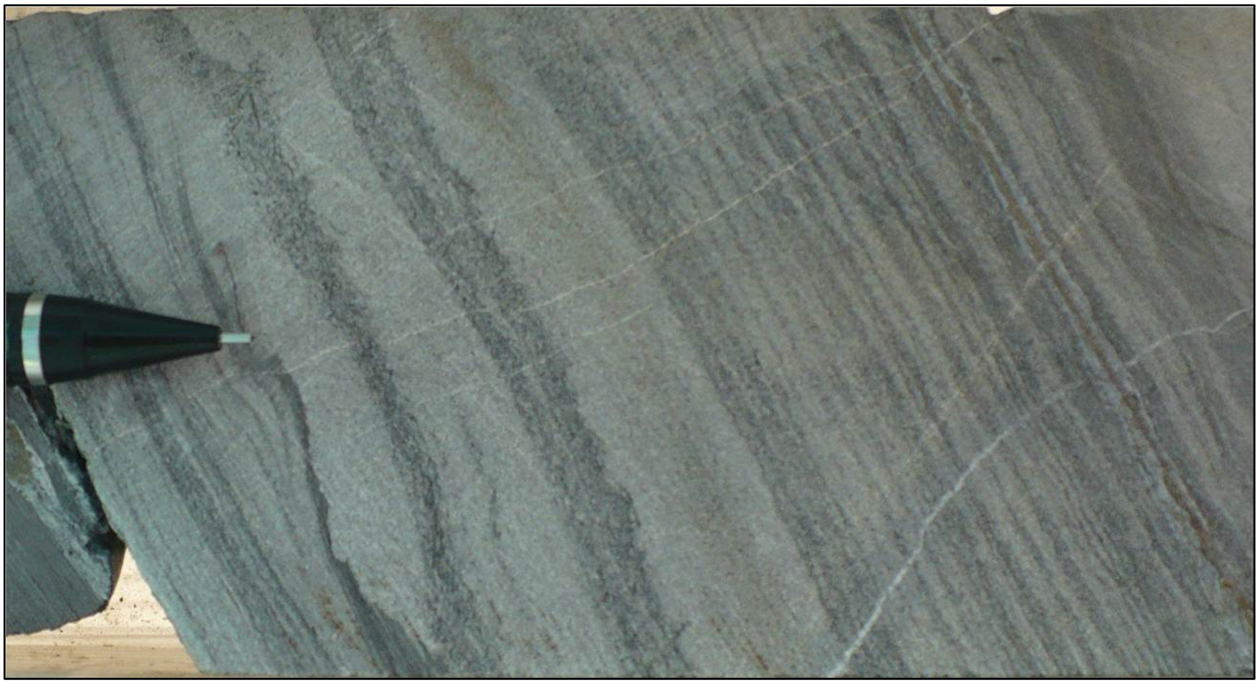


Figure 7-1: Sedimentary layers in argillite

(Photo from Doris Fox)

7.2.2 Tertiary Clastic Rocks

On the east side of the Nieves Property the Caracol Formation is overlain unconformably by a 1 to 10m thick conglomerate composed of rounded to sub-rounded limestone boulders 2 to 20 cm in diameter in a grey to brown sandstone groundmass. Above the limestone conglomerate there is up to 130m of conglomeratic sandstone with thin bands of calcareous conglomerate which was intersected in drill hole QTA-18 (Figure 7-2). These units dip shallowly.

Figure 7-2: Surface Expression of Clastic Sediments on the Property

(Photo from Doris Fox)

7.2.3 Tertiary Volcanic Rocks

In drill hole QTA-18 (Phase I) 46 m of rhyodacitic to andesitic welded tuff occur above the conglomerate and conglomeratic sandstone. A thin 1.5 to 2 m unit of grey to dark grey basalt occurs above the tuff and is in turn overlain by at least 56 m of porphyritic rhyolite flows striking north-northwest and dipping northeast. These porphyritic rhyolite flows underlie a prominent north trending ridge on the east side of the Property and are the host rock for manganese-calcite veins and breccia mineralization previously exploited by local miners (Figure 5-3 shows the ridge).

7.2.4 Structural Geology

The oldest structures on the Nieves Property are the folds which affect the Mesozoic argillite beds. These structures are likely related to compression during the Laramide Orogeny in the Cretaceous. Thrust faults are also common features of structures attributed to the Laramide Orogeny and several have been suspected to occur on the Nieves Property.

Post-Laramide structures are in all cases brittle in nature and affect both the Mesozoic Caracol Formation sedimentary rocks and the Tertiary volcanic and sedimentary rocks. These structures include: (1) faults that strike 330^o to 000^o and dip moderately northeast to east with east plunging slicken-sides, (2) faults that strike 170^o to 180^o and dip steeply to the west, and (3) major vein structures that strike 240^o to 270^o and dip 60^o to 90^o to the south. A late vertical fault structure striking 020^o to 030^o offsets the major mineralized structures and offsets the Concordia from the San Gregorio vein systems.

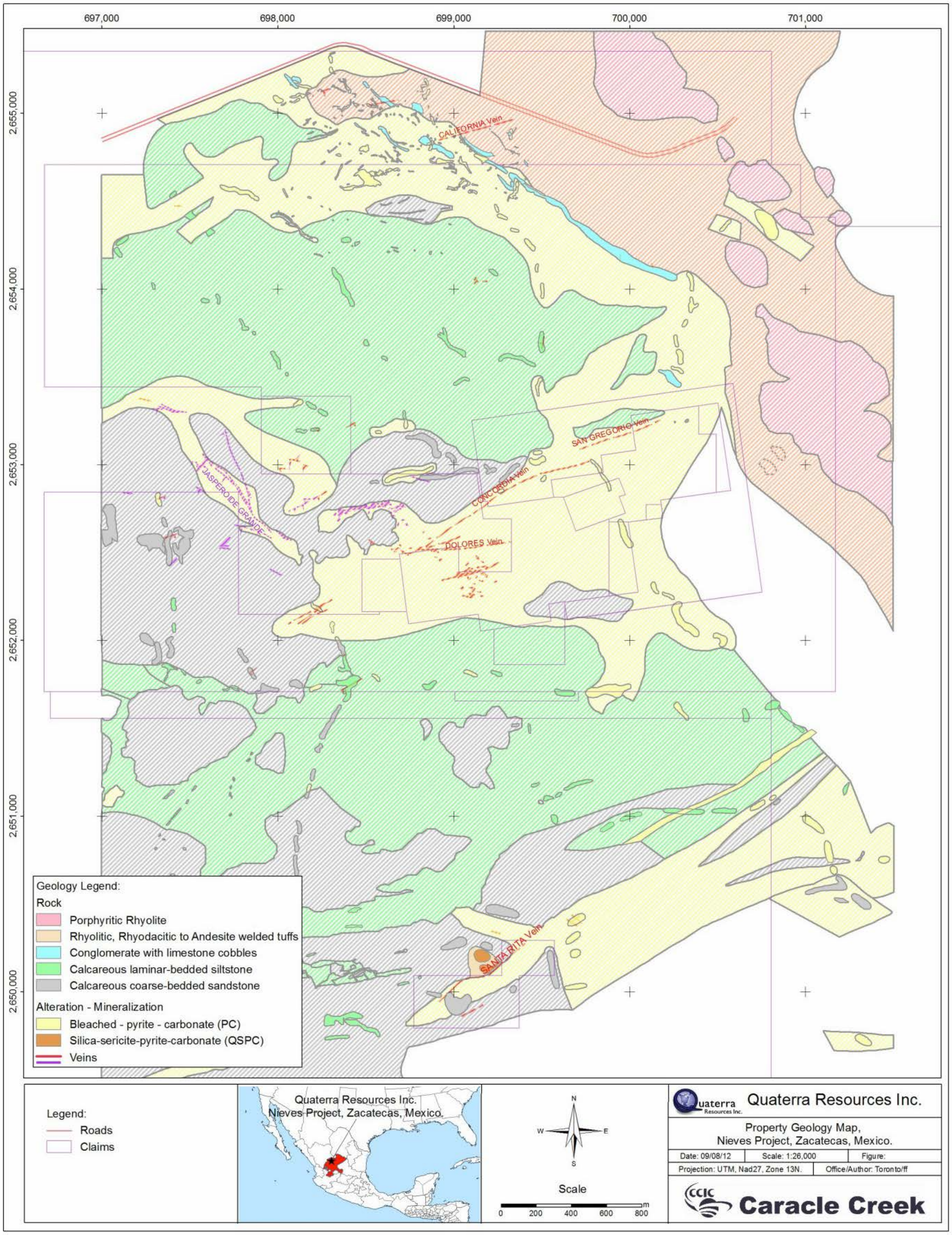


Figure 7-3: Geology map of the Nieves Property

7.3 MINERALIZATION

7.3.1 Alteration and Styles of Mineralization

Generally, Mesozoic Caracol Formation rocks proximal to mineralized zones exhibit a weak bleaching halo that results from the oxidation of 2% to 5% disseminated pyrite throughout these rocks. Pyrite and thin calcite veinlets occur adjacent to mineralized zones in a pyrite-carbonate alteration assemblage called P-C type (pyrite-carbonate).

A local, more intense alteration assemblage includes weak to moderate sericite replacing thin calcite veinlets and weak to advanced fine-grained quartz replacing calcite, associated with an increase in fine grained pyrite. This alteration type, described as QSPC (quartz-sericite-pyrite-carbonate) is present in close proximity to the mineralized structures in some drill holes. Stibnite rosettes are commonly associated with the sericite veinlets.

Silicification, mainly of sandstone beds, occurs in a few zones on the Nieves Property as in the hill located north of the Santa Rita vein. Weak chlorite alteration of tuffs and conglomeratic sandstone occurs in drill hole QTA-18 in the manganese mine area within the Tertiary rhyolitic rocks on the east side of the Property (Figure 7-3).

Four types of mineralization have been identified on the Nieves Property and are described below.

7.3.2 Jasperoid Structures

Jasperoid structures located to the northwest of the Concordia-Dolores vein system are characterized by silicified tan to black coloured rocks with abundant thin jasper, fine grained quartz micro-breccia and veinlets with up to 5% disseminated pyrite. These jasperoid structures are 1 to 12 m wide, strike northwest and dip southwest. Locally, jasperoid bodies are anomalous in gold, arsenic and antimony with erratic silver, lead and zinc values.

Possibly a related mineralization style to the jasperoid structures are silica breccia veins that are typically composed of small silicified rock fragments in a saccaroidal quartz groundmass.

7.3.3 Iron Carbonate Veins

Iron carbonate veins include mostly calcite and scarce rhodochrosite with hairline to 10 cm wide pyrite veinlets which are abundant up to hundreds of meters away from partially to totally replaced quartz veins. Some veinlets contain stibnite and silver sulphosalts and are abundant in surface alteration halos as well as above and below ore intercepts in drill core. Low grade silver often is associated with this type of veinlet.

7.3.4 Carbonate-Quartz-Sulphide Veins

Carbonate-quartz-sulphide veins are the most economically important veins and consist of calcite that is partially to totally replaced by grey to white, chalcedonic, fine-grained quartz veins and veinlets (Figure 7-4). These veins are from centimetres to 1.5 m wide with up to 50% sulphide minerals. Sulphides include pyrite, stibnite, sphalerite, galena, chalcopyrite and the silver sulphosalts: proustite, pyrargyrite, jamesonite and scarce tetrahedrite. The best grades of silver, gold, lead and zinc occur in these veins and past production has come primarily from this vein type.

Figure 7-4: Carbonate- Quartz-Sulphide Mineralized Veins

7.3.5 Calcite-Manganese-Oxide Breccias and Veins

These mineralized structures which may be 5 to 10 m wide and up to 150 m long include breccias formed by sub-angular volcanic fragments in a clay-altered sandy groundmass (Figure 7-5). Thin veinlets of ferro-manganese oxides form stockwork zones of clay-altered volcanic rocks and occur along the borders of the breccia bodies in the Manganese mine area (Figure 7-3).

Figure 7-5: Mineralized Oxide-Breccia in Core

(photo by Doris Fox)

7.3.6 Mineralized Zones

On the Nieves Property there are three major east to east-northeast striking silver vein systems, the California, Concordia- San Gregorio-Dolores, and Santa Rita veins systems (Figure 7-3). In addition to these silver mineralized systems there is an east-northeast to east-southeast striking manganese breccia system hosted by rhyolitic rocks on the east side of the Property. Local miners have worked on all of these areas, previously.

7.3.7 California Vein System

The California vein is marked by a shaft and series of small open cuts aligned 250° to 255° over a distance of 300 m. Only thin and discontinuous quartz-oxide veinlets outcrop near the workings. The California vein system shows a large 150-600m wide alteration zone extending about 2,700 m along strike. Local stockwork zones contain thin calcite veinlets in part weakly replaced by quartz-oxide veinlets. The California vein was intercepted in Kennecott hole NV08 in two intervals at depths of 108 m and 116.0 m that returned assays of 367 g/t silver over 2 m and 795 g/t silver over 2 m respectively. Recent drilling increased the length of known mineralization along the California vein system to approximately 550 m and mineralization remains open to the east. The total width of the mineralized zone may extend up to 130 m, suggested by assay results from drill hole QTA-130, which intersected several mineralized veins between 22 and 158.9 m grading between 79 g/t over 8 meters to 235 g/t over 2 m. The true width of the mineralized zone is not known.

7.3.8 Concordia- San Gregorio-Dolores Vein System

The Concordia- San Gregorio -Dolores vein system has a known strike length, in mine workings of nearly 1.8 km in two system of veins, (1) the 240º-260° striking Concordia-San Gregorio vein and (2) the 260°-270º striking Dolores splay. Both veins dip from 60º southward to near vertical.

The Concordia-San Gregorio-Dolores system is composed of carbonate to quartz-sulphide veins and varies in width from tens of centimetres up to 1.5m. The most recent drill program extended the total length of the known mineralized zone along the Concordia vein to approximately 1,300 meters. The true width of the mineralized zone along the Concordia vein ranges between 40 and 100 m.

The San Gregorio vein appears to be the continuation of the Concordia structure, assuming approximately 50 m of left lateral offset from a north trending fault that presumably follows the San Gregorio arroyo. The San Gregorio vein structure can be traced in some small open cuts for about 500 m to the northeast at an azimuth of 250° to 260°. Surface samples from 10 to 40 cm wide calcite to quartz veins with oxides returned silver assays of up to 954 g/t.

The Dolores vein is interpreted to be a splay of the Concordia vein, strikes at 260º to 270° and is traced for nearly 500 m on surface by numerous small open cuts and at least five shafts. A stockwork zone of thin calcite to quartz and oxides veinlets in the hanging wall extends on surface for up to 250 m across strike from the main vein and along strike for an additional 350m from the last workings on the vein. Surface samples of some of the thin stockwork veinlets from this zone returned silver assays of up to 553 g/t.

The Concordia and Dolores veins appear to intersect to the west of the Rosario Shaft in an area of abundant calcite and lesser quartz veinlets. This area was evaluated on the surface by two long trenches separated by 85 m, with 2 m wide channel samples collected 10 to 20 cm below the surface. No results were available to the author.

The Gregorio North area is located north of the San Gregorio vein, in the Gregorio Hill area and it is probably part of the Concodia-San Gegorio-Dolores vein system. The recent drill program was successful in extending the length of the mineralized zone to approximately 1,200 m. The true width of the mineralized zone in the Gregorio North area ranges between 100 and 200 meters.

7.3.9 Santa Rita Vein System

The Santa Rita vein system, located in southern portion of the Property, strikes 230° to 260° and can be recognized in shafts and in short drifts for over 500 m. Last production during 1970-1985 came from the lower levels of the mine which was deepening to 9 levels reaching a depth of 282m. The Santa Rita vein contains a series of veinlets in the footwall that form a wide stockwork zone in an area of 100 x 100 m centered on a small silica altered hill north of the main

Santa Rita drift. A sub-parallel vein also occurs about 100 m southwest of the main Santa Rita vein.

Quaterra hole QTA-16 tested the Santa Rita vein at a depth of 350m and intercepted a 3.1m interval that averages 71.44 g/t silver, 0.56% lead and 0.91% zinc. QTA-37 also appears to have cut the Santa Rita vein system at 416 m depth where it encountered a 5.90 m zone that averaged 104 g/t silver, 0.23% lead, and 0.55% zinc.

In the phase VII and VIII drill program, a total of 15 drill holes systematically tested the Santa Rita vein system over 500 along strike, the total length of mineralization was extended to approximately 750 m and remains open to the west. Drilling suggests the presence of several parallel vein systems. The apparent width of the mineralized zone along the Santa Rita vein system may be up to 340 meters, suggested by drill hole QTA-25 that intersected several mineralized veinlets over 340 meters with grades ranging from 129 g/t over 1.2 meters to 405 g/t over 0.29 meters.

Recent mapping on the West Santa Rita area identified two groups of narrow, sub-parallel 2 to 30 centimeter wide calcite-quartz veinlets, some of which contain strong gold and silver mineralization. The first group of veinlets has an east-northeasterly trend and extends 120 to 200 meters along strike with a width of 100 meters. The best results include 8.11 ppm gold over 0.2 meters, 253 ppm silver over 0.4 meters, 4,460 ppm lead and 2,690 ppm zinc over 0.4 meters.

7.3.10 Manganese Mineralization

Various small pits and drifts sunk on calcite-manganese-oxides breccias and stockwork veinlets hosted in volcanic rocks occur 1 km east of the Concordia-Dolores- San Gregorio vein system on the eastern side of the Nieves Property (Figure 7-3).

The stockwork zone is flanked to the north and south by two breccia structures formed by sub-angular volcanic fragments in clay altered sandy groundmass with irregular ferroan calcite and manganese oxides of possible hydrothermal origin. The north breccia structure is 150 m long by 5 to 10 m wide, trends 290 to 300 and dips 75° to south. The southern breccia is 115 m long by 7 m wide, trends 070 and dips 75° to the north.

A second zone of calcite-manganese-oxide breccia occurs 230 m south of those described above. It is 150 m long by 5 m wide, trends 075 and dips 67o north. Surface and underground rock samples from this area were anomalous in silver, arsenic, antimony, tungsten, molybdenum and cobalt. Drill hole QTA-18 tested the depth extent of these structures but intersected no significant mineralization.

8 DEPOSIT TYPES

Silver mineralization on the Nieves Property is best classified as low-sulphidation epithermal mineralization and is the primary exploration target. Several other styles of mineralization are found within the ages of rocks observed on the Nieves Property and are potential secondary exploration targets.

8.1 EPITHERMAL HIGH-GRADE SILVER VEINS

Within the Altiplano Region of Mexico, epithermal silver veins are the dominant deposit type with world- class examples such as Pachuca, Zacatecas, Fresnillo, and Guanajuato. The closest of these world class examples is the Fresnillo Deposit owned and operated by Peñoles, located 90 km to the south of the Nieves Property. Several styles of silver mineralization occur in the Fresnillo Deposit including (1) mantos and chimneys, (2) stockworks (Cerro Proaño area), (3) disseminated ores in areas of propylitic alteration, and (4) veins that show vertical mineralogical zonation (e.g. the Santo Niño vein). The veins are currently being mined by Peñoles and they are actively exploring for more of these mineralized structures (Garcia et al. 1991).

In the Santo Niño Vein the high-grade silver mineralization averaging 769 g/t silver, 0.56 g/t gold, 0.99% zinc, 0.5% lead, 0.03% copper; (Gemmel et al. 1988) is hosted in a single fault structure that locally bifurcates or is separated into en-echelon offset structures. It is between 0.5 to 4m wide, averaging 2.5m wide, and extends for over 2.5 km. Typically in these veins, the high-grade silver (gold) zone is constrained in elevation within the vein structure to up to 500m vertically, or between 180 to 750m depths (Garcia et al. 1991), below which the veins becomes dominated by base-metal sulphides and progressively lower in precious metal content (Garcia et al. 1991). A model for the formation of the Fresnillo fissure veins was proposed by authors such as Buchanan (1981) and modified and incorporated into the low-sulphidation epithermal model over the last 20 years (e.g. Corbett 2002; Corbett and Leach 1998; Hedenquist et al. 1996, Simmons et al. 1988). The low-sulphidation epithermal model predicts that the Fresnillo epithermal veins: (1) formed in rifting or tensional environments; (2) formed along normal or strike-slip fault structures; (3) are mineralogically zoned vertically; (4) have the highest precious metal zones within boiling horizons (likely related to paleo-water tables); and, (5) are in faults that diffuse as they near the surface and are accompanied with intense acid-sulphate alteration (advanced argillic and silicification) that cap the systems (Figure 8-1).

The geology of the Fresnillo District (Table 8-1) has been well studied and appears to be very similar to the geology observed on the Nieves Property. The Nieves Property and the Fresnillo District are underlain by a Jurassic-Cretaceous turbidite flysch sequence (Nieves; appears to be an argillite) and greywacke (Fresnillo) units that have been overlain by Tertiary volcanic rocks. Tertiary volcanism in this region is attributed to have occurred in conjunction with extensional tectonics associated with major strike-slip motion on north to northwest trending faults. In the Fresnillo District, epithermal fluids ascended along steeply dipping extensional fault structures generally oriented east-west (Simmons et al. 1988). On the Nieves Property, there are several north to north-northwest trending mapped faults as well as the main vein orientations which have a roughly east-west orientation, very similar to the mineralized veins and structures in the Fresnillo District.

8.2 OTHER DEPOSIT TYPES IN THE DISTRICT

The Altiplano Region contains several other deposit types such as Carbonate Replacement Deposits (e.g. San Martin, Charcas), Volcanogenic Massive Sulphide deposits (San Nicolas), Sedex (Francisco I. Madero) and Stockwork deposits (Real de Angeles) (Wendt 2002) (Table 8-2). These other deposit types are generally hosted within the Mesozoic rock units that underlie the Tertiary volcanic rocks and as the Mesozoic rocks are the dominant rock type underlying the Nieves Property, these other deposit types are possible secondary exploration targets.

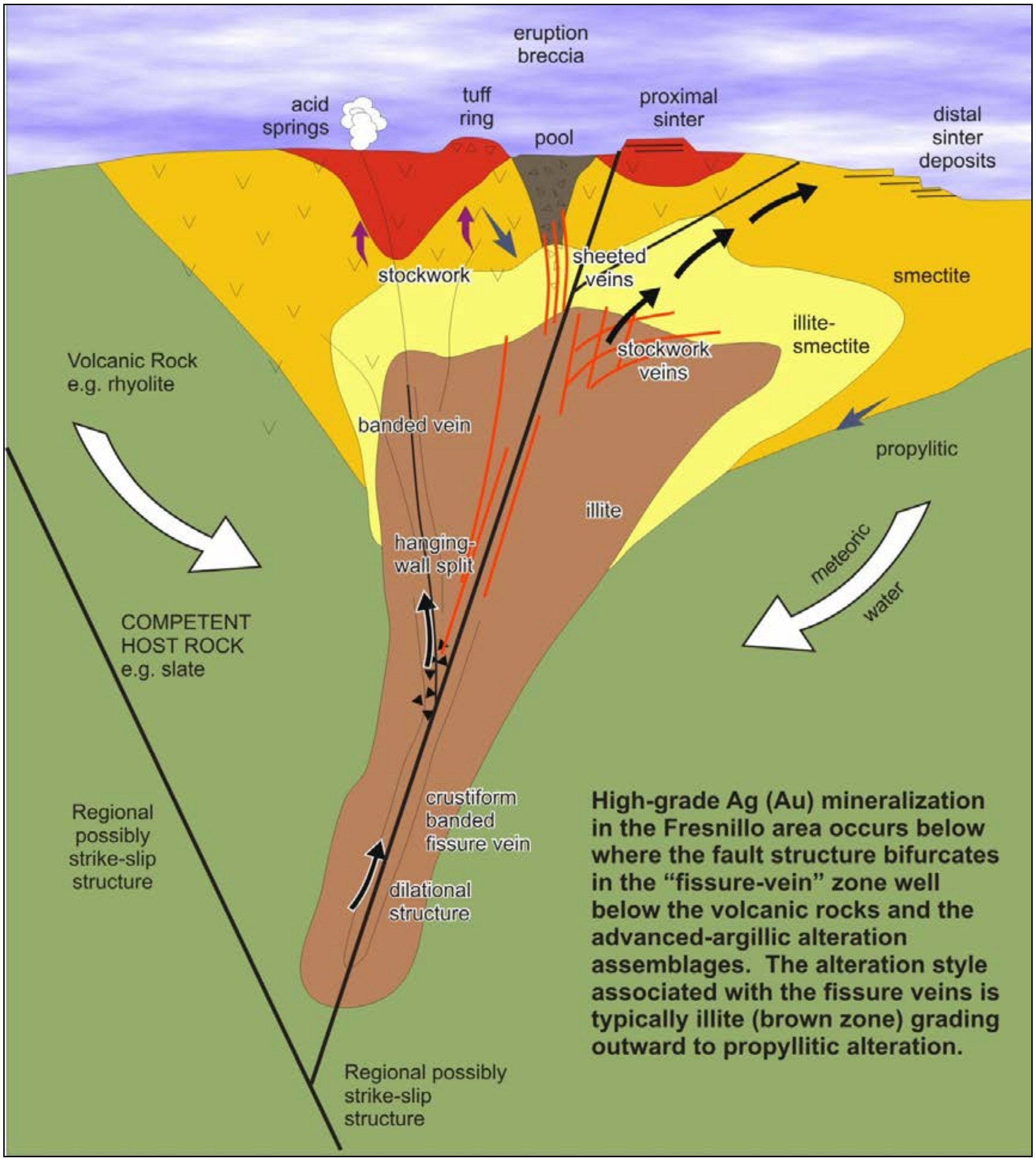


Figure 8-1: Schematic cross section of a typical rift related epithermal low-sulphidation system (after Corbett 2004)

Table 8-1: Stratigraphy and associated mineralization in the Fresnillo District (modified from Ruvalcaba-Ruiz and Ruiz, 1988, Wendt 2002)

Period	Age	Group Name	Formation	Local Name	Thickness (m)	Rock Type	Associated Minerals/ Alteration
Q	Holocene				1-250	Alluvium	None
	Pleistocene						
Tertiary	Miocene-Pliocene			Basalt	100	Olivine basalt	None
	Eocene-Miocene			Altamira Volcanics	400	Conglomerate, welded rhyolite ash-flow tuff, volarenites	None
	Eocene			Quartz monzonite	-	Quartz-monzonite	Ag-Pb-Zn skarn
	Paleocene-Eocene		Fresnillo	Linares Volcanics	400	Conglomerate, welded rhyolite ash-flow tuff, flow domes, volarenite	Veins, advanced argillic alt., silicification
Cretaceous	Late		Cuestra del Cura	Cerro Gordo	300	Limestone	Replacement and veins
				Fortuna	300	Limestone	Replacement and veins
	Early	Proaño	Plateros	Upper Greywacke	250	Calcareous greywacke and shale	Veins
				Calcareous shale	50	Calcareous shale	Veins and replacement
			Valdecañas	Lower Greywacke	700	Greywacke	Veins

Table 8-2: Major Altiplano Ore Deposits (after Wendt 2002)

ID	District	State	Deposit Type	Production (Tonnes)****	Reserves (Tonnes)	Average Grade Au (ppm)	Ag (ppm)	Cu (%)	Zn (%)	Pb (%)
1	San Martin-Sabinas	ZAC	CRD*	40+ M	30 M	tr	125	1	3.8	0.5
2	Concepcion del Oro	ZAC	CRD	40+ M	8 M+	< 1.5	275	0.2-2.3	12.8	5.8
3	Charcas	SLP	CRD	35 M	12M+		67	0.26	4.5	0.32
4	Fresnillo	ZAC	E-Vein**	50+ M	10+	3-0.6	685-280	0.02-0.3	0.5-3.0	0.6-3.0
5	Velardeña	DUR	CRD	22 M	8 M	< 1.5	156	to 0.4	5.2	3.8
6	Catorce	SLP	CRD, E-Vein	10+ M	0.5 M	tr	80	tr	6	10
7	La Negra	QRO	CRD	7 M	2 M		184	0.2	2.3	1.2
8	Zimapan	HID	CRD	3.5+ M	1 M		173	1.2	4	2
9	Mapimi	DUR	CRD	6 M	none	3.7	475	mod	high	15.8
10	Asientos/ Tepezala	AGS	CRD, E-Vein	6 M min	2.5 M+	0.5	150-600	0.2-3.5	5	2.5
11	Cerro San Pedro	SLP	CRD	5M	56 M (Au)	0.57-30	22-325	4	9	5
12	La Paz/ Matehuala	SLP		4 M ?	12 M	0.5	500	0.2-1.4	5	7
13	Chalchihuites	ZAC		2 M ?	1.5 M	1	350	< 0.3	3	2.5
A	Francisco I Madero	ZAC	Sedex ?	minor	20 M+	tr	60	1.5	6	1.5
B	Real de Angeles	ZAC	Stockwork	90 M	none		80		0.9	1
C	San Nicolas	ZAC	VMS***	minor	72 M	0.5	30	1.35	2.3	

*CRD = Carbonate Replacement Deposit
**E-Vein = Epithermal Vein
***VMS = Volcanogenic Massive Sulphide
****Tonnages reportedin historic, are not current, have not been verified or re-calculcated to NI 43-101 standards. These data should not be relied upon.

9 EXPLORATION

9.1 GEOPHYSICAL WORK

9.1.1 2011

In April 2011, Quaterra contracted Mira Geoscience AGIC (Advanced Geophysical Interpretation Centre) to invert ground magnetic data from the Nieves Property. The purpose of the project was to advance geological understanding of the magnetic characteristics of the low magnetic anomaly identified in the ground geophysical survey completed by Zonge in 2003 (see section 6.2.4). The results of this data inversion indicated that the geophysics model was poorly constrained due to insufficient data particularly along the western edge of the magnetic low anomaly. In December, 2011, Zonge International was contracted to conduct additional ground magnetometer surveying along 14 N-S lines with a spacing of 200 m between lines (Job No. 11191). The data from this survey indicates the magnetic low extends an additional 1200 meters west for a total E-W length of 2200m. Zonge was then retained to model the magnetic low and they concluded the magnetic low is best explained by a reversely polarized source body at a depth of 800 m (1150 m elevation) below ground surface with spatial dimensions of 2600 m NE-SW and 1800 m NW-SE.

In June and July 2011, Quaterra contracted Zonge International to conduct IPR surveys along 9 lines (Job No. 11112) consisting of 6 lines over the Santa Rita vein and its western extension; 2 lines to evaluation the eastern extension of the California vein and 1 line to evaluate the area beneath Tertiary volcanic rocks further east. The results of this survey indicate the Santa Rita vein extends 700 m west of the historic workings, appears to become two veins rather than a single vein, and the strike of the veins change from NE-SW to nearly E-W. The two lines on the California vein also suggest the vein extends only a very short distance to the east. The line over the Tertiary volcanic rocks was able to penetrate the volcanic rocks but did not detect anomalous IP response.

9.1.2 2012

At the end of 2011 realization that the geophysical response of several of the vein systems including the Santa Rita, Dolores, Nino and Orion veins extended to the western edge of the existing survey coverage, a decision was made to conduct additional geophysical surveying to better define the extend and character of these vein systems. In the first quarter of 2012 Quaterra retained Zonge International (Job No. 11190) to conduct a survey consisting of six lines, a total of 28.4 line-kilometers, of vector CSAMT and CSIP and nine follow-up lines of pole-dipole IPR totaling 16.5 line-kilometers (Figure 9-1). The six lines of vector CSAMT/CSIP were spaced 400 meters apart and covered 1,000 hectares west of the main veins in the area of the enigmatic magnetic low.

Nine anomalous zones were detected and validated with IP lines using 50 meter dipole spacings. Most of the anomalies appear to be westward extensions of mineralized veins previously drilled, including the Dolores, Santa Rita, Niño and Orion veins.

The anomalies were followed up by mapping and sampling (see section 9.2). The most interesting area identified to date is West Santa Rita, located 1,000 to 1,200 meters west of the central portion of the main Santa Rita mine and over 500 meters from Quaterra's nearest drill hole on line 7700E. The IP and resistivity results are shown along lines 6800E and 7200E (Figure 9-2, Figure 9-3 and Figure 9-4).

In addition the data also indicates the Nino vein extends well to the west from its previously known geophysical extent a strike length of 1,500 m along which no drilling has been done. Outcrop in the area is sparse but at least one sample from a fault zone coinciding with the anomalous IP zone defining the Nino vein is anomalous in gold and silver.

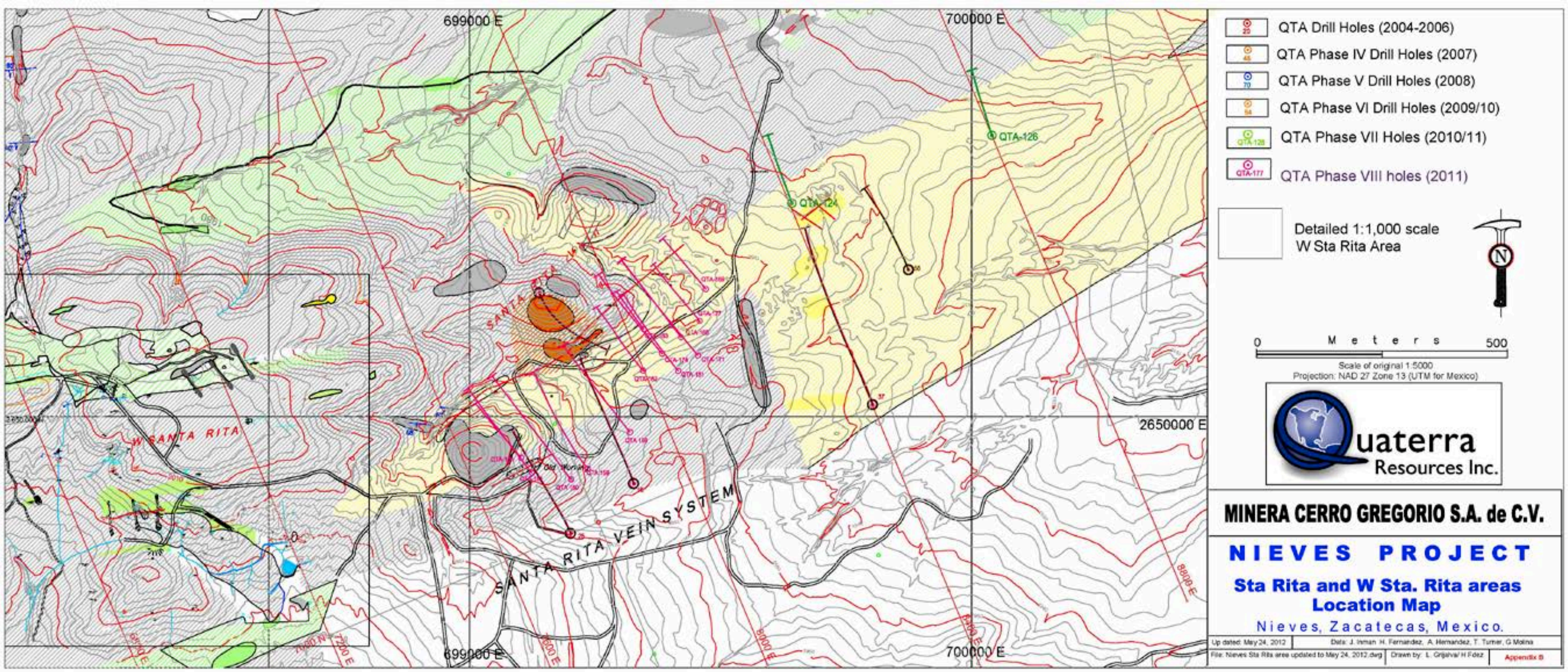


Figure 9-1: Geology and location of drill holes and geophysical survey lines (red lines) in the Santa Rita area

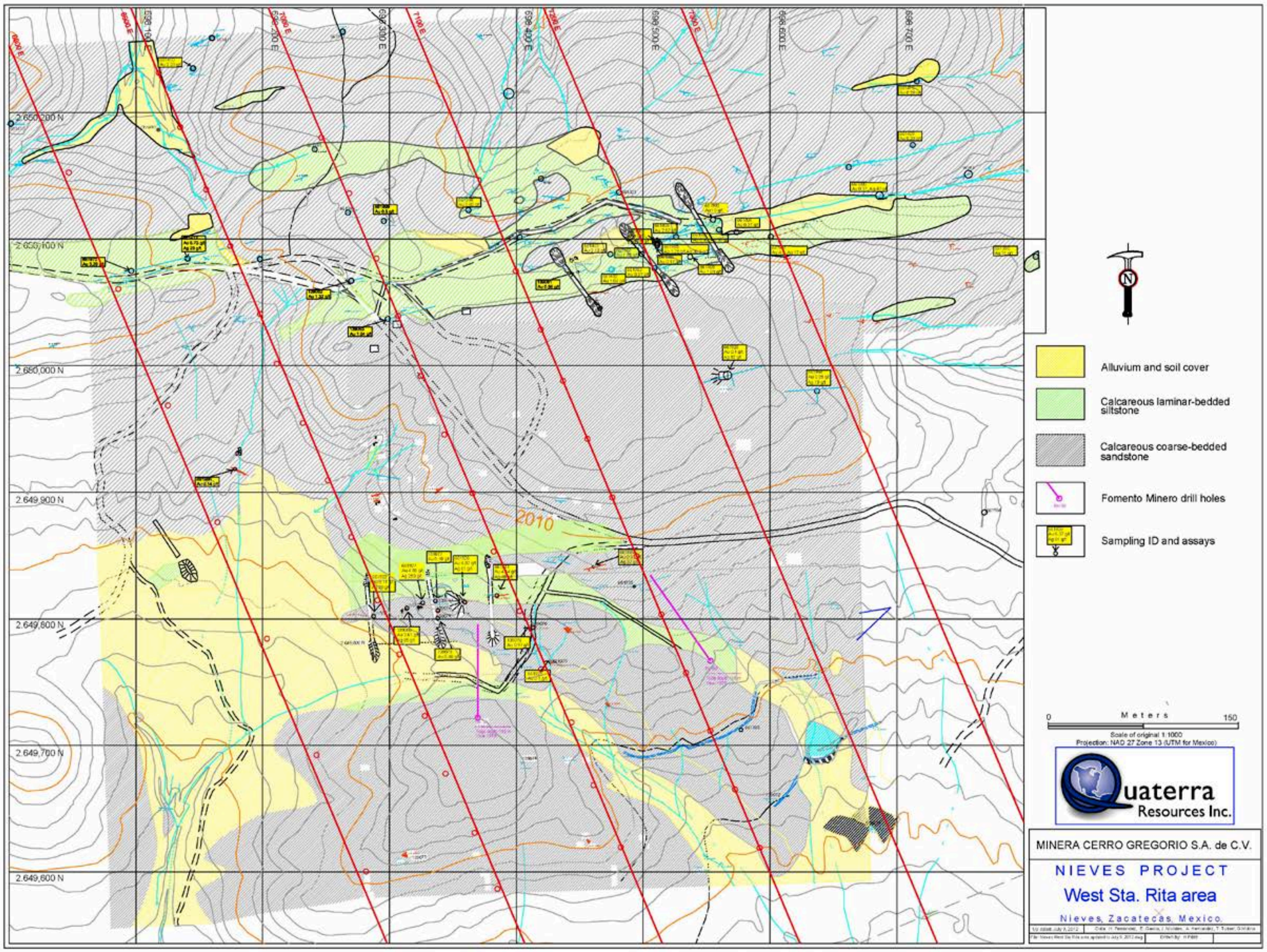


Figure 9-2: Geology and location of channels, samples and geophysical survey lines in the West Santa Rita area

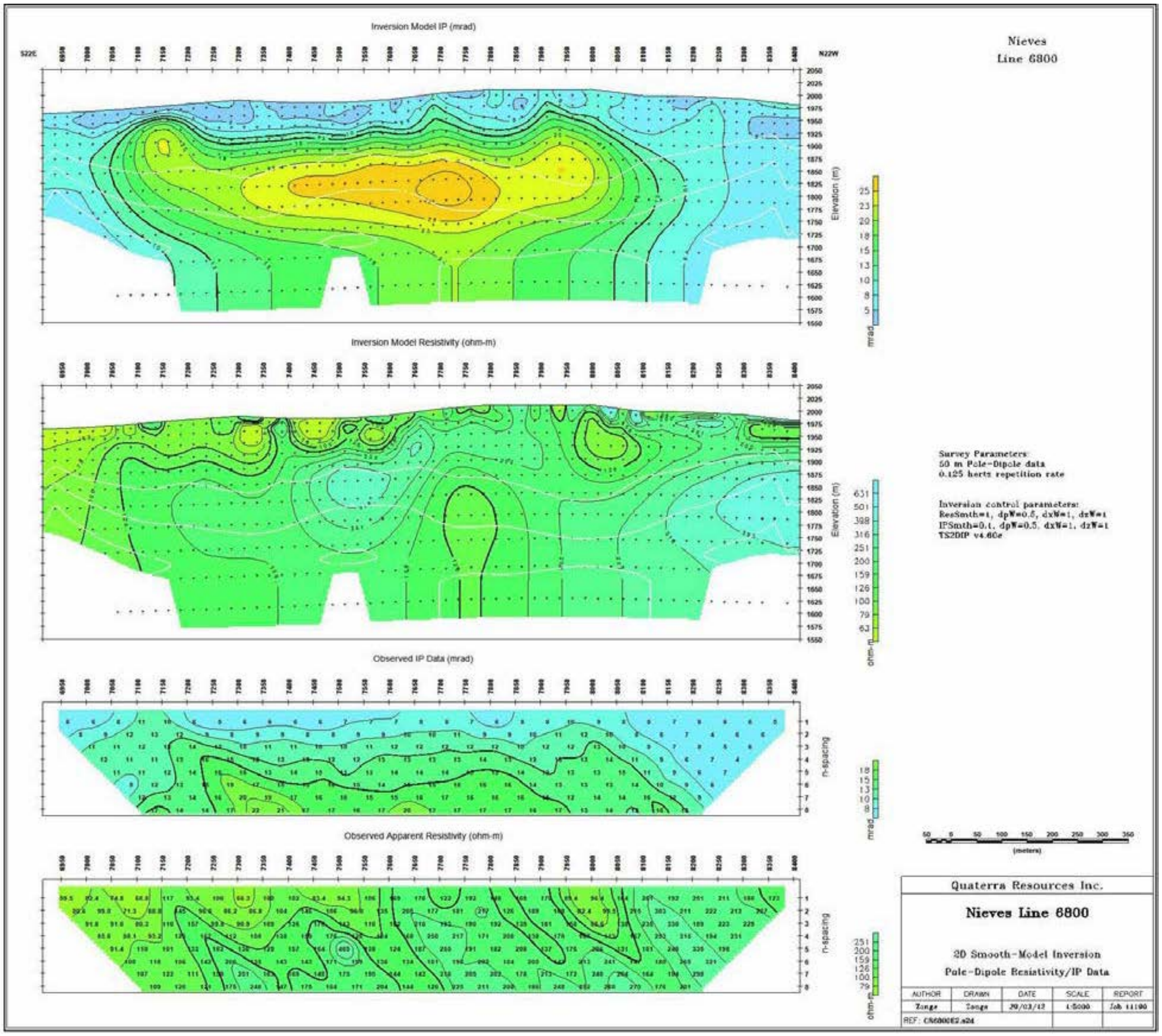


Figure 9-3: Pole-Dipole Resistivity/IP data along Line 6800 in the West Santa Rita Area

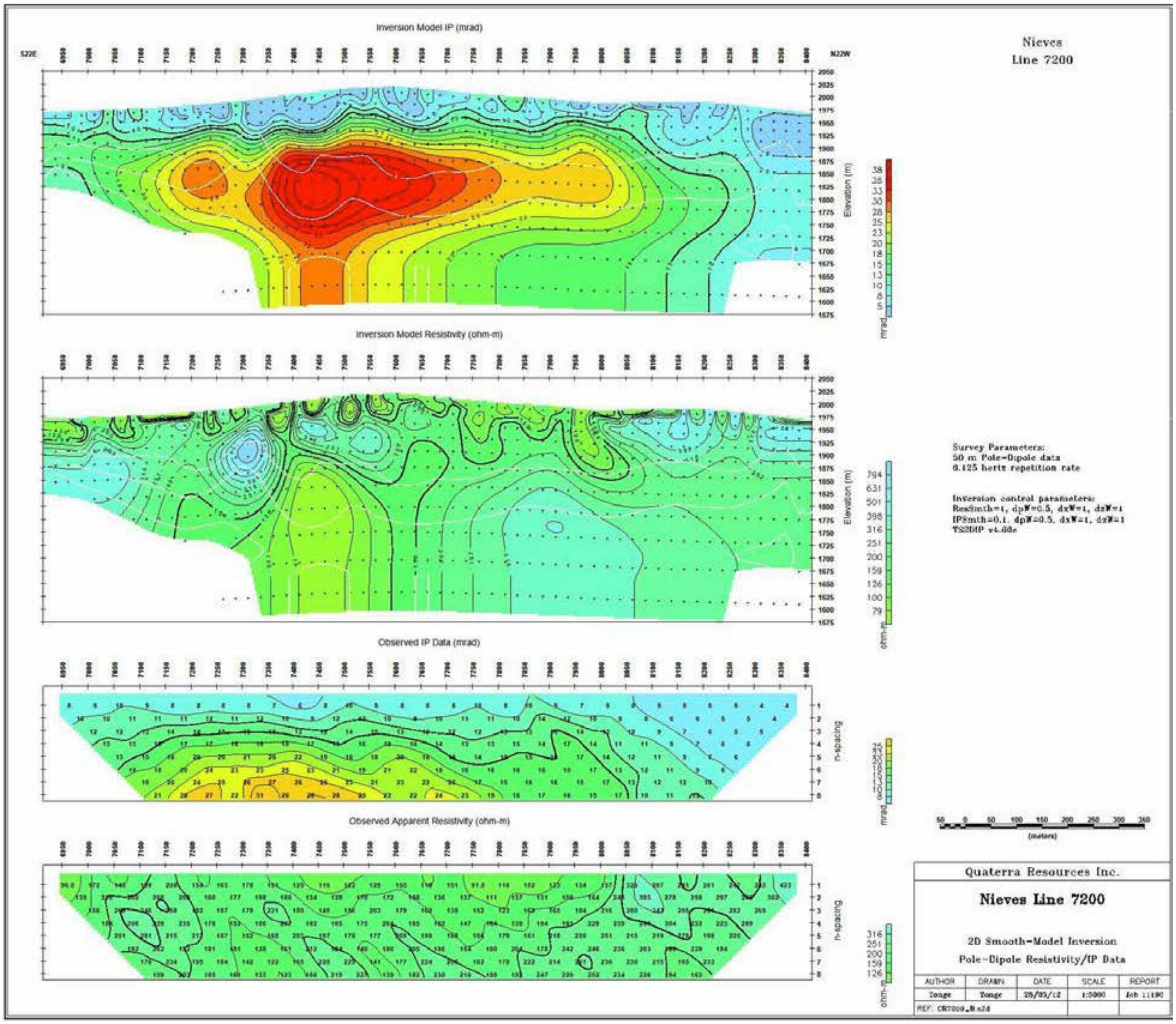


Figure 9-4: Pole-Dipole Resistivity/IP data along Line 7200 in the West Santa Rita Area

9.2 MAPPING AND SAMPLING

Mapping and sampling was completed to follow up the geophysical anomalies. The most interesting area was identified in West Santa Rita in the southern part of the Nieves Property (Figure 9-1 and Figure 9-2). Mapping identified two groups of narrow, sub-parallel 2 to 30 centimeter wide calcite-quartz veinlets, some of which contain strong gold and silver mineralization. The first group of veinlets has an east-northeasterly trend and extends 120 to 200 meters along strike with a width of 100 meters.

The second group of veinlets is located approximately 200 m north of the first group, has an easterly trend and 60 to 80° dip to the south and extends 300 meters along strike with an 80 meter width.

A total of 39 rock chip samples contain gold values ranging from <0.05 ppm to 8.11 ppm (over 0.2 meters), with six of the samples above 2 ppm gold. Silver values range from <0.02 ppm to 253 ppm (over 0.4 meters), with seven samples at or above 29 ppm silver. Lead and zinc range from 2 ppm and 7 ppm to 4,460 ppm lead and 2,690 ppm zinc over 0.4 meters, respectively.

Pathfinder elements like mercury and antimony report assays up to 32 ppm and 2280 ppm, respectively, suggesting that the veinlets may represent high level leakage, an idea supported by the presence of geophysical anomalies (chargeability highs and resistivity lows) starting at a depth of 50 to 100 meters below surface (see section 9.1).

10 DRILLING

10.1 DRILLING PROGRESS

Between March 2010 and October 2011, Quaterra completed Phase VII and Phase VIII drill programs. B.D.W. International Drilling of Mexico S.A. de C.V. was contracted to perform the drilling.

Drill holes were located using a RTK Trimble (model R8), double frequency GPS with precision to 1 cm. Down hole survey readings were recorded on average approximately every 50 m using an Eastman Single Shot instrument. Survey results have been corrected for magnetic declination (+9º).

When completed, drill holes are capped with an approximately 45 cm square concrete slab with the drill hole number etched into it for permanent identification (Figure 10-1).

Figure 10-1: Typical Drill Hole Cap and Marker

(photo by Doris Fox)

10.1.1 Phase VII

Phase VII diamond drill program on the Nieves Property in Zacatecas, Mexico commenced on March 2010 and was completed at the end of February 2011. Twenty-eight NQ holes were drilled comprising 7759 m (Figure 10-3 and Table 10-1).

The phase VII drill program was designed to test numerous IP anomalies on several separate vein systems that appeared similar to other anomalies associated with known mineralization.

Fourteen drill holes were drilled on the Gregorio North area, two holes were drilled on the Dolores area, six holes were drilled on the Concordia area, four holes were drilled on the California area and two holes were drilled on the Santa Rita area (Table 10-1 and Figure 10-2).

All drill holes in Phase VII drill program were drilled with a 340° azimuth and -60° or -55° dip. True thicknesses are approximately 80% of intercept width.

The average overburden depth is 4.34 m with a maximum overburden depth of 20.5 m in drill hole QTA115.

Table 10-1: Summary of drill holes in Phase VII drill program

Hole	Easting	Northing	Elevation (m)	Length (m)	Azimuth	Dip	Year	Area
QTA112	699720.12	2653353.7	1927.568	81.1	340	-60	2010	Gregorio North
QTA113	699758.32	2653307.8	1926.94	254	340	-60	2010	Gregorio North
QTA114	699836.51	2653346.2	1929.202	236	340	-60	2010	Gregorio North
QTA115	700177.49	2653418.6	1944.206	281	340	-60	2010	Gregorio North
QTA116	700350.75	2653434.7	1936.604	221	340	-60	2010	Gregorio North
QTA117	699950.9	2653359.1	1933.224	383	340	-55	2010	Gregorio North
QTA118	699569.93	2653232.2	1923.628	284	340	-60	2010	Gregorio North
QTA119	699333.74	2652752	1930.365	311	340	-60	2010	Concordia West
QTA120	699147.91	2652691.4	1936.267	314	340	-60	2010	Concordia West
QTA121	700245.45	2652662.2	1915.302	214.9	340	-60	2010	Dolores East
QTA122	699367.76	2653209.4	1930.962	300	340	-60	2010	Gregorio North
QTA123	699516.08	2652844.3	1929.679	342	340	-60	2010	Concordia West
QTA124	699642.23	2650423.9	1944.19	274	340	-60	2010	Santa Rita
QTA125	699148.31	2652196.9	1929.054	387	340	-55	2010	Dolores
QTA126	700041.92	2650555.9	1936.098	276	340	-60	2010	Santa Rita
QTA127	698690.69	2654815.4	1970.91	306	340	-60	2010	California
QTA128	698873.48	2654889.8	1957.357	210	340	-60	2010	California
QTA129	698543.72	2653096.5	1951.797	309	340	-60	2010	W Gregorio North
QTA130	699091.24	2654885.4	1966.625	201	340	-60	2010	California
QTA131	699185.46	2652598.1	1936.292	342	340	-60	2011	Concordia West
QTA132	699866.41	2653299.3	1929.045	300	340	-60	2011	Gregorio North
QTA133	699592.33	2653193.6	1923.98	318	340	-60	2011	Gregorio North
QTA134	699558.62	2653292.8	1925.184	252	340	-60	2011	Gregorio North
QTA135	700453.53	2653435.3	1945.72	279	340	-60	2011	Gregorio North
QTA136	700162.76	2653143.7	1926.229	219	340	-60	2011	Concordia East
QTA137	699329.56	2654907.2	1962.372	243	340	-60	2011	California
QTA138	700553.82	2653434	1958.641	303	340	-60	2011	Gregorio North
QTA139	698957.36	2652621.3	1944.003	318	340	-60	2011	Concordia West / W Gregorio North
			Total	**7759**				

Figure 10-2: Areas of mineralization on the Nieves Property

10.1.2 Phase VIII

Phase VIII drill program commenced in June, 2011 and was completed in October, 2011. Forty-five NQ holes were drilled comprising 10,788.25 m (Figure 10-3 and Table 10-2). Phase VIII drill program was designed to test extensions and shallower parts of the La Quinta-Concordia and Gregorio North vein systems.

Five drill holes were drilled on the Gregorio North area, 2 holes were drilled on the Concordia East area, 12 holes were drilled on the Concordia West area, 5 holes were drilled on the La Quinta area, 3 holes were drilled on the Concordia West/Gregorio North/Orion area, 2 holes were drilled on the Disquito Orion East area, located south of Orion East and northwest of the Concordia vein, 2 holes were drilled on the California area, 13 holes were drilled on the Santa Rita area and 1 hole was drilled on the Mariana vein, located southwest of the Jasperoide Grande vein (Figure 10-2).

All drill holes in Phase VII drill program were drilled with an azimuth between 320° and 340° and a dip between -60° or -50°. True thicknesses are approximately 80% of intercept width.

The average overburden depth is 2.09 m with a maximum overburden depth of 6.25 m in drill hole QTA181.

Table 10-2: Summary of Drill Holes in Phase VIII Drill Program

Hole	Easting	Northing	Elevation (m)	Length (m)	Azimuth	Dip	Year	Area
QTA140	699679.49	2652985.99	1922.66	203.00	340	-60	2011	La Quinta
QTA141	699580.55	2652947.98	1928.26	209.00	340	-60	2011	La Quinta
QTA142	699490.84	2652902.20	1929.69	209.00	340	-60	2011	Concordia West
QTA143	699439.28	2652853.30	1930.76	224.00	340	-60	2011	Concordia West
QTA144	699306.58	2652816.26	1931.34	201.00	340	-60	2011	Concordia West
QTA145	698219.43	2652730.23	1961.47	288.00	350	-55	2011	Disquito Orion East
QTA146	699932.09	2653406.66	1933.63	168.00	340	-60	2011	Gregorio North
QTA147	700040.00	2653388.96	1938.15	243.00	340	-60	2011	Gregorio North
QTA148	700113.57	2653395.89	1944.83	309.00	340	-60	2011	Gregorio North
QTA149	700225.22	2653473.81	1938.98	219.00	340	-60	2011	Gregorio North
QTA150	700331.57	2653481.07	1936.18	195.00	340	-60	2011	Gregorio North
QTA151	699940.47	2653131.74	1926.37	141.00	340	-60	2011	Concordia East
QTA152	699866.01	2653083.40	1924.78	105.00	340	-60	2011	La Quinta
QTA153	699220.45	2652787.49	1932.88	237.00	340	-60	2011	Concordia West

Hole	Easting	Northing	Elevation (m)	Length (m)	Azimuth	Dip	Year	Area
QTA154	699286.99	2652862.97	1932.00	213.00	340	-60	2011	Concordia West
QTA155	699432.02	2654911.44	1965.33	180.00	340	-60	2011	California
QTA156	698965.19	2654753.10	1959.09	228.00	340	-60	2011	California
QTA157	699125.20	2652745.03	1935.38	258.00	340	-60	2011	Concordia West
QTA158	699235.86	2649896.45	1970.28	459.00	320	-60	2011	Santa Rita
QTA159	699319.96	2649969.11	1965.00	357.00	320	-50	2011	Santa Rita
QTA160	699202.63	2649874.95	1975.94	408.00	320	-50	2011	Santa Rita
QTA161	699124.64	2649887.81	1982.16	333.00	320	-50	2011	Santa Rita
QTA162	699345.81	2650090.86	1955.02	252.00	320	-50	2011	Santa Rita
QTA163	699347.47	2650173.36	1961.65	144.00	320	-50	2011	Santa Rita
QTA164	699102.80	2649918.28	1986.84	219.00	320	-50	2011	Santa Rita
QTA165	699421.93	2650157.06	1957.72	309.00	320	-50	2011	Santa Rita
QTA166	698919.55	2652714.62	1942.58	300.00	340	-60	2011	Concordia West / Gregorio North/Orion
QTA167	698585.54	2652721.11	1953.82	282.00	340	-60	2011	Disquito Orion East
QTA168	699033.47	2652715.39	1938.03	270.00	340	-60	2011	Concordia West
QTA169	699470.94	2650253.03	1956.51	210.00	320	-50	2011	Santa Rita
QTA170	699051.92	2652668.43	1939.21	327.00	340	-60	2011	Concordia West
QTA171	699455.19	2650120.90	1951.72	381.00	320	-50	2011	Santa Rita
QTA172	699015.67	2652762.84	1937.83	237.00	340	-60	2011	Concordia West / Gregorio North/Orion
QTA173	698986.70	2652698.14	1940.64	288.00	340	-60	2011	Concordia West
QTA174	699383.87	2650124.39	1955.57	318.00	320	-50	2011	Santa Rita
QTA175	698957.81	2652768.33	1939.26	201.00	340	-60	2011	Concordia West / Gregorio North/Orion
QTA176	699414.43	2652898.07	1931.56	228.00	340	-60	2011	Concordia West
QTA177	699458.47	2650189.87	1960.24	227.75	320	-50	2011	Santa Rita
QTA178	699476.14	2652947.48	1929.10	144.00	340	-60	2011	Concordia West
QTA179	699561.90	2652995.22	1924.95	111.00	340	-60	2011	La Quinta
QTA180	699669.62	2653009.59	1922.70	141.00	340	-60	2011	La Quinta
QTA181	699416.01	2650090.31	1952.94	282.00	320	-50	2011	Santa Rita
QTA182	699404.98	2652921.32	1930.83	147.00	340	-60	2011	Concordia West
QTA183	700181.03	2653097.25	1924.47	195.00	340	-60	2011	Concordia East
QTA184	697303.26	2652466.07	1964.40	187.50	350	-50	2011	Mariana vein
			Total	**10788.25**				

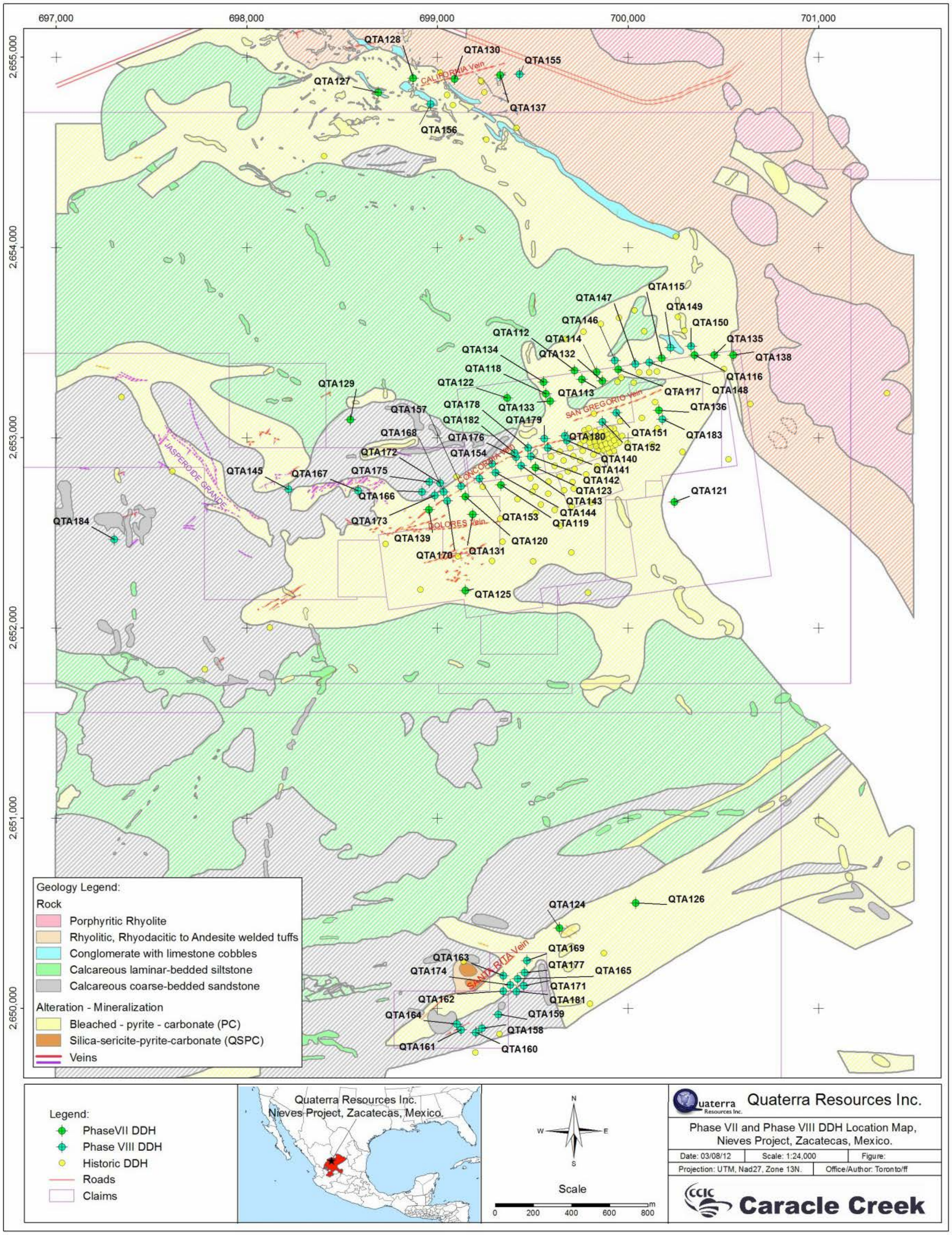


Figure 10-3: Location of drill holes in Phase VII and VIII drill programs

10.2 SAMPLING PROCEDURES

Core boxes were collected from the drill site and brought to the core storage facility on the Nieves Property for logging and sampling by the project or assistant geologists on a semi-daily basis. The drill core was washed, photographed and core recovery estimated. Rock types, alteration minerals, textural and structural features, veining, and mineralized zones were documented. Sample intervals were selected and measured, marked with permanent marker and given a sample number and sample tag by the geologists (Figure 10-4). From this point, technicians were given the core to split, using a core saw, into halves where one half of each interval was placed with the sample tag into a sample bag and marked with the sample number. The other half was placed back into the core box in its original position and the core boxes were then stacked on racks and stored in order and by hole number in their core storage facility.

The geologists visually selected sample intervals based on the presence of quartz-carbonate veins, silicification or the presence of sulphide minerals. The rock surrounding any significant mineralized zones was also sampled for several metres above and below the mineralization. Samples were placed into individual plastic bags marked with a unique sample identification number and with a sample tag placed into the bag. Sample ID numbers and meterages were also written on the core trays. Samples were then packaged into sealed sacks and taken by ALS employees to ALS Minerals Laboratories in Guadalajara, Mexico for preparation.

A total of 2884 samples were analyzed in Phase VII drill program, not including standards and blanks (Table 10-3). The length of samples in Phase VII ranges from 0.05 to 3 m; the average length is 1.51 m. 83 blanks and 45 standards were also sent for analysis. No core duplicates were included.

A total of 4876 samples were analyzed in Phase VIII drill program, not including QC samples (standards, blanks and core duplicates) (Table 10-4). The length of samples in Phase VIII ranges from 0.05 to 2.25 m; the average sample length is 1.69 m.

Figure 10-4: A) Core tray marked with hole ID, depth to-from of core and box number; B) typical sample ID marking in core box; C) Locked core storage 1 of 5; D) Core storage.

Table 10-3: Phase VII Sampling Details

Hole number	Length (m)	Number of samples	Samples/metre	Job number	Date
QTA112	81.10	37	0.68	ZA10140961	10/01/10
		18		ZA10148691	10/13/10
QTA113	254.00	153	0.60	ZA10148694	10/13/10
QTA114	236.00	16	0.36	ZA10153208	10/22/10
		70		ZA10148693	10/13/10
QTA115	281.00	130	0.50	ZA10153209	10/22/10
		11		ZA11005448	01/15/11
QTA116	221.00	78	0.52	ZA10159929	11/03/10
		37		ZA10155630	10/22/10
QTA117	383.00	177	0.46	ZA10161270	11/03/10
QTA118	284.00	167	0.59	ZA10167368	11/12/10
QTA119	311.00	126	0.41	ZA10173032	11/22/10
QTA120	314.00	93	0.38	ZA10173033	11/22/10
		27		ZA11005449	01/15/11
QTA121	214.90	79	0.37	ZA10179912	11/22/10
QTA122	300.00	67	0.22	ZA10179911	11/22/10
QTA123	342.00	106	0.35	ZA10179913	12/01/10
		6		ZA11005449	01/15/11
		7		ZA11007460	01/15/11
QTA124	274.00	61	0.24	ZA10187370	12/11/10
		6		ZA11007461	01/15/11
QTA125	387.00	133	0.34	ZA10187372	12/11/10
QTA126	276.00	72	0.26	ZA10187371	12/11/10
QTA127	306.00	53	0.17	ZA10187359	12/11/10
QTA128	210.00	69	0.33	ZA10189496	12/15/10
QTA129	309.00	83	0.27	ZA10189498	12/15/10
QTA130	201.00	55	0.42	ZA10189497	12/15/10
		10		ZA11056474	04/06/11
		20		ZA11007462	01/15/11
QTA131	342.00	114	0.33	ZA11011198	01/22/11
QTA132	300.00	121	0.40	ZA11011199	01/22/11
QTA133	318.00	134	0.42	ZA11014010	01/28/11
QTA134	252.00	104	0.41	ZA11014011	01/28/11
QTA135	279.00	114	0.41	ZA11017991	02/04/11
QTA136	219.00	63	0.29	ZA11022430	02/12/11
QTA137	243.00	62	0.26	ZA11022299	02/12/11
QTA138	303.00	125	0.41	ZA11022432	02/12/11
QTA139	318.00	80	0.25	ZA11022431	02/12/11
	Total	**2884**			

Table 10-4: Phase VIII Sampling Details

Hole number	Length (m)	Number of samples	Samples/metre	Job number	Date
QTA140	203	86	0.42	ZA11112572	06/20/11
QTA141	209	83	0.44	ZA11112573	06/20/11
		9		ZA11220707	10/25/11
QTA142	209	88	0.51	ZA11112574	06/20/11
		8		ZA11123527	07/02/11
		10		ZA11220708	10/25/11
QTA143	224	95	0.49	ZA11123529	07/02/11
		15		ZA11220709	10/25/11
QTA144	201	45	0.44	ZA11123526	06/20/11
		33		ZA11133978	07/15/11
		11		ZA11220720	10/25/11
QTA145	288	87	0.30	ZA11133979	07/15/11
QTA146	168	78	0.46	ZA11134790	07/15/11
QTA147	243	131	0.57	ZA11134791	07/15/11
		8		ZA11220721	10/25/11
QTA148	309	140	0.45	ZA11140962	07/24/11
QTA149	219	66	0.37	ZA11140961	07/24/11
		14		ZA11220722	10/25/11
QTA150	195	70	0.40	ZA11140919	07/24/11
		8		ZA11220723	10/25/11
QTA151	141	43	0.30	ZA11140960	07/24/11
QTA152	105	38	0.36	ZA11140918	07/24/11
QTA153	237	128	0.54	ZA11150810	08/04/11
QTA154	213	128	0.60	ZA11150811	08/04/11
QTA155	180	80	0.44	ZA11150812	08/04/11
QTA156	228	110	0.48	ZA11150813	08/04/11
QTA157	258	130	0.53	ZA11166414	08/22/11
		8		ZA11220724	10/25/11
QTA158	459	247	0.54	ZA11166415	08/22/11
QTA159	357	128	0.52	ZA11166413	08/22/11
		59		ZA11165784	09/04/11
QTA160	408	199	0.49	ZA11166416	08/22/11
QTA161	333	186	0.56	ZA11165787	09/04/11
QTA162	252	111	0.44	ZA11165785	09/04/11
QTA163	144	77	0.53	ZA11165786	09/04/11
QTA164	219	99	0.45	ZA11165788	09/04/11
QTA165	309	178	0.58	ZA11184761	09/13/11
QTA166	300	82	0.32	ZA11184760	09/13/11

Hole number	Length (m)	Number of samples	Samples/metre	Job number	Date
		14		ZA11220725	10/25/11
QTA167	282	105	0.37	ZA11183739	09/13/11
QTA168	270	145	0.57	ZA11183738	09/13/11
		8		ZA11220726	10/25/11
QTA169	210	98	0.47	ZA11183737	09/13/11
QTA170	327	134	0.41	ZA11190047	09/21/11
QTA171	381	139	0.36	ZA11190046	09/21/11
QTA172	237	66	0.28	ZA11190048	09/21/11
QTA173	288	105	0.36	ZA11190049	09/21/11
QTA174	318	183	0.58	ZA11177246	09/25/11
QTA175	201	82	0.41	ZA11177248	09/25/11
QTA176	228	87	0.38	ZA11177249	09/25/11
QTA177	227.75	87	0.38	ZA11177247	09/25/11
QTA178	144	72	0.50	ZA11182540	09/25/11
QTA179	111	59	0.53	ZA11182541	09/25/11
QTA180	141	51	0.36	ZA11182542	10/18/11
QTA181	282	95	0.34	ZA11182543	09/25/11
QTA182	147	83	0.56	ZA11220727	10/25/11
QTA183	195	91	0.47	ZA11220728	10/25/11
QTA184	187.5	56	0.30	ZA11220729	10/25/11
	Total	**4876**			

10.3 DRILL DATA AND DRILLING RESULTS

Phase VII and Phase VIII drill programs were very successful at increasing the size of the known mineralized zones along most of the major vein systems on the Nieves Property. Drill highlights are summarized in Table 10-5, Table 10-6 and Table 10-7.

The best intersections include 149 g/t Ag and 0.11 g/t Au over 31.25 m, which includes 6320 g/t Ag and 1.82 g/t Au over 0.25 m in drill hole QTA123 along the Concordia West vein, 104 g/t Ag over 19 m, including 6410 g/t Ag over 0.1 m and 5960 g/t over 0.1 m in drill hole QTA137 along the California vein, and 152.2 g/t Ag and 0.12 g/t Au over 57 m in drill hole QTA144 in the Concordia West area (Table 10-5, Table 10-6 and Table 10-7).

10.3.1 Concordia

A total of 28 drill holes were drilled along the Concordia vein system, which includes the Concordia East, La Quinta and the Concordia West areas.

Twenty drill holes were drilled in the Concordia West area, extending the mineralized zone approximately 200 m to the west. Most of the drill holes (QTA119, QTA120, QTA123, QTA131, QTA139, QTA143, QTA144, QTA153, QTA157, QTA168, QTA170 and

QTA172) intersected significant mineralization, but holes QTA131, QTA139, QTA166 and QTA167 did not intersect significant mineralization (Table 10-5, Table 10-6 and Table 10-7). Mineralization remains open to the west.

The Concordia East area was tested with three drill holes (QTA136, QTA151 and QTA183), two of which intersected high grade mineralization extending the mineralized zone 200 m east of the La Quinta area.

The total length of the known mineralized zone along the Concordia vein system was extended to approximately 1300 meters. Stockwork style mineralization, typical of Concordia vein, has now been intersected on a minimum spacing of 100 m over a total strike length of 1000 m. Holes QTA140, QTA141, QTA142, QTA152, QTA154, QTA176, QTA178, QTA179, QTA180 and QTA182 intersected low to moderate grade Ag mineralization at shallow depth, suggesting the presence of mineralization up- dip, near surface (Table 10-6 and Table 10-7).

10.3.2 California

A total of 6 drill holes (QTA127, QTA128, QTA130, QTA137, QTA155 and QTA156) were drilled along the California vein system. QTA130 intersected several shallow, stockwork style mineralization (Table 10-5). Holes QTA137 and QTA155 were drilled near the east end of previously known mineralization and intersected high grade mineralization (Table 10-5 and Table 10-6). QTA127, drilled to the west of the known mineralized zone, did not intersect significant mineralization.

Recent drilling increased the length of known mineralization along the California vein system to approximately 550 m and mineralization remains open to the east.

10.3.3 Gregorio North

A total of 18 holes were drilled along the Gregorio North vein system. Holes QTA112 to QTA118, QTA122, QTA132, QTA133 and QTA134 traced the Gregorio North vein for an additional 500 m to the west (Table 10-5). The grade and thickness of the vein decreases to the west, indicated by drill holes QTA122, QTA133 and QTA134. The two best holes (QTA115 and QTA116) are located on the east end of the Gregorio North vein. Holes QTA135 and QTA138 intersected weak mineralization in the vein 100 and 200 m further to the east.

Phase VII and VIII drill programs were successful in doubling the strike length of the Gregorio North vein, extending the strike length of the vein to approximately 1200 m.

10.3.4 Santa Rita

A total of 15 drill holes systematically tested the Santa Rita vein system over 500 along strike, the total length of mineralization was extended to approximately 750 m and remains open to the west. Drilling suggests the presence of several parallel vein systems.

Most of the drill holes intersected significant mineralization (Table 10-6 and Table 10-7). Low grade Ag mineralization was intersected in holes QTA161 and QTA169. Holes QTA124 and

QTA126, drilled east of the known mineralization on the Santa Rita vein, intersected weak mineralization.

10.3.5 Other areas

Two holes (QTA121 and QTA125) intersected weak mineralization on the Dolores vein (Table 10-5). QTA129 drilled at Orion failed to return any mineralization (Table 10-5). Hole QTA184 was drilled along the Mariana vein, but failed to intersect significant mineralization.

Table 10-5: Drill Highlights of Phase VII Exploration Program

Hole	Area	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Ag (oz/ton)	Pb (%)	Zn (%)
QTA112	Gregorio N	64.8	74.2	9.4	0.15	7	0.2	0	0.01
QTA113	Gregorio N	113.55	116	2.45	0.03	40	1.2	0.02	0.02
		138.5	146.95	8.45	0.06	16	0.5	0.01	0.02
		179.1	188.65	9.55	0.03	16	0.5	0.02	0.04
QTA114	Gregorio N	83.5	108.15	24.65	0.23	11	0.3	0.01	0.01
		126	162.65	36.65	0.08	20	0.6	0.01	0.03
includes		159	162.65	3.65	0.18	132	3.9	0.07	0.1
QTA115	Gregorio N	2	28.55	26.55	0.21	19	0.6	0.02	0.04
includes		22.5	28.55	6.05	0.22	59	1.7	0.06	0.13
		58.25	62.9	4.65	0.14	66	1.9	0.03	0.07
		152	173.65	21.65	0.13	32	0.9	0.02	0.04
QTA116	Gregorio N	58.05	73.7	15.65	0.08	17	0.5	0.02	0.06

(Continued on next page.)

Hole	Area	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Ag (oz/ton)	Pb (%)	Zn (%)
		148.85	187.5	38.65	0.1	23	0.7	0.02	0.03
includes		180.7	183.15	2.45	0.25	120	3.5	0.07	0.16
QTA117	Gregorio N	70.75	85	14.25	0.13	14	0.4	0	0.01
		132	140	8	0.16	56	1.6	0.03	0.06
QTA118	Gregorio N	85.5	87.75	2.25	0.03	24	0.7	0.01	0.02
		99.5	101.05	1.55	0.03	27	0.8	0.01	0.03
		146.1	148.3	2.2	0.27	34	1	0.01	0.03
		154.5	157.85	3.35	0.1	31	0.9	0.03	0.12
		181.95	182.2	0.25	1.2	1175	34.3	0.85	1.6
		205	210.05	5.05	0.03	21	0.6	0.02	0.06
		221.1	224.3	3.2	0.03	57	1.7	0.14	0.21
QTA119	Concordia W	106.7	108.5	1.8	0.52	88	2.6	0.18	0.33
		136.55	142.1	5.55	0.04	30	0.9	0.02	0.04
		158.1	218.05	59.95	0.04	17	0.5	0.05	0.07
QTA120	Concordia W	48.1	52.5	4.4	0.33	15	0.4	0	0.02
		51.85	52.5	0.65	1.8	71	2.1	0.01	0.07
		170.6	182.3	11.7	0.06	36	1.1	0.04	0.27
QTA121	Dolores E	109.3	109.85	0.55	0.61	16	0.5	0	0.12
QTA122	Gregorio N	60.2	67.1	6.9	0.08	14	0.4	0	0.01
QTA123	Concordia W	103.6	181.7	78.1	0.06	69	2	0.07	0.08
		103.6	134.85	31.25	0.11	149	4.4	0.12	0.14
includes		114.4	128.25	13.85	0.12	290	8.5	0.2	0.24
includes		117.2	117.45	0.25	1.82	6320	184.5	2.96	2.94
QTA124	Santa Rita	118	124.6	6.6	0.03	30	0.9	0.06	0.09
QTA125	Dolores	84	87.7	3.7	0.23	11	0.3	0	0.02
		210	225	15	0.05	23	0.7	0.02	0.04
QTA128	California	128	131	3	0.07	13	0.4	0.01	0.02
QTA130	California	22	30	8	0.05	79	2.3	0.03	0.1
includes		26	28	2	0.07	215	6.3	0.08	0.17
		80.1	83	2.9	0.03	108	3.2	0.04	0.24
		99	105	6	0.03	89	2.6	0.03	0.03
includes		103	105	2	0.03	235	6.9	0.09	0.05
		157	158.9	1.9	0.05	119	3.5	0.04	0.1
QTA131	Concordia West	279.95	280.1	0.15	0.1	181	5.3	3.71	1.49

Hole	Area	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Ag (oz/ton)	Pb (%)	Zn (%)
QTA132	Gregorio North	138	192.1	54.1	0.13	37.4	1.1	0.05	0.04
		204.95	212	7.05	0.03	20.4	0.6	0.03	0.03
QTA133	Gregorio North	207.6	207.7	0.1	0.92	1380	40.3	1.69	10.5
		222.5	222.65	0.15	1.18	1810	52.9	1.41	3.64
QTA134	Gregorio North	47.7	51	3.3	0.05	42.7	1.2	0.01	0.04
		110	111.85	1.85	0.11	66.2	1.9	0.03	0.05
		133	139.6	6.6	0.04	30.9	0.9	0.02	0.04
QTA135	Gregorio North	159	196.65	37.65	0.12	18.1	0.5	0.01	0.03
includes		160.1	162	1.9	0.21	121	3.5	0.02	0.13
includes		172.9	173.2	0.3	1.03	62.3	1.8	0.08	0.27
QTA136	Concordia East	84	90.7	6.7	0.23	92.9	2.7	0.03	0.11
includes		89.45	89.8	0.35	1.15	1510	44.1	0.51	1.81
QTA137	California	77	96	19	0.03	104	3	0.03	0.05
includes		80.55	85.4	4.85	0.03	342.5	10	0.12	0.15
includes		83.7	83.8	0.1	0.03	6410	187.2	2.06	3.28
includes		85.3	85.4	0.1	0.06	5960	174	2.53	0.44
QTA138	Gregorio North	187	195	8	0.14	24.8	0.7	0	0.05
includes		192.6	193	0.4	1.79	290	0.5	0.03	0.78
QTA139	Concordia West	291	293	2	0.03	15.5	0.5	0.01	0.02

Table 10-6: Drill Highlights of Phase VIII Exploration Program from Hole QTA140 to QTA 169

Hole	Area	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Ag (oz/ton)	Pb (%)	Zn (%)
QTA140	La Quinta	2	9.5	7.5	0.1	9.9	0.3	0	0.02
		19.2	60.1	40.9	0.12	27.9	0.8	0.01	0.04
includes		43.5	50.2	6.7	0.31	103.9	3	0.04	0.11
QTA141	La Quinta	21.05	41	19.95	0.27	17	0.5	0.02	0.07
includes		35	41	6	0.7	49.4	1.4	0.05	0.21
QTA142	Concordia West	39.9	49.15	9.25	0.34	65.4	1.9	0.03	0.04
		70.65	147	76.35	0.08	23.9	0.7	0.02	0.03
includes		92.05	101	8.95	0.11	80.9	2.4	0.06	0.09

Hole	Area	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Ag (oz/ton)	Pb (%)	Zn (%)
		155.1	158.3	3.2	0.03	52.4	1.5	0.05	0.06
QTA143	Concordia West	68.1	76	7.9	0.17	15.3	0.4	0	0.01
		98	148	50	0.08	66.9	2	0.05	0.08
includes		108	146	38	0.08	81.5	2.4	0.07	0.1
includes		108	110	2	0.46	353	10.3	0.24	0.29
QTA144	Concordia West	32	38.5	6.5	0.29	12.6	0.4	0.01	0.03
		107	164	57	0.12	152.5	4.5	0.12	0.17
includes		109	125.65	16.65	0.23	290.9	8.5	0.23	0.3
includes		110.85	115.6	4.75	0.41	447.4	13.1	0.35	0.51
QTA145	Disquito Orion East	192.5	192.6	0.1	0.13	115	3.4	0.07	0.16
QTA146	Gregorio North	20	28.35	8.35	0.17	7.5	0.2	0	0.01
QTA147	Gregorio North	145.55	180	34.45	0.15	16.5	0.5	0.01	0.02
QTA148	Gregorio North	0.25	87	86.75	0.13	13.3	0.4	0	0.02
		155	186	31	0.09	30.3	0.9	0.02	0.04
QTA150	Gregorio North	17	29.85	12.85	0.11	6.5	0.2	0	0.02
QTA152	La Quinta	13	17	4	0.23	23.9	0.7	0.01	0.02
		50.3	53	2.7	0.61	20.7	0.6	0	0.02
QTA153	Concordia West	50.3	53	2.7	0.61	20.7	0.6	0	0.02
		107	187	80	0.1	37.5	1.1	0.05	0.07
includes		117.4	125.75	8.35	0.56	134.5	3.9	0.09	0.11
includes		120	121.5	1.5	2.71	317.2	9.3	0.2	0.2
includes		168.5	172.05	3.55	0.13	228.7	6.7	0.4	0.52
QTA154	Concordia West	34	114	80	0.03	18.1	0.5	0.01	0.03
QTA155	California	111.25	111.45	0.2	0.03	64	1.9	0.02	0.15
QTA156	California	90	98	8	0.08	31	0.9	0.01	0.03
QTA157	Concordia West	103	219	116	0.04	20	0.6	0.03	0.03
includes		106	116.05	10.05	0.06	59	1.7	0.02	0.07
includes		173.95	174.2	0.25	2.18	2140	62.5	1.54	2.48
includes		192.65	200.25	7.6	0.07	47	1.4	0.21	0.1
QTA167	Disquito	219.95	220.4	0.45	2.9	11	0.3	0	0.02
QTA168	Concordia West	15	20.6	5.6	1.22	5	0.1	0	0.01
		170.2	213	42.8	0.09	46	1.3	0.04	0.08
		172.1	183.2	11.1	0.14	93	2.7	0.07	0.12
		173.35	181.25	7.9	0.16	107	3.1	0.08	0.13
QTA158	Santa Rita	98	137.1	39.1	0.05	19	0.5	0.1	0.12
		241	259.7	18.7	0.03	18	0.5	0.07	0.25
QTA159	Santa Rita	61	82.8	21.8	0.03	25	0.7	0.09	0.19
includes		62.9	69.05	6.15	0.03	79	2.3	0.27	0.49
includes		68.6	69.05	0.45	0.03	556	16.2	2.07	4.83
		273	288	15	0.05	60	1.8	0.12	0.21
QTA160	Santa Rita	130	150	20	0.04	34	1	0.19	0.16
		200.45	244	43.55	0.08	15	0.4	0.05	0.08
		294	306	12	0.21	19	0.5	0.02	0.07
QTA161	Santa Rita	36	66	30	0.04	24	0.7	0.13	0.2
		124.75	265.6	140.85	0.06	20	0.6	0.03	0.06
includes		183.45	205	21.55	0.03	44	1.3	0.06	0.09
QTA162	Santa Rita	149.5	149.9	0.4	0.39	55	1.6	1.2	2.88
QTA163	Santa Rita	120.35	124.1	3.75	0.08	11	0.3	0.03	0.05
QTA164	Santa Rita	118	121.95	3.95	0.05	58	1.7	0.03	0.14

Hole	Area	From	To	Interval (m)	Au (g/tonne)	Ag (g/tonne)	Ag (oz/ton)	Pb (%)	Zn (%)
		142	153	11	0.03	77	2.3	0.15	0.21
QTA165	Santa Rita	117	163	46	0.03	19	0.6	0.05	0.05
		221.7	250	28.3	0.03	18	0.5	0.02	0.04
QTA169	Santa Rita	34	113	79	0.03	32	0.9	0.02	0.06
includes		68.1	70	1.9	0.03	210	6.1	0.15	0.08

Table 10-7: Ag and Au Drill Highlights in Phase VIII Drill Program from Hole QTA170 to QTA184

Hole	Area	From	To	Interval (m)	Ag (g/t)	Au (g/)
QTA170	Concordia West	28.9	31	2.1	9.26	1.08
		199	223.3	24.3	45.04	0.04
including		203.15	213	9.85	106.20	0.04
		237	288	51	12.20	0.03
including		237	244.25	7.25	43.96	0.05
QTA171	Santa Rita	165	194	29	6.18	0.03
		300.9	303.05	2.15	15.72	0.37
		313	318	5	44.36	0.03
QTA172	Concordia West / Gregorio North/Orion	132.4	140	7.6	36.65	0.06
QTA173	Concordia West	178	221	43	13.42	0.03
including		204	213.85	9.85	29.37	0.04
QTA174	Santa Rita	140.35	169.05	28.7	5.97	0.07
including		161.15	166	4.85	17.18	0.20
		187.7	228.5	40.8	22.08	0.06
including		216	221.05	5.05	100.68	0.04
		249	295.6	46.6	25.33	0.08
including		268.2	272	3.8	188.95	0.09
QTA176	Concordia West	12	19.05	7.05	0.48	0.01
		37	109	72	15.22	0.03
including		80.75	84	3.25	62.04	0.03
		141	148	7	7.92	0.03
QTA177	Santa Rita	98	117	19	15.72	0.03
including		99.15	101	1.85	97.16	0.02
		146.55	152	5.45	29.61	0.05
		158.6	169	10.4	19.48	0.04
QTA178	Concordia West	7	28	21	13.60	0.03
including		25.8	28	2.2	81.91	0.04
		41.3	62	20.7	92.48	0.05
including		45	56	11	162.37	0.06
		92	98	6	11.97	0.03
QTA179	La Quinta	3	17	14	11.49	0.04
including		9	13	4	22.50	0.06
		99	102	3	51.64	0.09
QTA180	La Quinta	12.7	34.5	21.8	17.07	0.08
including		12.7	18	5.3	46.87	0.17
QTA181	Santa Rita	175.05	183	7.95	13.13	0.17
		201	205	4	13.76	0.03

Hole	Area	From	To	Interval (m)	Ag (g/t)	Au (g/)
QTA182	Concordia West	13	71	58	25.53	0.03
including		53.35	57.1	3.75	58.90	0.04
		93	100	7	8.64	0.03
QTA183	Concordia West	19	23	4	6.58	0.04
		43	44.85	1.85	118.64	0.08
		146	154.2	8.2	27.19	0.03
including		148.5	152	3.5	50.86	0.03

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 SAMPLE SECURITY

Core boxes are delivered to the core logging facility from the drill twice per day. The core is logged onsite and core samples are selected and marked by the logging geologist. No minimum or maximum sample lengths are used; the sample length is determined by the geologist based on presence and intensity of mineralization. The start and end of a sample and the sample ID are marked by the geologist on the side of the core box using a red permanent marker. The end of the box with the hole number is also marked with a red "X" for easy visual recognition in core storage. The marked core boxes are taken to the onsite core cutting area and the core is split into two halves using a water-cooled circular diamond saw (Figure 11-1). One half of the core is taken for analysis and the remaining half is left in the box for future reference and stored in the locked core storage facility. After a sample is cut, each sample is placed immediately in a plastic sample bag with a pre-printed sample tag supplied by the lab in booklets of 50 sequential, numerical tags. The depth to and from of the core sample are marked in the sample tag booklet. The sample bags are stapled shut and set aside. Once a significant number of samples have been bagged, the samples are placed in rice bags with predetermined standards, duplicates and blanks. Blank and duplicate sample tag ID's are recorded in the core box following the core sample.

Two to three times per month during the drill program, the samples were picked-up at the core logging facility in Nieves by an ALS Minerals operated transport truck. The truck transported the samples directly to the ALS prep lab in Guadalajara, Mexico. While waiting for the ALS truck to arrive, samples in rice bags are stored inside the locked core storage facility.

Figure 11-1: Core Cutting and sample prep area at core logging / core storage facility

(Photo by Doris Fox)

11.2 QA/QC PROCEDURES

11.2.1 Frequency of QC samples

In Phase VII, the 3069 samples sent for analysis included 83 blanks (3% of samples) and 45 standards (1% of samples) (Table 11-1). No core duplicates were included. Out of 44 jobs sent to the lab, no external standards were inserted into 9 of the jobs and no external blanks and standards were inserted into 13 jobs.

The frequency of insertion of the quality control samples in Phase VII drill program is adequate for this stage of the project, but the number of quality control samples and the frequency of their insertion should be higher in the future for a systematic monitoring of assay quality. According to Sketchley (1998), 10% to 15% of quality control samples should be included with every sample batch. Every 20 sample should include 1 standard, 1 blank and 1 duplicate.

Table 11-1: Frequency of QC Samples in Phase VII Drill Program

Job number	No. of analyses	No. of blanks	No. of standards	No. of duplicates	Comments
ZA10140961	37	2			no standards
ZA10148691	18	1			no standards
ZA10148693	70	3			no standards
ZA10148694	153	7			no standards
ZA10153208	16	1			no standards
ZA10153209	130	5			no standards
ZA10155630	37	1			no standards
ZA10159929	78	4			no standards
ZA10161270	177	4	3		
ZA10167368	167	4	3		
ZA10173032	126	3	2		
ZA10173033	93	2	2		
ZA10179911	67	2	1		
ZA10179912	79	2	1		
ZA10179913	106	3	2		
ZA10187359	53	2	1		
ZA10187370	61	1	1		
ZA10187371	72	1	2		
ZA10187372	133	3	3		
ZA10189496	69	2	1		
ZA10189497	55	2	1		
ZA10189498	83	2	2		
ZA11005448	11				no standards, no blanks
ZA11005449	27				no standards, no blanks
ZA11005449	6				no standards, no blanks
ZA11007460	7				no standards, no blanks
ZA11007461	6				no standards, no blanks
ZA11007462	20				no standards, no blanks
ZA11011198	114	4	2		
ZA11011199	121	3	3		
ZA11014010	134	3	4		
ZA11014011	104	3	2		
ZA11017991	114	3	3		
ZA11022299	62	3			no standards
ZA11022430	63	1	2		
ZA11022431	80	3	1		
ZA11022432	125	3	3		
ZA11056474	10				no standards, no blanks
ZA11056475	25				no standards, no blanks
ZA11056476	3				no standards, no blanks
ZA11056477	51				no standards, no blanks
ZA11056478	63				no standards, no blanks
ZA11103978	19				no standards, no blanks
ZA11103979	24				no standards, no blanks
Total analysis	**3069**	**83**	**45**		
Percent of QC samples		**3%**	**1%**		

In Phase VIII, the 5315 samples sent for analysis included 132 external blanks (2% of samples), 130 external standards (2% of samples) and 177 core duplicates (3%) (Table 11-2). The frequency of QC samples improved in Phase VIII drill program, compared to Phase VII drill program, following recommendations given by Caracle Creek in August, 2011.

Table 11-2: Frequency of QC Samples in Phase VIII Drilling Program

Job number	No. of analyses	No. of blanks	No. of standards	No. of duplicates	Comments
ZA11112572	90	2	2		no core duplicates
ZA11112573	87	2	2		no core duplicates
ZA11112574	93	3	2		no core duplicates
ZA11123526	48	2	1		no core duplicates
ZA11123527	8				no core duplicates
ZA11123529	99	2	2		no core duplicates
ZA11133978	34		1		no core duplicates
ZA11133979	92	3	2		no core duplicates
ZA11134790	82	2	2		no core duplicates
ZA11134791	138	3	4		no core duplicates
ZA11140918	40	1	1		no core duplicates
ZA11140919	74	2	2		no core duplicates
ZA11140960	45	1	1		no core duplicates
ZA11140961	70	2	2		no core duplicates
ZA11140962	147	4	3		no core duplicates
ZA11150810	135	3	4		no core duplicates
ZA11150811	135	4	3		no core duplicates
ZA11150812	88	2	2	4	
ZA11150813	122	3	3	6	
ZA11165784	65	2	1	3	
ZA11165785	122	3	3	5	
ZA11165786	85	2	2	4	
ZA11165787	206	5	5	10	
ZA11165788	109	2	3	5	
ZA11166413	142	3	4	7	
ZA11166414	144	3	4	7	
ZA11166415	274	7	7	13	
ZA11166416	221	5	6	11	
ZA11177246	203	5	5	10	
ZA11177247	95	2	2	4	
ZA11177248	90	2	2	4	
ZA11177249	96	3	2	4	
ZA11182540	79	2	2	3	
ZA11182541	65	2	1	3	
ZA11182542	57	1	2	3	
ZA11182543	105	3	2	5	
ZA11183737	108	3	2	5	
ZA11183738	161	4	4	8	
ZA11183739	116	3	3	5	
ZA11184760	90	2	2	4	

Job number	No. of analyses	No. of blanks	No. of standards	No. of duplicates	Comments
ZA11184761	197	4	5	10	
ZA11190046	153	4	3	7	
ZA11190047	148	4	3	7	
ZA11190048	72	1	2	3	
ZA11190049	116	3	2	6	
ZA11220707	10		1		no core duplicates
ZA11220708	11		1		no core duplicates
ZA11220709	17	1	1		no core duplicates
ZA11220720	11				no core duplicates
ZA11220721	9	1			no core duplicates
ZA11220722	16	1	1		no core duplicates
ZA11220723	9	1			no core duplicates
ZA11220724	9	1			no core duplicates
ZA11220725	15		1		no core duplicates
ZA11220726	9		1		no core duplicates
ZA11220727	92	2	2	5	
ZA11220728	99	2	3	3	
ZA11220729	62	2	1	3	
Total analysis	**5315**	**132**	**130**	**177**	
Percent of QC samples		**2%**	**2%**	**3%**	

11.2.2 Blanks and standards

The source of blank material is a gravel (consisting of barren rocks) quarry located approximately 15 km to the west of the Nieves property and it is supplied by a local farmer by pick-up truck in bulk. The blank samples are prepared by Quaterra geotechs. The blank material is purposely put in plastic sample bags in weights heavier than most samples so that the sample weight can be used to help identify blanks when data is returned from the lab. Blank material is stored outside the core storage facility in sample bags within watertight plastic 45 gallon drums.

Standard material is stored in the field office in 2L plastic jugs. The only external standard used is a custom made standard (KM 2653) prepared by Smee & Associates Consulting Ltd. Table 11-3 summarizes the standard information for Ag and Au.

The standard is characterized as a Provisional (not certified) standard for Au with a relative standard deviation between 5% and 15% and caution must be exercised when assessing the accuracy of data (Smee, 2010).

The analytical method used in the round robin of standard KM 2653 for Ag is four-acid digestion followed by instrument finish and for Au is fire assay and instrument finish.

Table 11-3: Characteristics of Customized Standards Inserted in Phase VII and VIII Drill Programs

Standard name	Prepared by	Element	Value (ppm)	Standard deviation	Analytical method	Standard type
KM 2653	CDN Resource Laboratories Ltd.	Ag	80.6	1.8	4 acid digestion and instrument finish	Certified (RSD*<5%)
KM 2653	CDN Resource Laboratories Ltd.	Au	0.062	0.004	Fire assay and instrument finish	Provisional (RSD* between 5 and 15%)
* RSD=Relative Standard Deviation						

Standards are used to check the accuracy of the analysis. The rules for the standards and blank samples include:

1. The standard is considered a failure when it returns a value that falls outside ±3 standard deviation.
2. The standard is marked as a "warning" when it returns a value between ±2 and ±3 standard deviation. If three or more adjacent standards are on the same side of the Au mean value and fall between ±2 and ±3 standard deviation, then all standards are classified as failure. This may indicate a bias in the laboratory.
3. A blank sample greater than the maximum acceptable value, which is typically three times the detection limit, is a failure. A failure in the blanks indicates a contamination during sample preparation in the laboratory.

11.2.3 Duplicates

Core duplicates were inserted only in Phase VIII drill program. Lab duplicates were inserted in the laboratory.

Core and laboratory duplicates are used to check the precision of the analysis: analytical errors, sample preparation errors and nugget effect. The original values versus the duplicate values are plotted and compared. If the R2 value of the correlation line is greater than 0.95%, all the duplicates pass. A duplicate is considered a failure when there is a large difference between the original and duplicate analyses and the value of the analysis falls outside the 0.95% confidence interval.

11.3 SAMPLE PREPARATION

Samples were shipped to ALS Minerals Lab in Guadalajara, Mexico for preparation, then to ALS Minerals Vancouver, B.C. for analysis (Quaterra Resources Inc. webpage: www.quaterra.com). All ALS laboratories in North America are registered to ISO 9001:2008, and have received ISO 17025 accreditations for specific procedures (ALS Minerals website: www.alsglobal.com).

The samples were weighed, logged into the ALS Minerals system, fine crushed to 70%-2 mm or better, split using a riffle splitter and pulverized to 85% passing 75 microns or better.

11.4 ANALYTICAL METHODS

Silver was analyzed with two methods including aqua regia digest and a combination of ICP-AES (Inductively Coupled Plasma – Atomic Emission Spectroscopy) finish and fire assay and gravimetric finish. Gold was analyzed with fire assay and gravimetric finish (Table 11-4). The rest of the elements were analyzed with aqua regia digestion and ICP-AES finish.

In the aqua regia digest and ICP-AES finish, the samples are digested in aqua regia in a graphite heating block (ALS Minerals website: www.alsglobal.com). After cooling, the solution is diluted to 12.5 ml with deionized water, mixed and analyzed by ICP-AES. The results are corrected for inter-element spectral interferences.

In the fire assay and gravimetric finish, the samples are decomposed with fire assay fusion, during which the sample is fused with a mixture of lead oxide, sodium carbonate, borax, silica and other reagents to produce a lead button, which is cupelled to remove the lead (ALS Minerals website: www.alsglobal.com). The remaining gold and silver bead is separated in dilute nitric acid, annealed and weighed as gold. Silver is determined by the difference in weights.

Table 11-4: Description of Analytical Methods for Ag and Au

Analytical method	Element	Analyte range (ppm)	Sample weight	Description
ME-ICP41	Ag	0.2-100	>1 g	Aqua regia digestion and ICP-AES finish
ME-GRA21	Au	0.05-1,000	30 g	Fire assay and gravimetric finish
ME-GRA21	Ag	5-10,000	30 g	Fire assay and gravimetric finish
Ag-OG46	Ag	1-1,000		Aqua regia digestion and ICP-AES finish

11.5 QA/QC PROCEDURES IN ALS MINERALS LABS

ALS Minerals inserted internal standards (Table 11-5), blanks and duplicates in every job at regular intervals.

For every 50 samples prepared, ALS Minerals inserts an additional split from the coarse crushed material to create a pulverizing duplicate, which is processed and analyzed in a similar manner to the other samples in the submission (ALS Minerals website: www.alsglobal.com).

Table 11-5: List of Internal Lab Standards Inserted by ALS Minerals

Standard name	Prepared by	Element	Certified value (ppm)	Standard deviation	Analytical method	Matrix
OREAS 67a	ORE Research and Exploration Pty Ltd.	Au	2.238	0.096	fire assay and AAS or OES finish	epithermal Au-Ag ore hosted in sedimentary and volcanic rocks
OREAS 67a	ORE Research and Exploration Pty Ltd.	Ag	33.6	2	4 acid digestion and AAS, OES or MS finish	epithermal Au-Ag ore hosted in sedimentary and volcanic rocks
OxQ70	RockLabs	Au	49.18	0.69	fire assay	feldspar with minor quantities of Au and Ag minerals
OxQ70	RockLabs	Ag	151.5	6.1	fire assay and/or acid digestion and instrument finish	feldspar with minor quantities of Au and Ag minerals
SP27	RockLabs	Au	18.1	0.429	fire assay and AAS or gravimetric finish	feldspar and pyrite with minor quantities of Au and Ag containing minerals
SP27	RockLabs	Ag	58.38	2.644	aqua regia, multi-acid, 4 acid digestion or fire assay and AAS, ICP-ES or gravimetric finish	feldspar and pyrite with minor quantities of Au and Ag containing minerals
SQ28	RockLabs	Au	30.14	0.473	fire assay and AAS or gravimetric finish	feldspar and pyrite with minor quantities of Au and Ag containing minerals

(Continued on the next page.)

Standard name	Prepared by	Element	Certified value (ppm)	Standard deviation	Analytical method	Matrix
SQ28	RockLabs	Ag	11.02	0.72	aqua regia, multi-acid or 4 acid digestion and AAS, ICP-ES finish	feldspar and pyrite with minor quantities of Au and Ag containing minerals
GBM908-5	Geostats Pty Ltd.	Ag	58.2	4.4	variable?	oxide cap Ag ore
GBM908-10	Geostats Pty Ltd.	Ag	3	0.4	variable?	oxide copper Au ore
OREAS 15g	ORE Research and Exploration Pty Ltd.	Au	0.527	0.023	fire assay, AAS or OES	quart-feldspar-sericite schist in alkali basalt
OREAS 45p	ORE Research and Exploration Pty Ltd.	Ag	0.3	0.02	aqua regia, ICPOES/MS	ferriginous soil
OREAS 45c	ORE Research and Exploration Pty Ltd.	Ag	0.26	0.03	aqua regia, ICPOES/MS	ferriginous soil
SP49	RockLabs	Au	18.34	0.34	fire assay, instrument or gravimetric	feldspar minerals, basalt and pyrite with minor quantities of Au and Ag containing minerals
SP49	RockLabs	Ag	60.2	2.5	aqua regia, multi-acid, 4 acid digestion or fire assay and AAS, ICP-OES/AES/MS or gravimetric finish	feldspar minerals, basalt and pyrite with minor quantities of Au and Ag containing minerals
SQ44	RockLabs	Au	39.76	0.67	fire assay	feldspar and pyrite with minor quantities of Au and Ag containing minerals
SQ44	RockLabs	Ag	121.8	4.97	fire assay and/or acid digestion and instrument finish	feldspar and pyrite with minor quantities of Au and Ag containing minerals

11.6 CHECK ASSAYS

11.6.1 Phase VII

A total of 158 samples from Phase VII were sent for check assays to Skyline Assayers and Laboratories of Tucson, Arizona. The samples included 145 rejects from ALS Minerals, 3 quarter core duplicates and their rejects from ALS Minerals, 4 blanks and 3 standards. The standard was the same customized standard inserted with the original assays (KM2653) (Table 11-3). The check assays are addressed also in Section 12.2.4.

The analytical methods of check assay samples are summarized in Table 11-6. All Skyline laboratories have received ISO 17025 accreditations for the analytical methods used for the check assays (Skyline website: http://www2.skylinelab.com). Table 11-7 summarizes the properties of lab standards inserted by Skyline.

Table 11-6: Analytical Methods of Check Assays at Skyline

Element	Analytical method	Description	Detection limit
Au	FA-3	Fire Assay - Gravimetric	0.03-1,000 ppm
Ag	FA-3	Fire Assay - Gravimetric	0.03-1,000 ppm
Ag	TE-2	Trace Elements by Aqua Regia leach analyzed by ICP/OES (32 elements)	0.2 ppm

Table 11-7: Summary of Lab Standards Used by Skyline for Phase VII Check Assays

Standard name	Prepared by	Element	Value (ppm)	Standard deviation	Analytical method	Matrix
CU123	Skyline?	Ag	42.575	0.897	no data	no data
PB138	Skyline?	Ag	198.5	4.479	no data	no data
CDN-GS-10C	CDN Resource Laboratories Ltd.	Au	9.71	0.325	fire assay and gravimetric/ICP finish	mix of mineralized q veins in greywacke and blank granite
CDN-GS-5G	CDN Resource Laboratories Ltd.	Au	4.77	0.200	fire assay and AA/ICP finish	siliceous ores
CDN-GS-8A	CDN Resource Laboratories Ltd.	Au	8.25	0.300	fire assay and ICP finish	banded magnetite iron formation with gold bearing q shears

11.6.2 Phase VIII

A total of 127 samples from Phase VIII drill program were sent to AGAT Laboratories of Sudbury, Canada for preparation and sent to AGAT Laboratories of Mississauga, Ontario for analysis. The samples included 127 pulp rejects from ALS, 7 blanks, 4 silver standards and 3 gold standards. AGAT Laboratories is accredited and certified for ISO 9001 and ISO/IEC 17025 accreditations.

Table 11-8: Summary of external standards inserted in the check assay samples for Phase VIII drill program

Standard name	Prepared by	Element	Certified value (ppm)	Standard deviation	Analytical method	Matrix
OREAS 62c	Ore Research and Exploration Pty. Ltd.	Ag	8.76	0.49	aqua regia or 3 acid digest and instrument finish (AAS, OES, MS)	epithermal vein-style gold hosted by andesitic volcanic rocks
OxD87	Rocklabs	Au	0.417	0.013	fire assay and instrument or gravimetric finish	basalt with feldspar and minor quantities of gold-containing minerals

Analytical methods of check assays for Ag and Au at AGAT are the same as the analytical methods of the original samples (Table 11-9).

Table 11-9: Analytical Methods of Check Assays for Ag and Au at AGAT Laboratories

Element	Analytical method	Description	Detection limit
Au	202064	Fire Assay, Gravimetric finish	<0.05 ppm
Ag	202066	Fire Assay, Gravimetric finish	<5 ppm
Ag	201073	Aqua Regia digest, ICP/OES finish	0.2 ppm

The names of the laboratory standards were not provided by AGAT, but the laboratory QC data indicates that internal standards were inserted for both Ag and Au. Five types of silver standards were inserted ranging from 116 and 811 g/t Ag in value. Two types of gold standards were inserted with values 0.922 and 5.865 g/t Au.

12 DATA VERIFICATION

12.1 CARACLE CREEK SITE VISIT

A property site visit was conducted by D. Fox of Caracle Creek on March 11th and 12th, 2012. Several drill sites, artisanal pits, the core storage facility, geological logging area, sample cutting area and field office were all visited while onsite.

The property was accessed by toll highway from Zacatecas to Nieves. From Nieves, the property and core logging facility were accessed by dirt road. A network or narrow dirt roads and trails criss-cross the property from the logging facility to the drill sites and abandoned artisanal pits and shafts.

The compound containing the core logging and core storage facility contained within a chain link fence with locked gate preventing vehicle access (Figure 12-1 and Figure 12-2). Once inside the gated compound, the individual storage rooms are locked and prevent access to the core logging and core cutting areas. The onsite geology office is a separate building within the compound and is also kept locked. The main working office is located in the town of Nieves within a locked house compound and also serves as a field house for the geologists. Paper and digital maps, cross-sections and long sections are stored in the Nieves field house office.

Figure 12-1: Core storage and logging compound

Figure 12-2: Core storage by hole and depth

Several drill sites from the Phase VII and VIII drill programs were visited. The drill programs were completed before the site visit so it was not possible to see a drill in operation on the property. The drill sites are marked with a cement slab with the drill hole ID marked on the top (Figure 10-1). Using a handheld GPS the coordinates of three drill hole markers were recorded to compare with Quaterra's coordinates. The coordinates matched to within the error of the handheld GPS.

Table 12-1: Verification of Drill Hole Locations

Hole ID	QTA Easting	QTA Northing	DF Easting	DF Northing	GPS Accuracy
QTA-143	699439.27	2652853.3	699436	2652851	± 5m
QTA-144	699306.58	2652816.26	699304	2652816	± 4m
QTA-166	698919.55	2652714.62	698918	2652708	± 6m
DF=Doris Fox site visit coordinates					

Drilling activities are supported by the town of Nieves and Fresnillo. Drills are supplied by BDW drilling of Guadalajara and holes are drilled using HQ size core rods, reducing to NQ in deeper holes if conditions warrant. Standard drilling practices, such as marking the ends of 3m runs with wooden depth marker blocks are followed. Water for drilling is supplied by a deep water well at the logging compound pumped to the drill up to 1 kilometer away (Figure 12-3). Drilling activities greater than 1 kilometer from the compound are supplied water from the well by water truck into an onsite or nearsite sump.

Figure 12-3: Water well at logging compound

Claims in Mexico are staked as corner points from a known government located survey marker. The Nieves property is a series of claims each registered from the same central government survey monument (Figure 12-4 and Figure 12-5). The monument was visited by Ms. Fox during the site visit. A secondary “back-up” marker registered with the government is located approximately two (2) meters from the main monument in the event the main monument is destroyed. Historically claim stakers were required to mark each of the corners of the claim with a separate claim-holder monument. This practice has been abandoned, however there are many monuments of various age scattered across the Nieves property as a testament to the long history of exploration on the property.

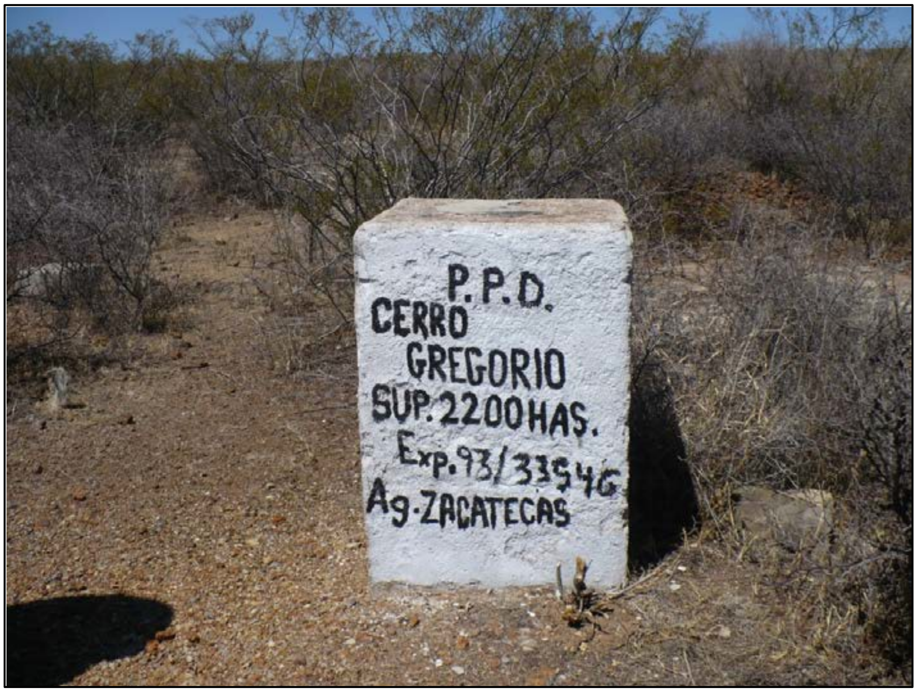


Figure 12-4: Federal survey claim marker monument

Figure 12-5: Federal survey claim marker with datum peg showing date, datum and federal identification number

Abandoned pits and shafts are visible from the main access road that runs from the logging compound south to the Santa Rita mill. Pits at Dolores, Concordia and Santa Rita were visited (Figure 12-6 and Figure 12-7). All pits and shafts are unmarked and no security fencing is present. The sides of the pits and shafts are unstable and the mineralized zone cannot be safely accessed. The extension of the mineralization cannot be traced at surface. No surface expression of the mineralization intersected in core exists on the property. Three samples from stockpiles alongside the pits were collected to verify the presence of mineralization in or around the abandoned workings (Table 12-2).

Figure 12-6: Dolores vein looking down the shaft

Figure 12-7: Concordia Shaft

Since no surface expression of the mineralization exists, the site visit focused on examination of core stored at the logging facility. A total of seven drill holes from Phase VIII were reviewed. The mineralized intersections were identified from cross-sections, and intervals for review were laid out in the core logging area. The assay results for the intervals were reviewed and random samples were selected for quarter splitting and cut by the Quaterra geotechs. Only some of the quarter samples were then selected for check assays and the rest of the cut samples remained in the core boxes in core storage. The selected samples were a mix of low, moderate and high grade to best verify the quality and accuracy of ALS Chemex. Core samples are summarized in Table 12-3.

The samples were bagged and tagged by Ms. Fox and placed in rice bags and then wooden boxes for transport while onsite. The samples remained with Ms. Fox during her visit and were transported by her to DHL in Zacatecas for shipment to Canada. The samples were shipped directly to the CCIC office in Sudbury, Canada. The samples were assigned a CCIC Sample ID and sent to AGAT Laboratories in Sudbury, Ontario for preparation and Mississauga, Ontario for analysis.

Table 12-2: Surface Samples Collected on the Site Visit

CCIC ID	Sample Id	Sample Type	Easting	Northing	Sample Location Description	Sample description
51642	df-001	Surface	699182	2650088	dump pile sample near Santa Rita vein	pieces of shale and sandstone in rubbly material, no sign of mineralization, altered, Fe-stained (Fe-oxides, hydroxides?) pieces
51643	df-002	Surface	699203	2650085	dump pile near Santa Rita vein	vein stockwork in shale, lots of pyrite, galena, sphalerite?, q (seems vuggy in places) in veinlets, weathered, Fe-rich oxides, pieces of sandstone or felsic volcanic rocks?
51644	df-003	Surface	699155	2652747	Concordia vein material	brecciated vein material, lots of stibnite? (elongated/acicular, slightly bluish metallic mineral), quartz (vuggy in places), calcite (maybe other carbonate too), some pyrite, host rock is fine grained, q-rich, light grey

Table 12-3: Quarter Core Samples Selected on the Site Visit

CCIC ID	Sample Id	QTA Sample ID	Hole ID	From (m)	To (m)	Sample description
51645	df-004	571750	QTA-144	152.75	154.55	dark grey shale with stringers (~70 degrees to CA, 10%) composed of fine grained pyrite, calcite and quartz, minor sphalerite? (dark mineral), shale does not appear altered along the stringers, stringers are typically <5 mm, up to 2 cm wide
51646	df-005	571752	QTA-144	154.55	156	dark grey shale, calcite rich, with stringers (~5%, up to 1 cm in width, ~70 degrees to CA) composed of pyrite, calcite, quartz and sphalerite?, second generation of calcite veinlets (~50 degrees to CA) with no sulphides, shale is layered (fine and coarse grained layers) with no sign of alteration along veinlets, some stringers are zoned with pyrite, sphalerite and calcite/quartz (from edge to centre)
51647	df-006	571753	QTA-144	156	157	carbonaceous shale with fine and coarse layers, a few stringers (~30 degrees to CA, <5 mm in width) composed of pyrite calcite, quartz, minor sphalerite?
51648	df-007	571623	QTA-143	112	114	carbonaceous shale with fine and coarse layers, lots of stringers (90, 45, 25 degrees to CA, 15%) composed of pyrite, sphalerite, calcite, quartz. There are at least 3 generations of stringers. Some of the sphalerite postdates pyrite, suggested by crosscutting relationships. Thickness of veinlets is up to 2 cm, but generally ~5 mm.
51649	df-008	571624	QTA-143	114	116	carbonaceous shale with fine and coarse layers, a few stringers (~70 degrees to CA, <5 mm in width) composed of pyrite calcite, quartz, minor sphalerite?

(Continued on Next Page)

CCIC ID	Sample Id	QTA Sample ID	Hole ID	From (m)	To (m)	Sample description
51650	df-009	658061	QTA-147	207	209	carbonaceous shale with fine and coarse layers, but more lighter, coarse grained layers than previous sample, a few stringers (70, 30 degrees to CA) , up to 1 cm in width, most stringers are parallel to layering in sediments and disseminated pyrite is also found in some of the finer grained layers in the sediment. Stringers are composed of pyrite, calcite, quartz, sphalerite?, silverish locally dendritic/elongated shaped mineral in wider veinlets, more along the edges of veins. May have been some movement along layers, open spaces/fractures filled with quartz/calcite
51651	df-010	658062	QTA-147	209	211	similar to previous sample, veinlets are mostly along bedding, large veins contain silverish mineral, not too shiny, maybe tarnished?
51652	df-011	658088	QTA-148	18	19	rock is broken up and rubbly, host rock is fine grained, light grey shale, but it is strongly silicified, bleached, more altered layers contain disseminated pyrite (~5% in the whole sample) and another dark tarnished mineral

The assay results of the site visit samples are shown in Table 12-4. Surface samples 51642 to 51644, collected near the Santa Rita and Concordia veins, returned high Ag values, verifying the presence of mineralization in the veins. The assays of the selected quarter core samples returned values reasonably well comparable to the original assays, considering the highly variable nature of the mineralization.

Table 12-4: Assay Results of the Site Visit Samples Compared to the Original Samples

CCIC ID	Site visit samples		QTA sample ID	Original samples	
	Au (ppm)	Ag (ppm)		Au (ppm)	Ag (ppm)
51642	0.1	123			
51643	0.26	351			
51644	0.86	933			
51645	0.75	505	571750	0.42	442
51646	0.1	154	571752	<0.05	39
51647	0.27	11	571753	<0.05	<5
51648	0.3	163	571623	0.31	140
51649	0.1	64	571624	0.07	59
51650	0.1	27	658061	0.1	33
51651	0.1	7	658062	<0.05	10
51652	0.1	<5	658088	0.1	58

One drill hole, QTA-144, was reviewed in its entirety to compare logging descriptions and listed lithologies with actual core. The logging descriptions, lithologies and to-from depths were consistent with observations from the core. The sample intervals were marked on the sample boxes. During logging, the geologist photographs the core to maintain a complete record in the event core is destroyed. The core photos are digitally stored in the Nieves geology office by hole number and depth.

12.2 QUALITY CONTROL

12.2.1 External blank and standard

The results of the external blank and standard for Phase VII and VIII are summarized in Table 12-5. The control charts for standard and blank for Ag analyzed with both methods are shown on Figure 12-8 to Figure 12-15. The control charts for Au are in Appendix 3 of the report.

Table 12-5: Failure Rates of External Blank and Standard Analysis in Phase VII and VIII

Standard name	Element	Analytical method	Phase VII		Phase VIII	
			Number of analysis	Failure rates	Number of analysis	Failure rates
Blank	Ag	ME-ICP41	83	8%	132	7%
Blank	Ag	ME-GRA21	83	0%	132	1%
Blank	Au	ME-GRA21	83	1%	132	1%
KM 2653	Ag	ME-ICP41	45	31%	129	29%
KM 2653	Ag	ME-GRA21	45	20%	129	20%
KM 2653	Au	ME-GRA21	45	89%	129	88%

Silver assays analyzed with the ME-ICP41 method are biased high (Figure 12-8 and Figure 12-12) and Ag assays analyzed with the ME-GRA21 method are biased low (Figure 12-9 and Figure 12-13). These biases show no correlation with time suggesting a systematic, not a temporary problem.

The failure rates of customized standard KM 2653 is high for Ag analyzed with both methods and very high for Au in both phases of drilling.

The main reason for the high failure rate of Ag with both methods is the difference in the analytical methods between that used to certify the standard and that used to analyze the drill core. The standard is certified for 4 acid digestion and instrument finish and Ag in the Nieves project was analyzed with aqua regia digestion and instrument finish and fire assay and gravimetric finish.

There are several reasons for the high failure rate of the standard for Au. One of them is the difference in methodology. The standard was analyzed for certification with fire assay and instrument finish and Au in the Nieves project was analyzed with fire assay and gravimetric finish.

The other reason for the high failure rate of the standard for Au is that the standard is classified as a provisional (not certified) standard for Au with an RSD (relative standard deviation) between 5 and 15%, therefore it should be used with caution when assessing the accuracy of data (Smee, 2010).

Also, the detection limit for Au is 0.05 ppm and the Au grade of standard is 0.062 ppm, which is very close to the detection limit, within the acceptable interval for a blank sample (3 times the detection limit).

The failure rates of the blank are acceptable for both Ag and Au in both phases of drilling.

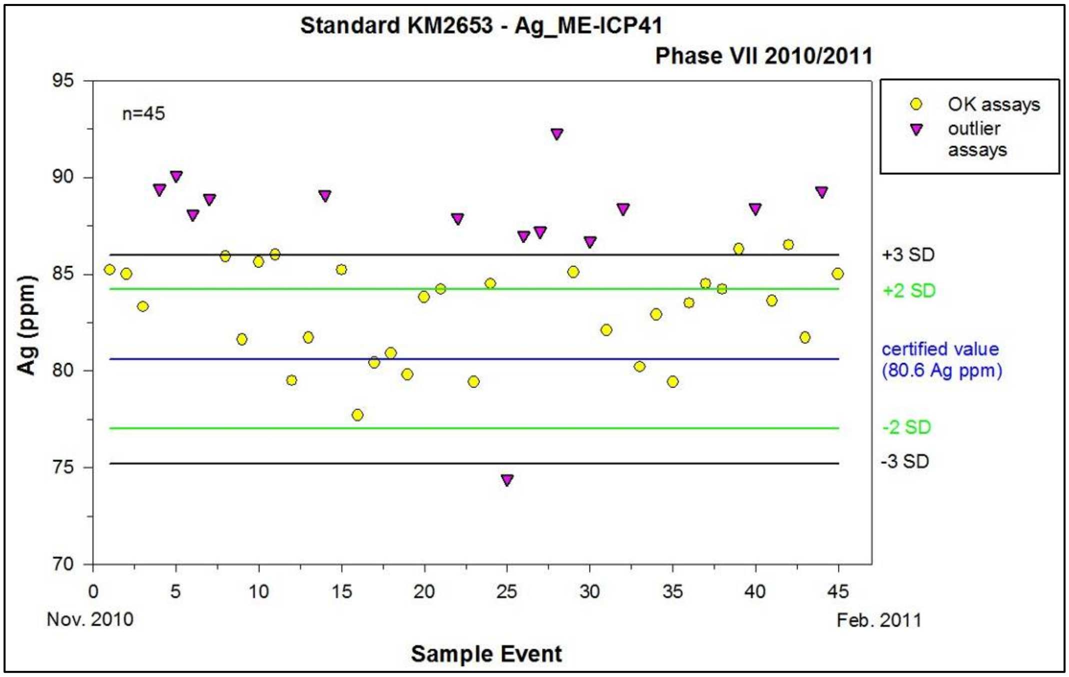


Figure 12-8: Control chart of standard KM2653 for Ag analyzed with ME-ICP41 method in Phase VII

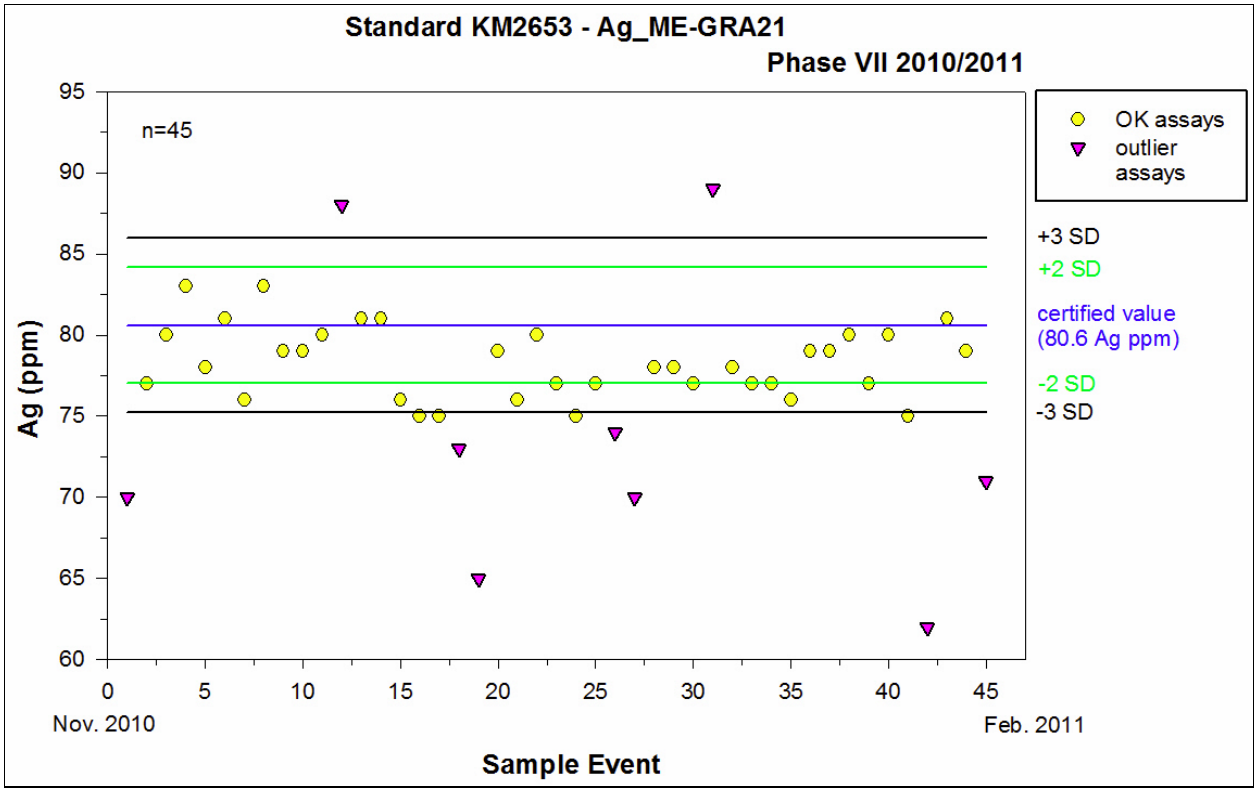


Figure 12-9: Control chart of standard KM2653 for Ag analyzed with ME-GRA21 method in Phase VII

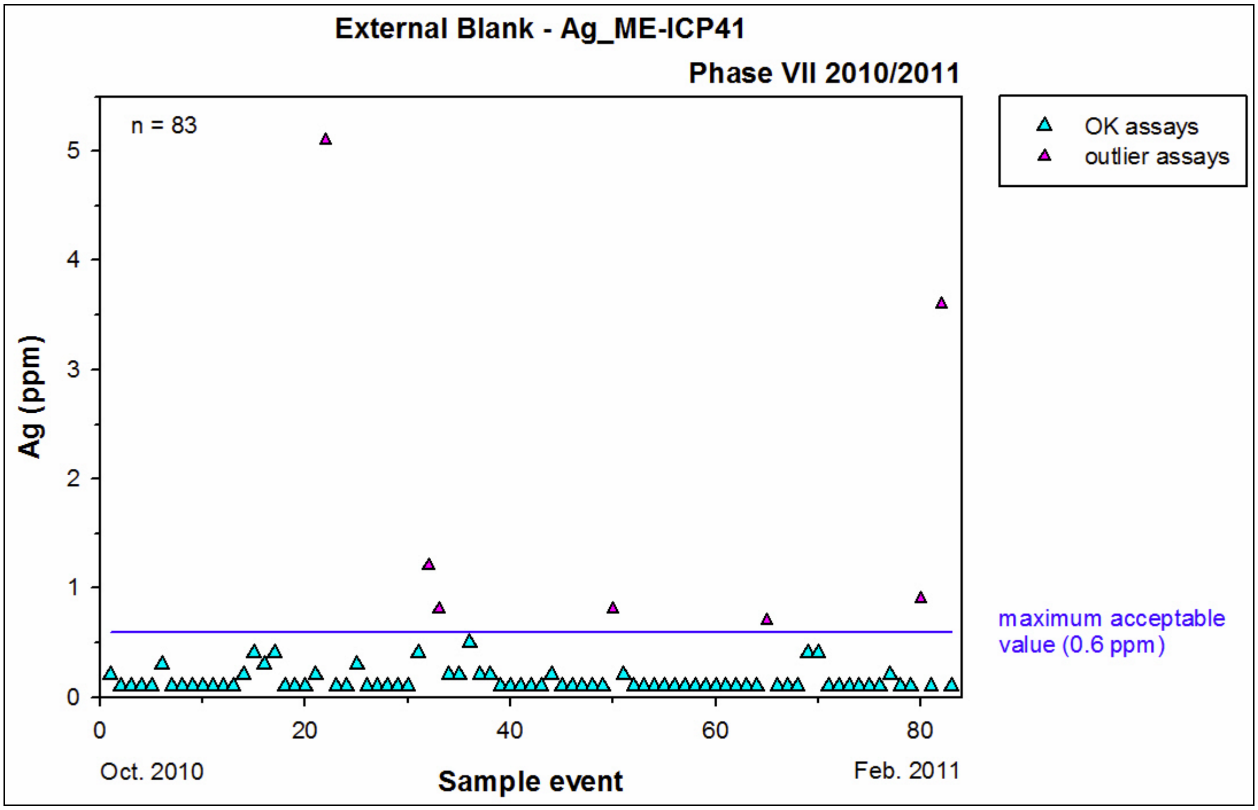


Figure 12-10: Analytical results of blank samples for Ag with ME-ICP41 method in Phase VII

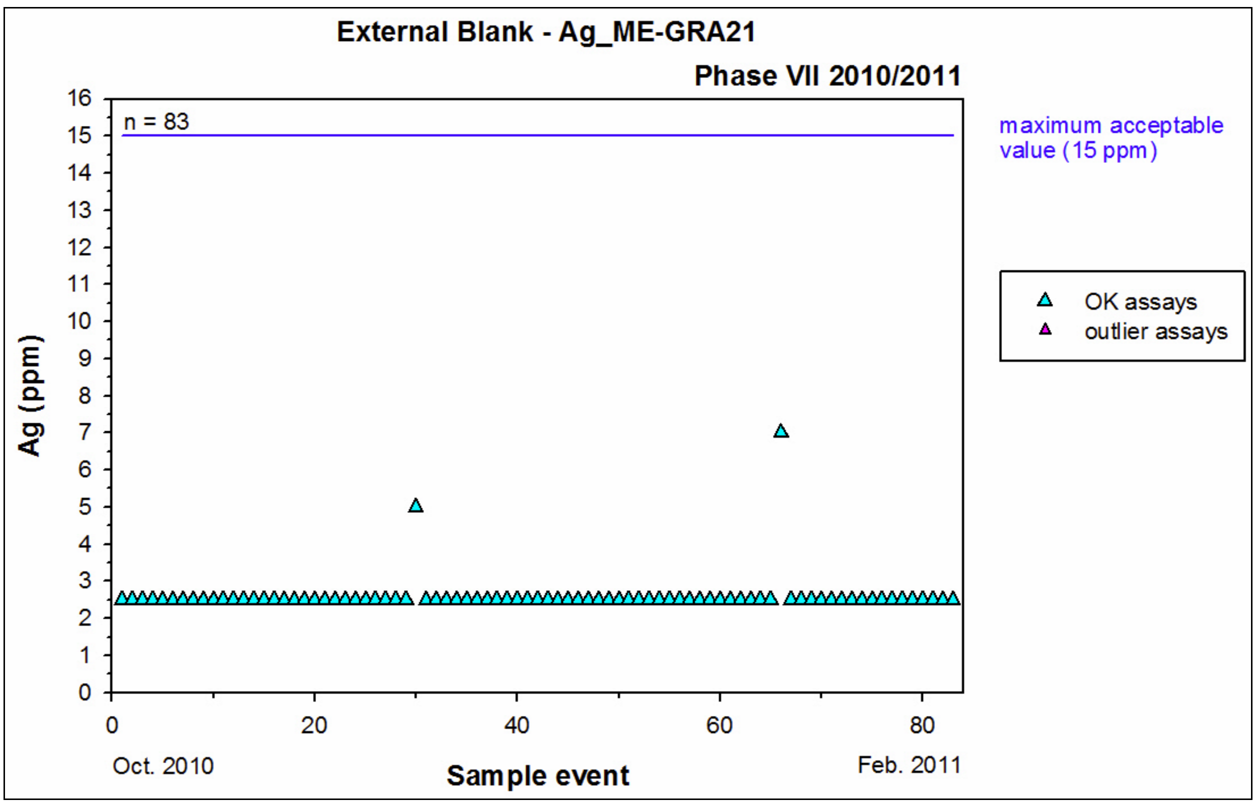


Figure 12-11: Analytical results of blank samples for Ag with ME-GRA21 method in Phase VII

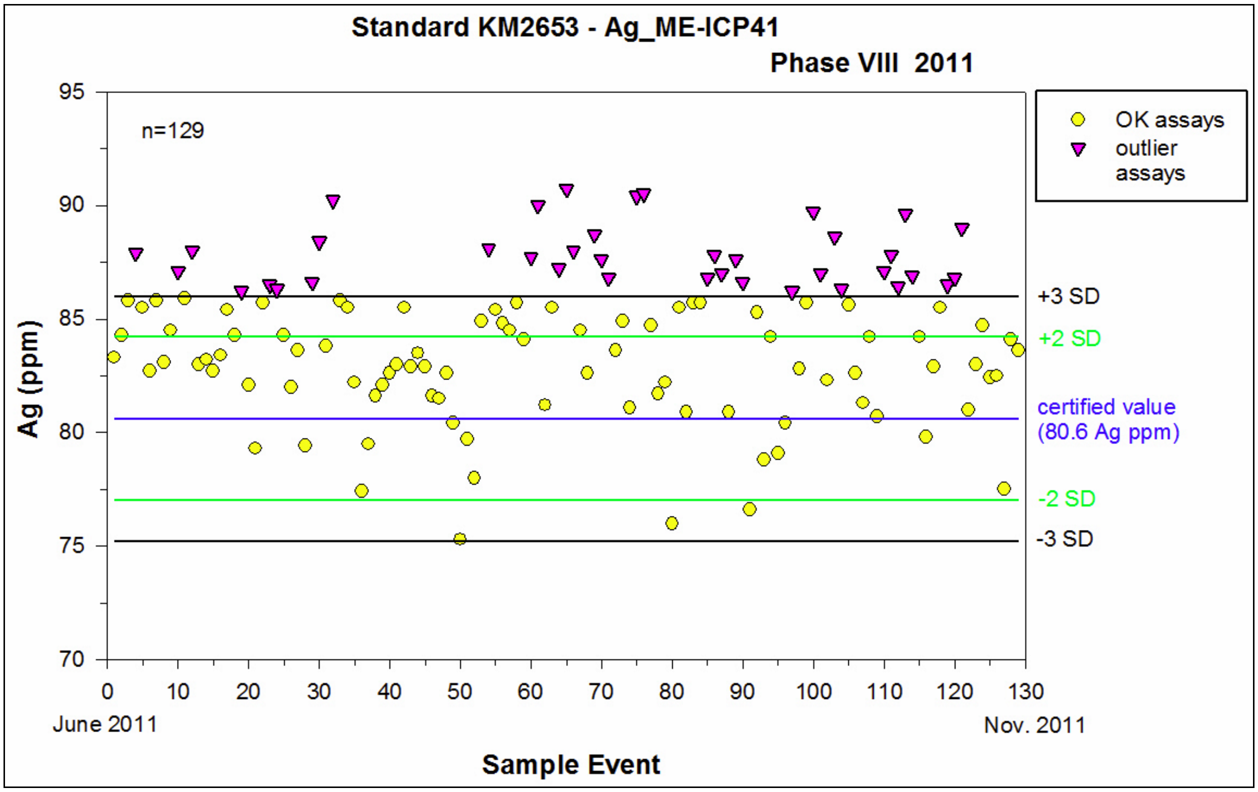


Figure 12-12: Control chart of standard KM2653 for Ag analyzed with ME-ICP41 method in Phase VIII

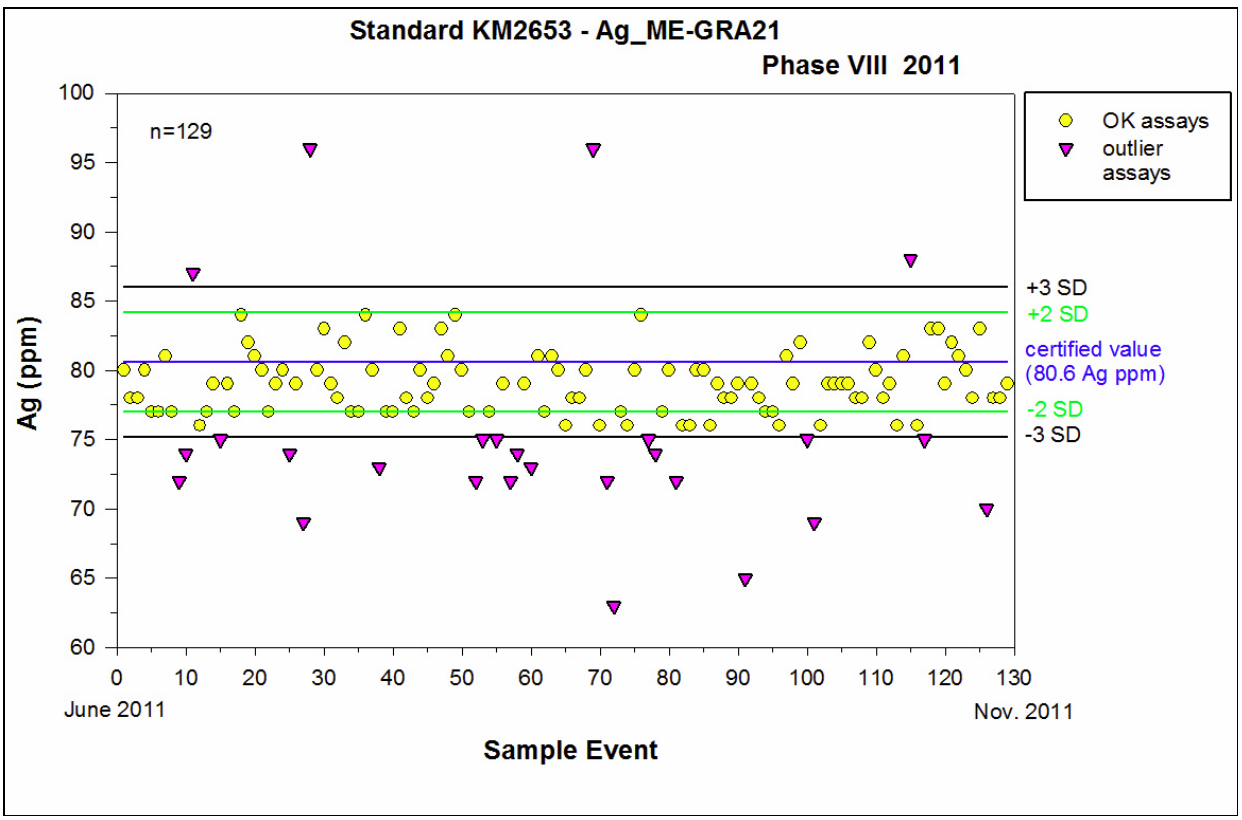


Figure 12-13: Control chart of standard KM2653 for Ag analyzed with ME-GRA21 method in Phase VIII

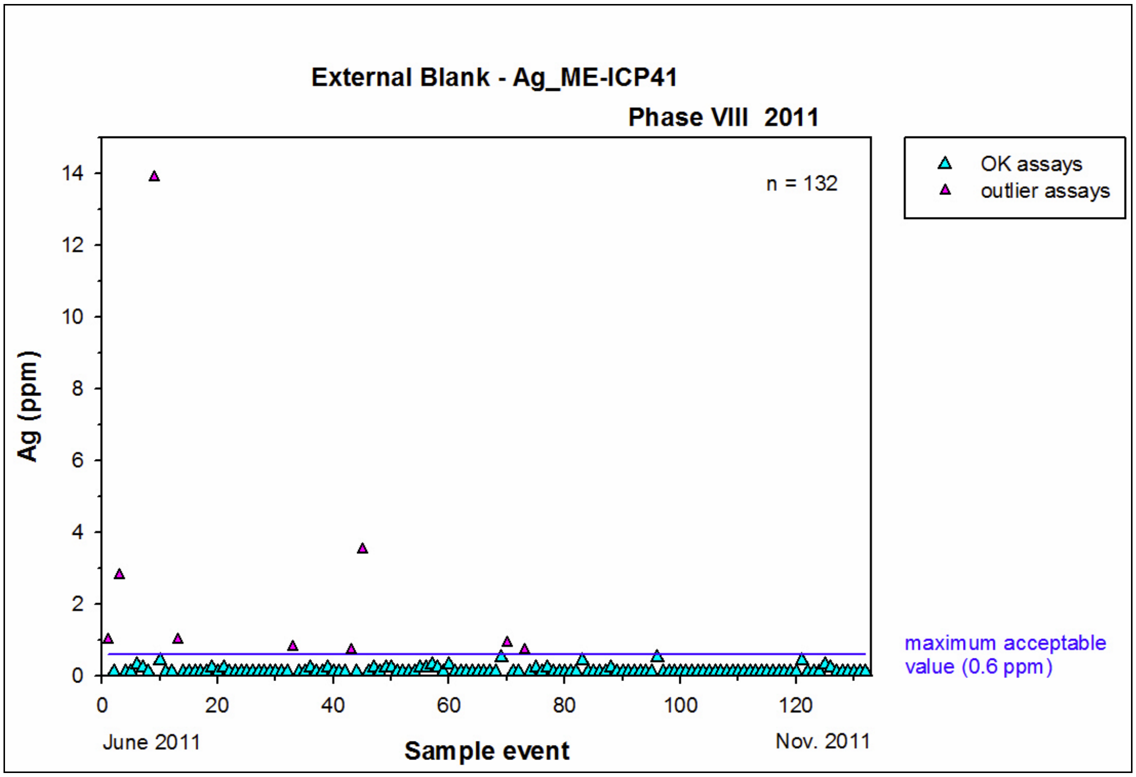


Figure 12-14: Analytical results of blank samples for Ag with ME-ICP41 method in Phase VIII

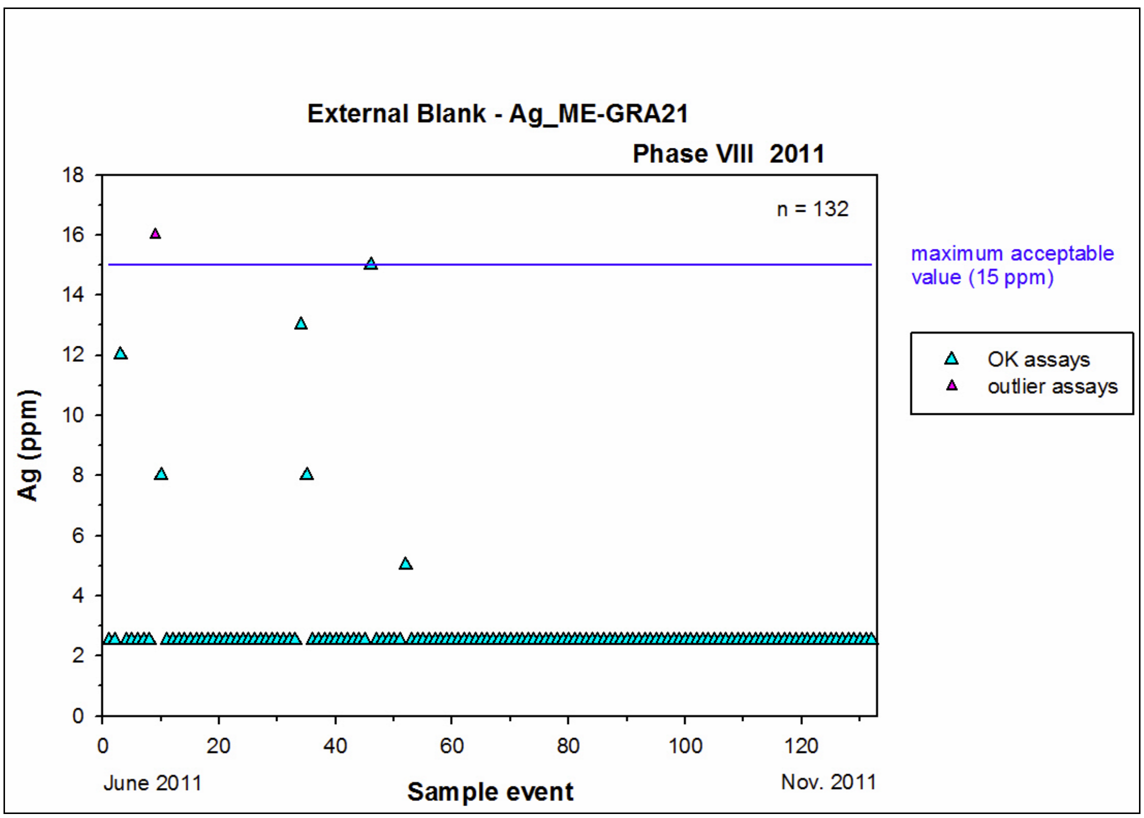


Figure 12-15: Analytical results of blank samples for Ag with ME-GRA21 method in Phase VIII

12.2.2 Laboratory standards

The performance of the laboratory standards were also checked due to the high failure rates of external standards. The failure rates of the laboratory standards are summarized in Figure 12-6.

Table 12-6: Failure Rates of Laboratory Standards for Phase VII and VIII

Standard name	Element	Analytical method	Phase VII			Phase VIII		
			Number of analysis	Failure rate	Bias	Number of analysis	Failure rate	Bias
Blank	Au	ME-GRA21	936	0%		1245	0%	
Blank	Ag	ME-GRA21	936	0%		1245	0%	
Blank	Ag	ME-ICP41	936	0%		235	0%	
GBM908-5	Ag	ME-ICP41	55	0%		55	1%	
GBM908-10	Ag	ME-ICP41	0			113	0%	
OREAS-15G	Au	ME-GRA21	22	9%	High	3	0%	
OREAS-45C	Ag	ME-ICP41	28	71%	Low	7	57%	
OREAS-45P	Ag	ME-ICP41	45	82%		0		
OREAS-67A	Au	ME-GRA21	132	0%		207	0%	
OREAS-67A	Ag	ME-GRA21	132	10%	Low	207	8%	low
OXQ70	Au	ME-GRA21	129	0%		210	0%	
OXQ70	Ag	ME-GRA21	129	0%		210	0%	
SP27	Au	ME-GRA21	104	0%		155	2%	
SP27	Ag	ME-GRA21	104	2%		155	4%	
SP49	Au	ME-GRA21	42	0%		23	9%	
SP49	Ag	ME-GRA21	42	7%	High	23	13%	
SQ28	Au	ME-GRA21	172	2%	High	17	0%	
SQ28	Ag	ME-GRA21	172	16%		17	47%	
SQ44	Au	ME-GRA21	18	0%		30	7%	
SQ44	Ag	ME-GRA21	18	0%		30	0%	

Internal standards OREAS-45C and OREAS-45P have very high failure rates probably due to the matrix of these standards, which is ferruginous soil which does not match the matrix of the drill core samples (Table 11-5).

The slightly high failure rate of standard OREAS-67A for Ag is probably caused by a difference in analytical methods. OREAS-67A is certified for 4 acid digestion and AAS, OES or MS finish (Table 11-5) and the samples were analyzed with fire assay and gravimetric finish.

The reason of the high failure rate of standard SQ28 for Ag (16% and 47.06%) is probably also due to different analytical methods. Standard SQ28 is certified for instrument finish (AAS or ICP-ES), but the samples were analyzed with gravimetric finish (Table 11-5).

Overall, the results of internal standards are acceptable. There is at least one standard for every analytical method used for Ag and Au that performed adequately.

12.2.3 Duplicates

The failure rates of pulp duplicates in Phase VII are summarized in Table 12-7. The failure rates of pulp and core duplicates in Phase VIII are summarized in Table 12-8. Duplicate plots for silver are shown in Figure 12-16 to Figure 12-21.

The failure rates of all duplicates are within acceptable limits. The failure rates of core duplicates are slightly high, which may be indicative of the style of mineralization characterized by narrow veinlets.

Table 12-7: Failure Rates of Duplicates in Phase VII

Element	Duplicate type	Analytical method	Number of analysis	Failure rate
Au	pulp	ME-GRA21	125	1%
Ag	pulp	ME-GRA21	125	0%
Ag	pulp	ME-ICP41	74	0%

Table 12-8: Failure Rates of Duplicates in Phase VIII

Element	Duplicate type	Analytical method	Number of analysis	Failure rate
Au	pulp	ME-GRA21	186	0.54%
Ag	pulp	ME-GRA21	186	0.00%
Ag	pulp	ME-ICP41	131	0.00%
Au	core	ME-GRA21	177	10.17%
Ag	core	ME-GRA21	177	5.65%
Ag	core	ME-ICP41	159	9.43%

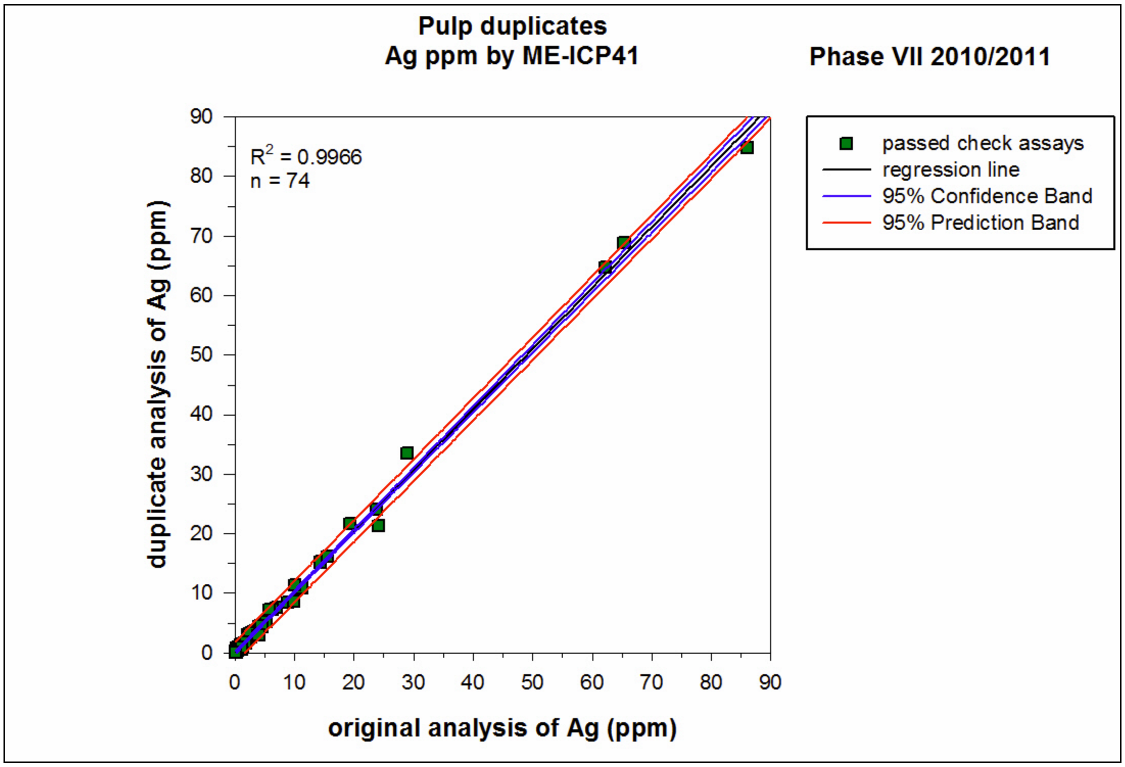


Figure 12-16: Pulp duplicate versus original plot for Ag analyzed with ME-ICP41 method

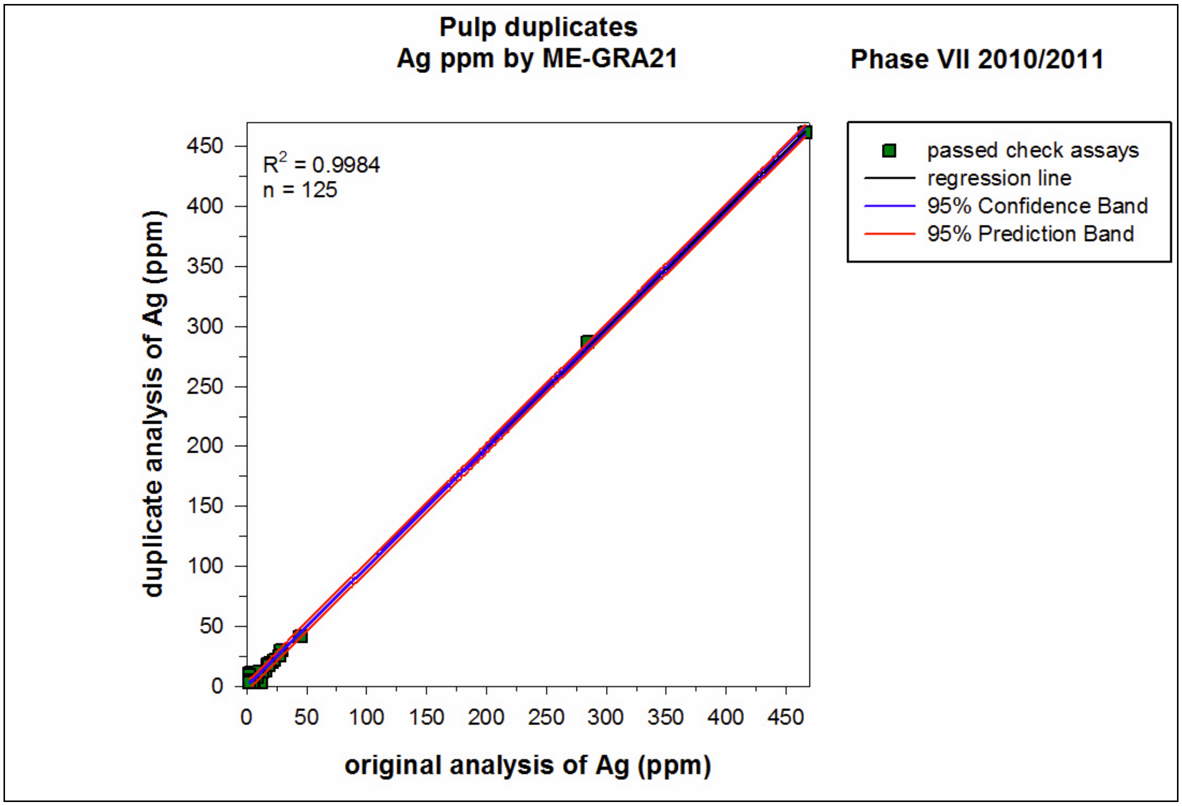


Figure 12-17: Pulp duplicate versus original plot for Ag analyzed with ME-GRA21 method

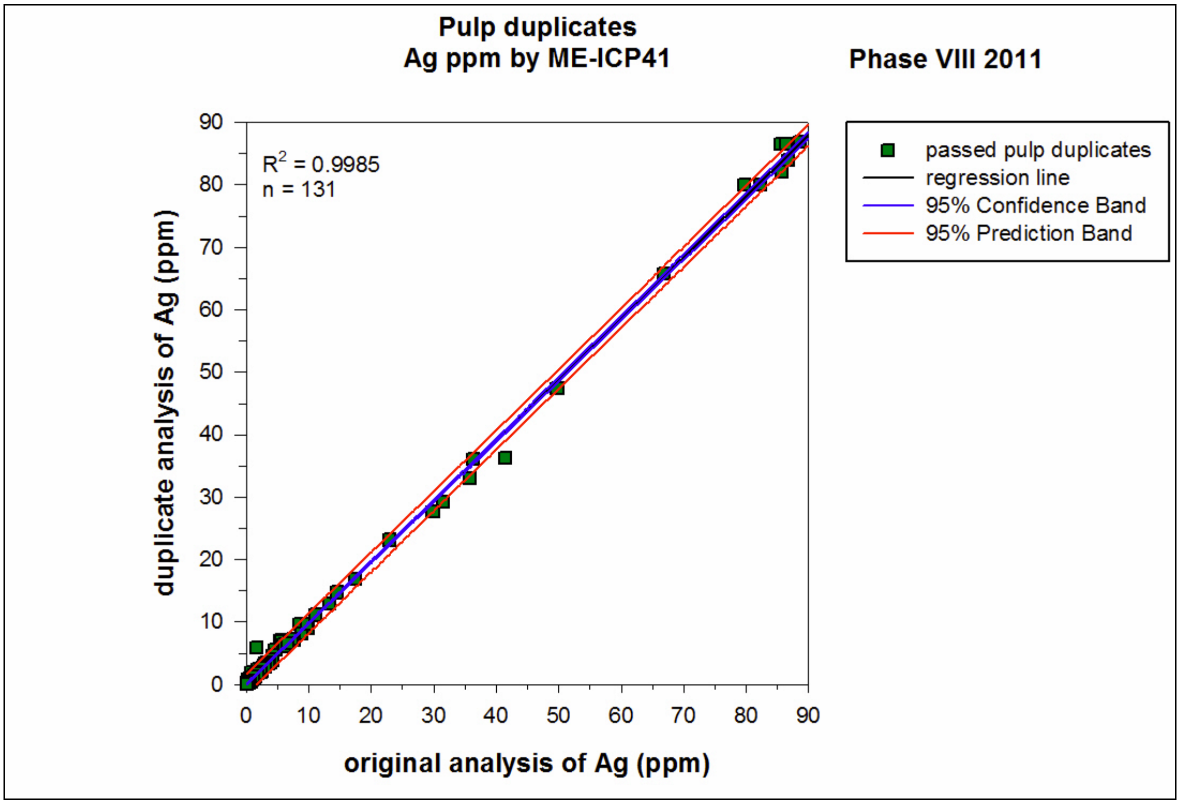


Figure 12-18: Pulp duplicate versus original plot for Ag analyzed with ME-ICP41 method

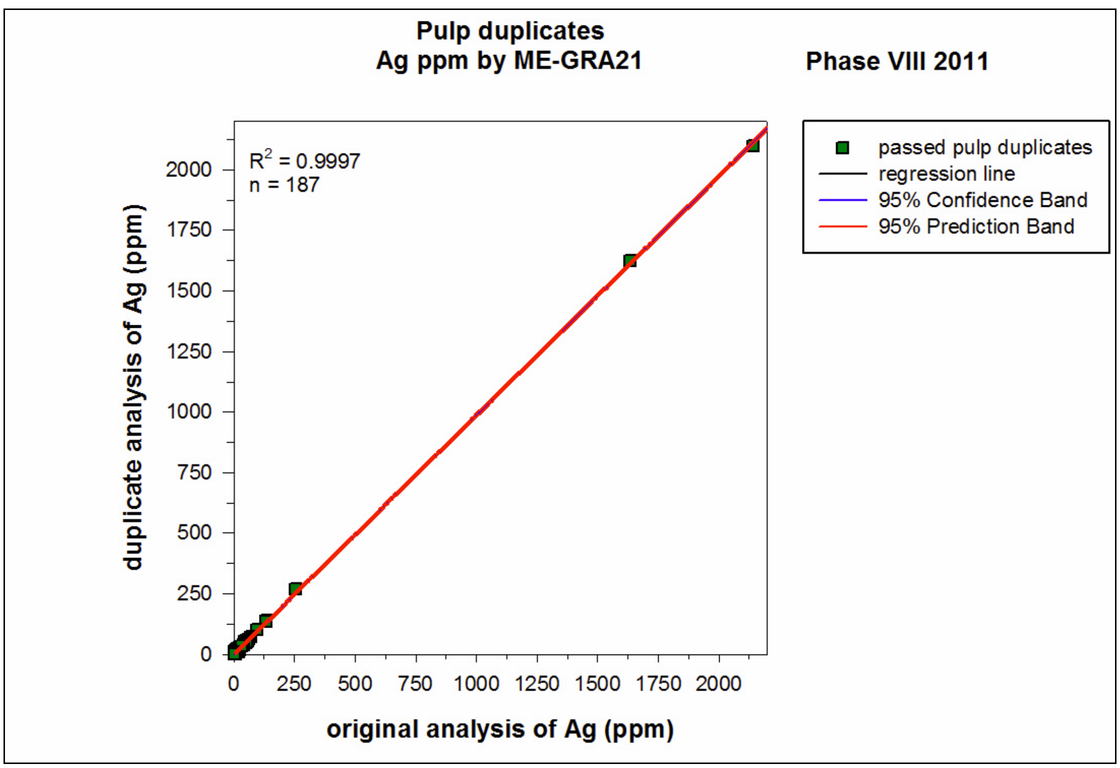


Figure 12-19: Pulp duplicate versus original plot for Ag analyzed with ME-GRA21 method

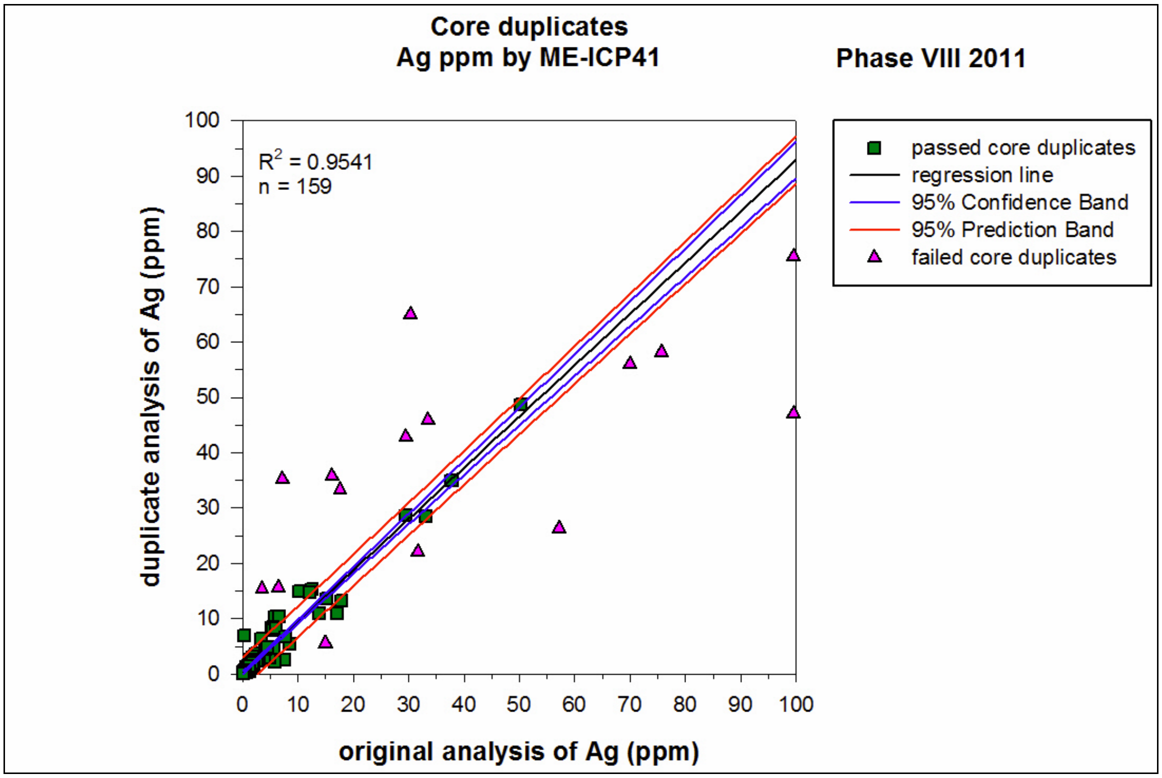


Figure 12-20: Core duplicate versus original plot for Ag analyzed with ME-ICP41 method

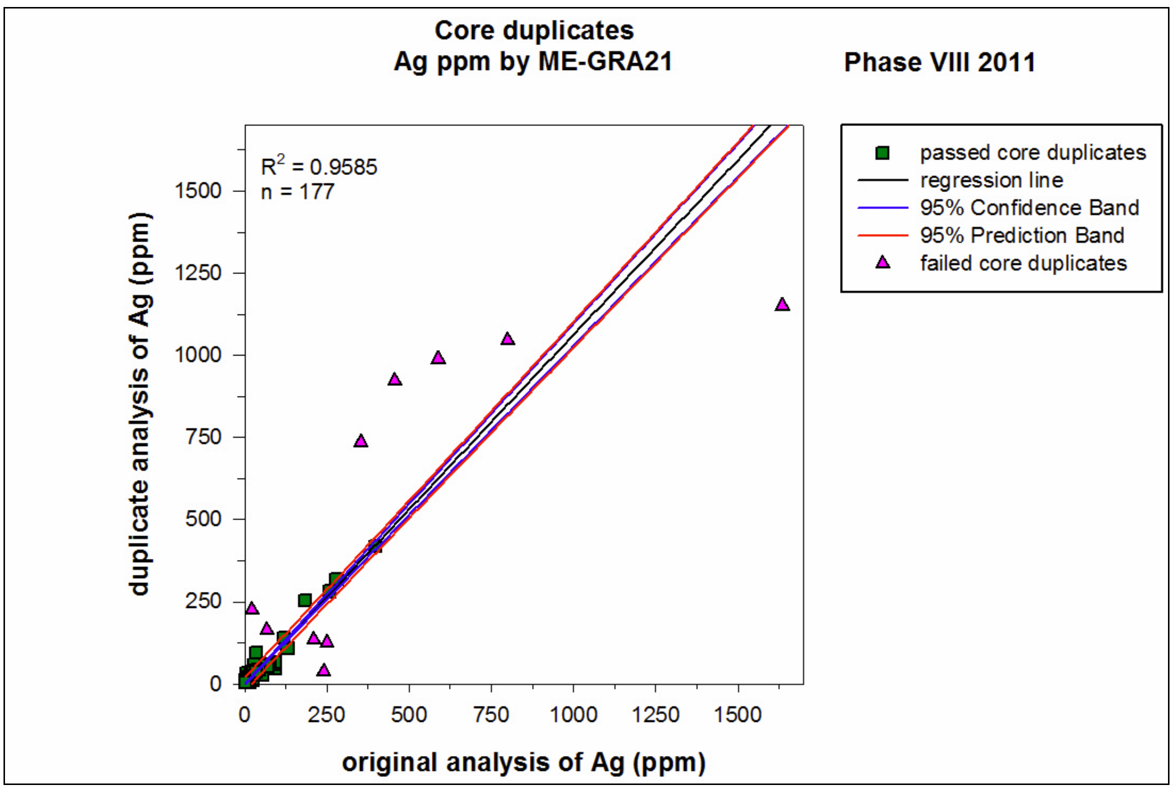


Figure 12-21: Core duplicate versus original plot for Ag analyzed with ME-GRA21 method

12.2.4 Phase VII check assays (Skyline)

The failure rates of the external blank and standard for Ag and Au are summarized in Table 12-9. The failure rates of blanks are acceptable for Au and Ag analyzed with the FA-03 method and too high for Ag analyzed with the TE-2 method (Table 11-6).

The failure rates of the external standard are too high for Au and Ag analyzed with both methods, similar to the original assays by ALS. The reasons for the high failure rates are the same as the reasons for high failure rates in the original analysis (see Section 12.2.1).

Table 12-9: Check Assay Failure Rates of External Blanks and Standards in Phase VII Drill Program

Element	Analytical method	Standard	Number of analysis	Failure rate
Au	FA-03	Blank	4	0%
Ag	FA-03	Blank	4	0%
Ag	TE-2	Blank	4	25%
Au	FA-03	KM 2653	2	100%
Ag	FA-03	KM 2653	2 (minor failures)	100%
Ag	TE-2	KM 2653	3	33%

The failure rates of laboratory standards are summarized in Table 12-10. The failure rates for Ag are within the acceptable limits for both methods (Table 11-7). The failure rate of Au is too high.

Table 12-10: Check Assay Failure Rates of Laboratory Standards in Phase VII

Standard name	Element	Analytical method	Number of analysis	Failure rate
CU123	Ag	FA-03	4	0%
PB138	Ag	FA-03	5	0%
CDN-GS-10C	Au	FA-03	2	0%
CDN-GS-10C	Au	FA-03	4	25%
CDN-GS-10C	Au	FA-03	3	0%

The results of the check assays were compared to the original assays from ALS (Table 12-11). The Ag assays compare reasonably to the original assays with an R2 value of 0.9518 for Ag analyzed with ICP and 0.9842 for Ag analyzed with the gravimetric method (Figure 12-22 and Figure 12-23).

The Au check assays compare a bit poorly to the original Au assays with most of the failures in the lower grades, which is probably also due to the poor choice of analytical method.

Table 12-11: Failure Rates of Check Assays Versus Original Assays in Phase VII

Element	Original analytical method	Reassay analytical method	Number of analysis	Failure rate
Au	ME-GRA21	FA-03	145	23.45%
Ag	ME-GRA21	FA-03	145	1.38%
Ag	ME-ICP41	TE-2	108	10.19%

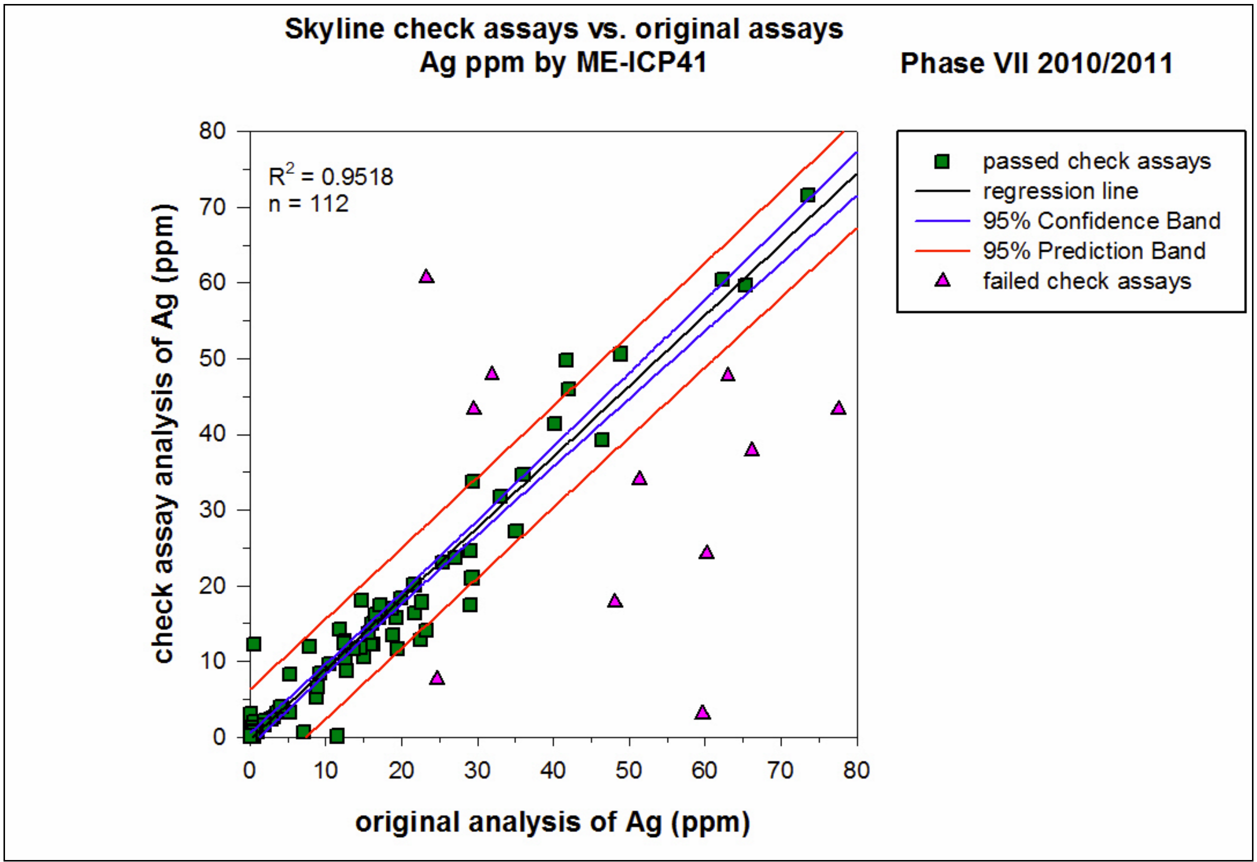


Figure 12-22: Plot of check assays versus original assays for Ag analyzed with ICP

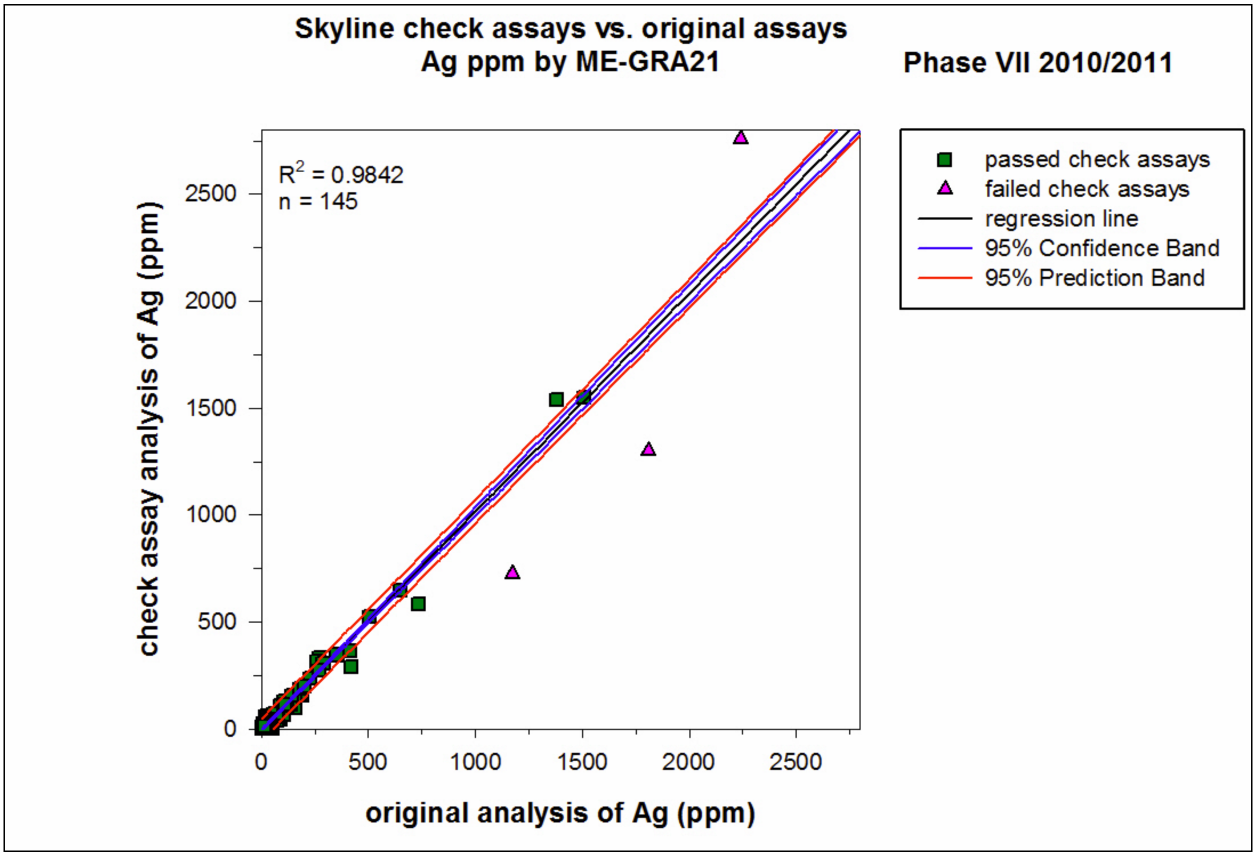


Figure 12-23: Plot of check assays versus original assays for Ag analyzed with gravimetric method

12.2.5 Phase VIII check assays (AGAT)

The failure rates of blanks and standards for both silver and gold are acceptable (Table 12-12). The check assays also compare reasonably to the original assays (Table 12-13, Figure 12-24 and Figure 12-25) for silver analyzed with both methods and for gold.

Table 12-12: Check Assay Failure Rates of External Standards in Phase VIII

Standard name	Element	Analytical method	Number of analysis	Failure rate
Blank	Ag	ICP-OES finish	7	0.00%
Blank	Ag	gravimetric finish	7	0.00%
Blank	Au	gravimetric finish	7	0.00%
OREAS 62c	Ag	ICP-OES finish	4	0.00%
OxD87	Au	gravimetric finish	3	0.00%

Table 12-13: Failure Rates of Check Assays Versus Original Assays in Phase VIII

Element	Original analytical method	Reassay analytical method	Number of analysis	Failure rate
Au	ME-GRA21	gravimetric finish	127	9.45%
Ag	ME-GRA21	gravimetric finish	127	0.79%
Ag	ME-ICP41	ICP-OES finish	124	10.19%

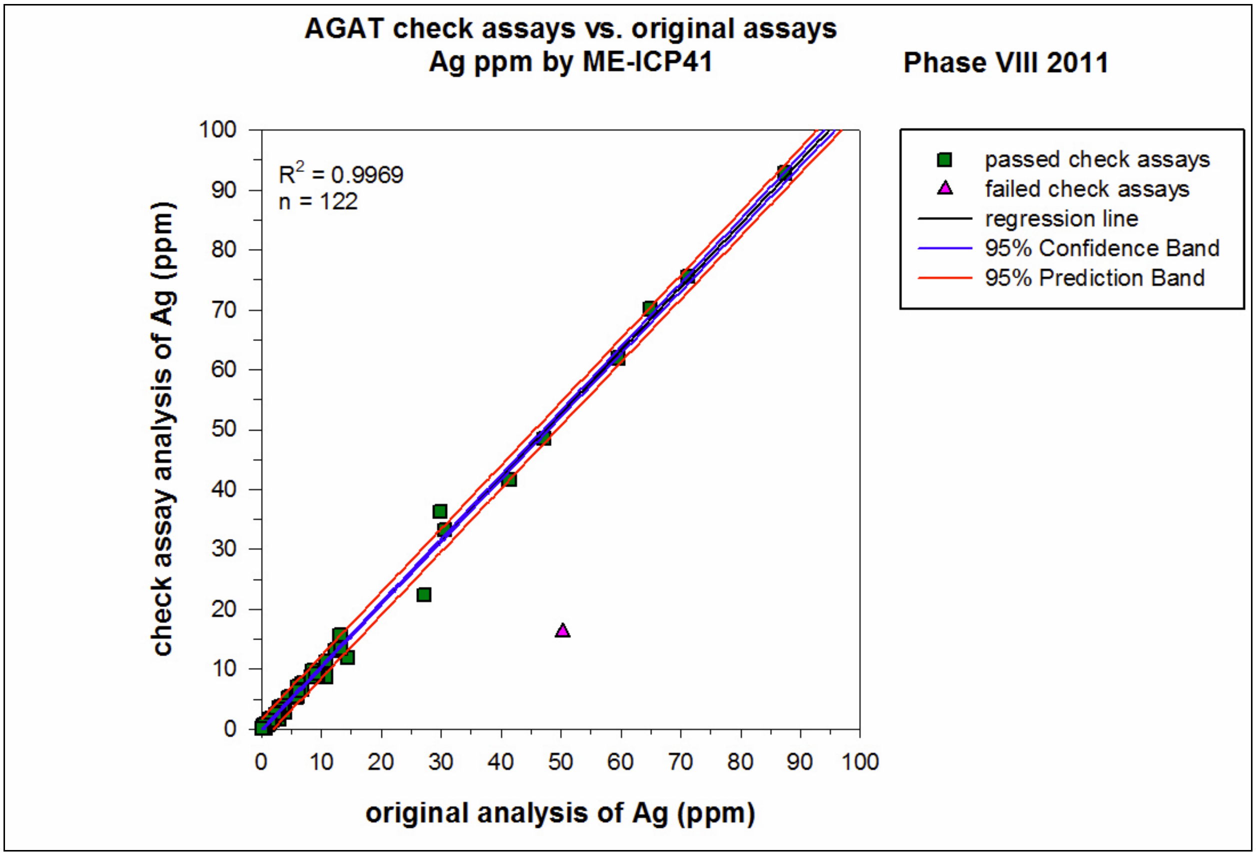


Figure 12-24: Plot of check assays versus original assays for Ag analyzed with ICP

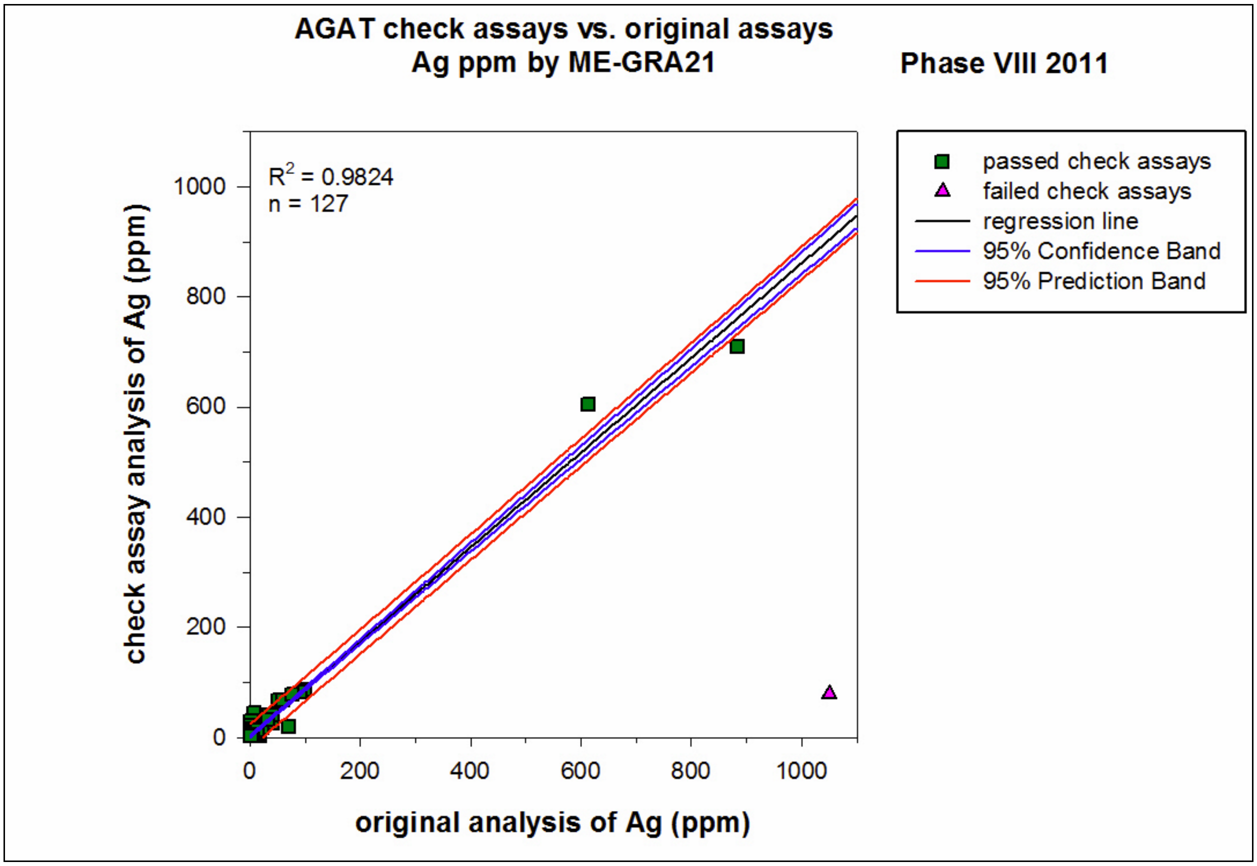


Figure 12-25: Plot of check assays versus original assays for Ag analyzed with gravimetric method

12.2.6 QA/QC of phases IV, V, and VI and gold reassay results

Due to the high failure rates in phases VII and VIII, the QC procedures and results of phases IV to VI were also reviewed. In the previous phases standard CDN-SE-1 was used for Au and Ag (Table 12-14). The standard performed very well for silver (~6% failure rate), but the failure rate for gold was very high (43 to 47%) (Table 12-15). For this reason, approximately 5% of the samples from phases IV to VII were reanalyzed for gold at AGAT Laboratories with fire assay and gravimetric method and some samples were reanalyzed with fire assay and ICP-OES finish as well. Since the comparison between the two methods was reasonable (R^2 value 0.9859 and 5% failure rate) and the amount of gold is very small at Nieves, the gold assays were included in the resource calculation.

Table 12-14: Characteristics of Standard CDN-SE-1

Standard Name	Prepared by	Element	Value (ppm)	Standard deviation	Analytical method
CDN-SE-1	CDN Resource Laboratories Ltd.	Ag	712	28.5	fire assay or 4 acid digestion and ICP finish
CDN-SE-1	CDN Resource Laboratories Ltd.	Au	0.48	0.017	Fire assay and AA or ICP finish

Table 12-15: QC Results for Au and Ag in Phases IV, V and VI

Standard Name	Element	Analytical Method	Phase IV		Phase V		Phase VI	
			Number of Analysis	Failure Rate	Number of Analysis	Failure Rate	Number of Analysis	Failure Rate
Blank	Ag	ME-ICP41	0		0		82	17%
Blank	Ag	ME-GRA21	0		0		82	1%
Blank	Au	ME-GRA21	0		0		82	1%
CDN-SE-1	Ag	ME-GRA21	47	6%	107	6%	42	7%
CDN-SE-1	Au	ME-GRA21	47	43%	107	47%	42	43%

12.2.7 Conclusions and Recommendations

The QP's opinion is that the quality of the data is adequate at this stage of the project and can be used in 3D modelling for the purpose of resource estimation.

The quality control review indicates that there were no major problems in the core shack such as sample mix ups or contamination. The slightly high failure rate of core duplicates in Phase VIII is probably an indication of the nature of the ore that is characterized by narrow veinlets.

The failure rates of external standard (KM2653) are high for silver in phases VII and VIII, but this is due to the different analytical method and not the poor quality of the data, which is suggested by the performance of the laboratory standards. Also, silver analyzed with the ME-ICP41 method is slightly biased high and silver analyzed with the ME-GRA21 method is slightly biased low, but these biases are not always consistent with the laboratory standard, suggesting that the problem is with the external standard. In the previous phases silver was analyzed with the same methods and a commercially available certified standard (CDN-SE-1) was used and performed well for silver, which also suggests that the reason for the high failure rates for silver is the poor choice of external standard.

The failure rates for gold are very high in phases VII and VII and high in the previous phases. The reason for the high failure rates is the poor choice of standards (different analytical methods) and poor choice of analytical method. The average gold value in phases at Quaterra is 0.058 g/t including all data and 0.22 g/t including only data above the detection limit, therefore gravimetric method should not be used to analyze gold.

Despite the high failure rates of gold standards, the QP's conclusion is that the quality of the Au assay data is adequate to include Au in the resource calculation at this stage of the project, especially because the grade of Au is fairly low and it is not the main commodity at Quaterra. Also, Au analyzed with ICP- OES and gravimetric method is comparable.

It is recommended that in the future drill programs a different external standard is used to check the quality of silver assays, which has similar certified value as the silver grades at Nieves, is certified for the same analytical method and has similar matrix.

It is also recommended that the analytical method for gold is changed to fire assay and instrument finish (AAS or ICP) and a certified standard with a low grade value, same analytical method and similar matrix is inserted.

The frequency of the quality control samples should also be increased to include one standard, one blank and one core duplicate with every twenty samples.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

The Nieves Project will produce a silver flotation concentrate. The concentrate will be shipped offsite for further processing.

This report section describes the samples used and the test work performed to evaluate the metallurgical aspects of the project. The interpretation of the test work is also discussed. Estimated consumption of reagents and other consumables is presented.

The metallurgical test work performed to date is limited, but M3 considers it sufficient to support a preliminary economic assessment level study.

In 2010, the project group performed certain mineralogical examinations and metallurgical testing to provide data for evaluating the project, and to establish preliminary criteria for the design of a processing facility.

A master composite sample was prepared for preliminary testwork for the Nieves project.

Preliminary testwork included: ore characterization using standard analytical techniques and QEMSCAN bulk mineral analysis; ore hardness; and open circuit kinetic rougher and batch cleaner tests. Preliminary tests to determine process alternatives included: gravity concentration; and cyanidation.

The test results are reported in the following documents:

1. G&T Metallurgical Services Ltd., Kamloops, B.C., Canada, June 30 2010, *Metallurgical Assessment of the Nieves Project, KM2653.*

2. G&T Metallurgical Services Ltd., Kamloops, B.C., Canada, August 30, 2010, *Supplemental Metallurgical Testing of the Nieves Project, Zacatecas, Mexico, KM2740.*

13.1 MINERALOGY

The chemical and mineral contents of the master composite sample prepared for metallurgical testing, taken from Reference 1 above, are shown in the following table. Standard analytical techniques and QEMSCAN Bulk Analysis were used.

Table 13-1: Chemical and Mineral Composition – Master Composite 1

	Symbol	Units	Master Composite 1
Element			
Silver	Ag	g/t	79
Copper	Cu	%	0.08
Lead	Pb	%	0.14
Zinc	Zn	%	0.1
Iron	Fe	%	4.12
Sulfur	S	%	1.81
Mineral			
Silver Sulfide	AgS	%	0.07

	Symbol	Units	Master Composite 1
Chalcopyrite	Cp	%	0.02
Sphalerite	Sp	%	0.2
Galena	Ga	%	0.12
Goethite	Goe	%	2.49
Pyrite	Py	%	3.04
Quartz	Qz	%	30.8
Micas	Mi	%	20
Feldspars	Fs	%	18.3
Others	-	%	25

13.2 METALLURGICAL SAMPLES

Coarse crush 'reject' material from selected core intervals in 12 holes was composited. One Master Composite was prepared for mineralogy and metallurgical testing, as well as a single Bond ball mill work index test.

Table 13-2: Composite Sample Details

Coarse crush "reject" core material							
Composite sample details (silver as determined by ALS during the exploration program)							
Hole	Sample	From (m)	To (m)	Ag (g/t)	Weight (kg)		Ag, g
QTA96	568216	74	76	64	6.1		390.4
QTA97	568304	77	79	150	7.4		1110.0
QTA98	568364	54	56	34.5	6.9		238.1
QTA99	568438	68	70	112	7.6		851.2
QTA100	568534	104	106	84.5	6.8		574.6
QTA101	568633	122	124	42.1	7.3		307.3
QTA102	568700	114	116	101	6.2		626.2
QTA102	568711	124	126	70.4	7.3		513.9
QTA103	568775	134	136	86.8	7.6		659.7
QTA104	568871	130	132	123	7.2		885.6
QTA105	568985	170	172	30.1	7		210.7
QTA106	569055	120	122	77	7.4		569.8
QTA107	569122	146	148	146	7.5		1095.0
QTA108	569198	84	86	31.2	6.5		202.8
				83.4	98.8		8235.3
Note : Independent Technical Report 17Sep2010 pg 65							

Fourteen crushed ore samples were received at G&T weighing approximately 99 kilograms. The samples were combined to form Master Composite 1. The samples were stage crushed to minus 6 mesh, homogenized and split into 2 kilogram charges. Representative samples were removed and assayed.

G&T Test KM2653 - June 3, 2010						
Assayed Head - Master Composite 1						
Cu (%)	Pb (%)	Zn (%)	Fe (%)	S (%)	Ag (g/t)	C (%)
0.08	0.14	0.1	4.12	1.81	79	2.52

13.3 COMMINUTION TESTING

A single Bond ball mill work index test was performed by G & T Resources in June, 2010 (Ref. 1) at 100% -106 µ (150 mesh) on Master Composite 1. The reported Wi was 10.8 kWh/tonne. This indicates a moderately soft ore.

13.4 FLOTATION

For the master composite, three open circuit kinetic rougher tests were performed to evaluate the primary grind size and the reagent type and dosage. Results are discussed below:

90 to 95% of the silver in the feed was recovered into the rougher concentrate with a mass pull ranging from 12 to 22%.

Two primary grind sizes were tested, P80 = 104µ and P80 = 67µ.

A finer grind did not improve the silver recovery in these preliminary tests. Additional tests to coarsen the grind are recommended.

Reagent screening tests were run using potassium amyl xanthate (PAX) with and without Aerophine 3418A.

Results were best with a combination of PAX and 3418A. Additional reagent optimization tests are recommended.

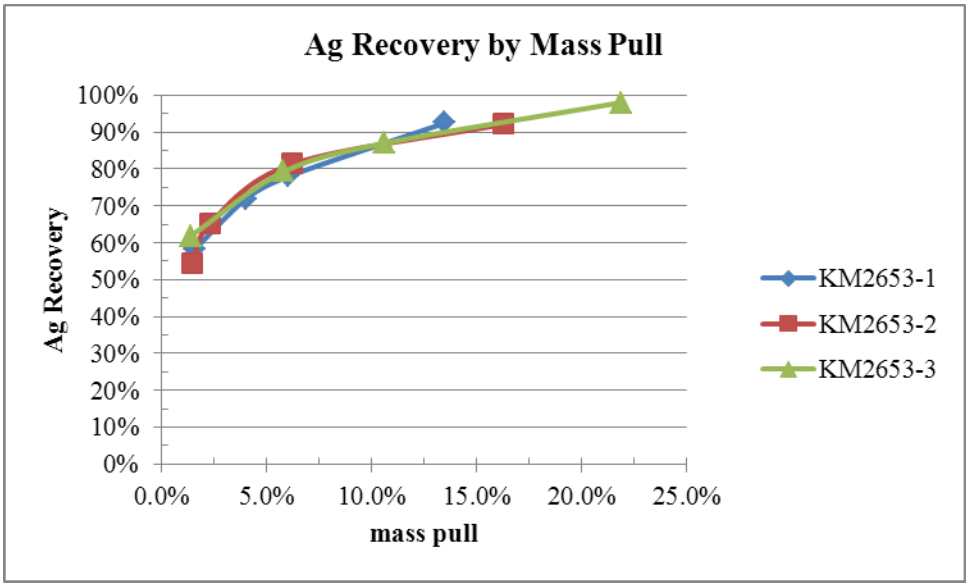


Figure 13-1: Rougher Flotation Silver Performance

Three cleaner tests were performed to evaluate the effect of: (1) rougher concentrate regrind size and (2) pH of the slurry. Parameters for the cleaner tests included:

- primary grind size P80 = 104µ
- regrind size – 28µ, 23µ, 19µ
- pulp pH – 8 and 10

Results are discussed below:

- Three regrind grind sizes were tested. Test 4 was not reground P80 = 28µ, test 5 was reground to a P80 = 23µ, and test 6 was reground to a P80 = 19µ.
    - A finer grind did not appear to improve the silver recovery in these preliminary tests.
- A single test was done with the pH of the cleaner circuit being adjusted to pH 10.
    - An increase in the final cleaner concentrate grade was obtained with no significant impact on recovery.

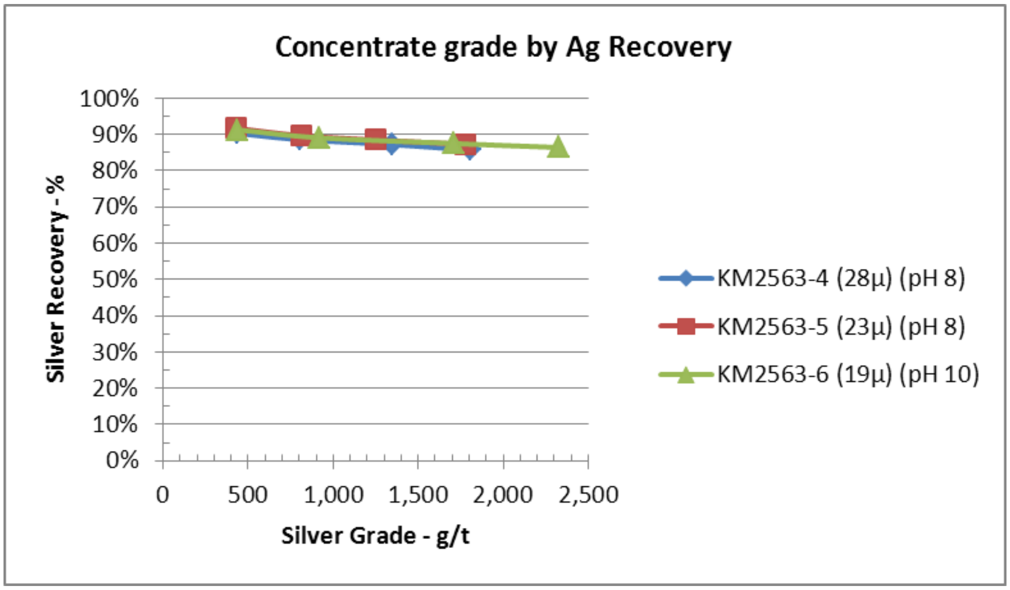


Figure 13-2: Cleaner Flotation Silver Performance

Three additional cleaner tests were performed to evaluate the effect of: (1) rougher concentrate regrind size and (2) pH of the slurry.

Parameters for the additional cleaner tests included:

- primary grind size P80 = 104µ
- regrind size – 24µ, 19µ, 11µ
- pulp pH – 10 and 11

Results are discussed below:

- A single open circuit cleaner test was conducted at a primary grind of P80 = 104µ with the rougher concentrate reground to a P80 = 24µ. The cleaner circuit pH was 10. Final concentrate grade was 2,420 g/t silver with a recovery of 86%. Concentrate was analyzed using a Trace Mineral Search (TMS) with QEMSCAN and the mean projected diameter of the silver sulfides was determined to be 19 µ.

- Based on the results of the TMS a second open circuit cleaner test was conducted with a regrind size P80 = 19µ. In addition, the slurry was conditioned to a pH of 11. Final concentrate grade was 7,200 g/t silver with a recovery of 67%.

- A third open circuit cleaner test was conducted with a regrind size P80 = 11µ. The slurry was conditioned to a pH of 10. Final concentrate grade was 6,050 g/t silver with a recovery of 81%.

Further testing is required to improve selectivity and increase concentrate grade.

For this study, based on the preliminary testwork, design parameters of 86% silver recovery with a final concentrate grade of 6,000 g/t will be used. The high recovery and high concentrate grade can likely be achieved through reagent and flotation optimization.

13.5 QUALITY OF CONCENTRATE

Concentrate from open circuit cleaner flotation tests was subjected to a minor element scan and a Trace Mineral Search (TMS) using QEMSCAN. The concentrate sample had elevated levels of antimony, arsenic, and fluorine. Pyrite was the dominant mineral (41%). Lead-antimony sulfide was the second most abundant mineral. Silver minerals accounted for 7.8% of the weight with freibergite being the majority. The concentrate analyzed had a silver grade of 6,050 gpt.

13.6 GRAVITY CONCENTRATION

A single gravity concentration test was performed on master composite 1. The sample was ground to a primary grind of P80 = 104µ. A Knelson concentrator was used as the first step of gravity. Concentrate from the Knelson concentrator was then hand panned for upgrading. Approximately 9% of the silver in the feed was recovered. No further gravity tests are planned.

13.7 CYANIDATION

A single whole ore leach bottle roll test was performed on master composite 1. The sample was ground to a primary grind of P80 = 104µ. The tests parameters were: 33% solids (w/w), pH 11, 2 g/L NaCN, and 48 hour leach time. After 48 hours of leaching, 48% of the silver in the feed was recovered.

A second bottle roll test was performed on the gravity tail from both the Knelson concentrator and the hand panning. After 48 hours of leaching, 49% of the silver from the tailings was recovered. No further cyanidation tests are planned.

14 MINERAL RESOURCE ESTIMATES

14.1 INTRODUCTION

Caracle Creek International Consulting (Caracle Creek) was retained by Quaterra Resources Inc. (Quaterra) to complete a mineral resource estimate update for their Nieves Property located in Zacatecas State, Mexico. The Nieves Property is a large, undeveloped, low grade Ag-Au deposit which has the potential to be mined by open pit.

The mineral resource reported herein is based on drilling information as of June 22nd, 2012. All of the drill hole data, including collars, assays, survey and lithology, were compiled into a database which links directly to the geological modelling and resource estimation software. The mineral resource estimation was evaluated using geostatistical block modeling methods constrained by a mineralised wireframe. GEMCOM's GEMS resource modeling software V.6.3 was used to generate the block model and perform the grade estimation. Grades for Ag & Au were estimated using the inverse distance method of interpolation. The mineral resources have been estimated in conformity with the CIM "Mineral Resource and Mineral Reserves Estimation Best Practices" guidelines and were classified according to the CIM Standard Definition for Mineral Resources and Mineral Reserves (December 2005) guidelines. The mineral resources are reported in accordance with the Canadian Securities Administrators National Instrument 43-101.

Independent, NI 43-101 compliant resources at the Nieves Property were estimated by Jason Baker P.Eng., a Geological Engineer with Caracle Creek. QA/QC was completed by Caracle Creek on the historic assays prior to incorporation in the 3D model (Section 12, Data Verification). Because of his education, project experience and affiliation to a recognized professional association, Mr. Baker is a "qualified person" independent of Quaterra Resources Inc. in accordance with NI 43-101 guidelines. Mineral resources were calculated for the Nieves Project by the methods described below. The Mineral Resource Statement reported for the Nieves Project is presented in Table 14-1 using a 15 g/t Ag cut-off grade.

Table 14-1: Mineral Resource Statement[1] (Caracle Creek, June 22nd, 2012)

Vein	Area	Category	Quantity (tonnes)[2]	Grade[3] Ag g/t	Grade[4] Au g/t	Ounces[5] Ag	Ounces[5] Au
Concordia	La Quinta	Indicated	33,040,000	50.1	0.04	53,220,000	42,500
Concordia	La Quinta	Inferred	39,260,000	32.0	0.02	40,390,000	25,200
San Gregorio	North	Inferred	18,770,000	27.0	0.08	16,293,900	48,300

[1] Reported at a cut-off grade of 15 g/t Ag. Mineral resources are not mineral reserves and do not have demonstrated economic viability.
[2] Tonnes have been rounded to the nearest 10,000.
[3] Ag grade has been rounded to one (1) significant digit.
[4] Au grade has been rounded to two (2) significant digits.
[5] Ounces have been rounded to the nearest 100. One (1) troy ounce = 31.103 grams

This report summarizes the methodology, data and validation techniques used by Caracle Creek in estimating the mineral resources for the Nieves Project.

14.2 RESOURCE ESTIMATION METHODOLOGY

14.2.1 Resource Database, Preparation & Compositing

Drill hole collar coordinates and details were provided in MS Excel format by Quaterra Resources Inc. including assays, lithology and down hole survey. The resource estimate was calculated using data from 8 drill holes from programs of previous operators between 1995 and 1996, 10 drill holes drilled by Quaterra between 1999 and 2000, as well as 174 drill holes drilled by Quaterra and Blackberry between 2004 and 2012. QA/QC was completed by Caracle Creek on the assays prior to incorporation in the 3D model.

All of these data were compiled into a database which links directly to the geological modelling and resource estimation software. 3D wireframes (solids) representing the mineralized areas were constructed and used to constrain (domain) the tonnage and grade estimation. GEMCOM's GEMS software V.6.3 was used to generate the 3D block model and perform the grade estimation (Table 14-2, Figure 14-1).

Table 14-2: Data used in estimating the mineral resources at Nieves

Drill program	# of Holes	# of Samples
Quaterra (1999 – 2011)	184 (55,728 m)	19,967
Historical (1995 – 1996)	8 (1,901 m)	591
Total	**193 (57,629 m)**	**20,558**

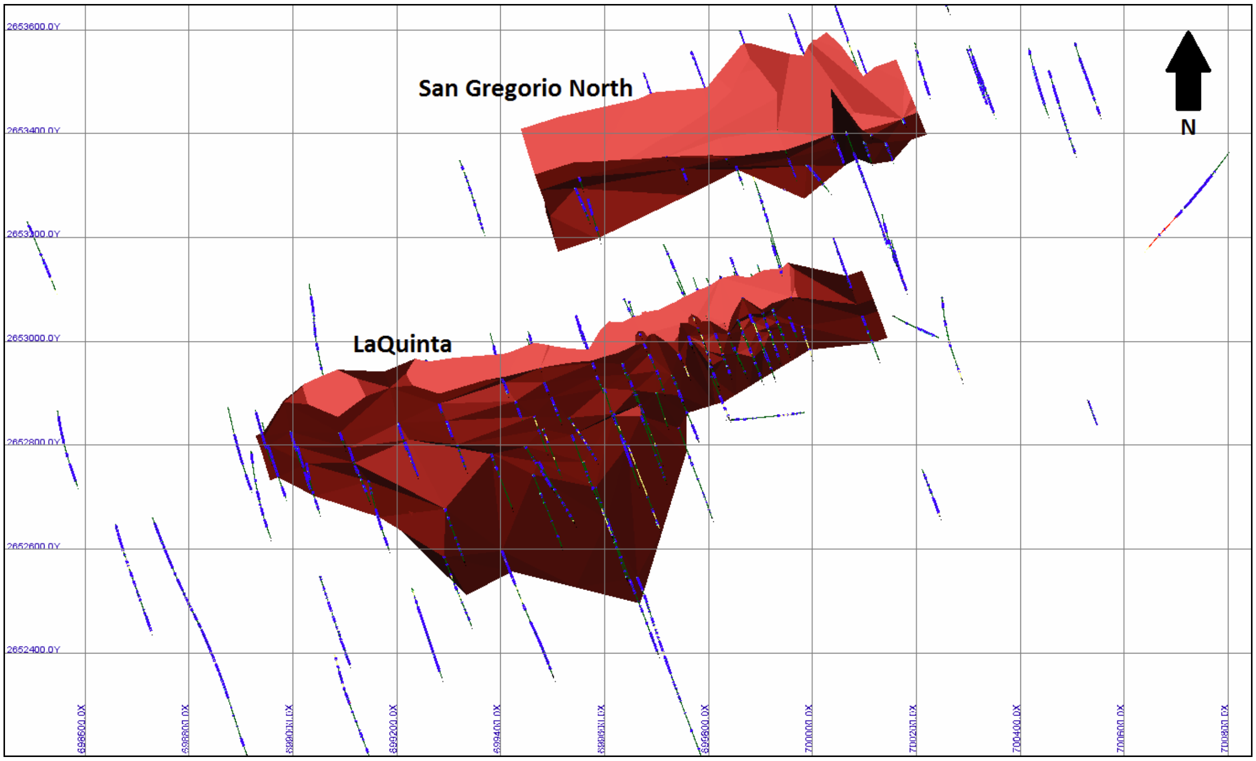


Figure 14-1: Drill Hole Distribution of all holes at Nieves

The following section describes how the mineralized domains were used to constrain the resource estimation as well as how compositing and outliers were dealt with in this project. The results of the specific gravity analysis are also discussed.

14.2.1.1 Geological Modeling & Mineralized Domains

Geological modeling was performed by Caracle Creek using the raw drill hole data. A topography surface was created by Caracle Creek using the drill hole collar coordinates. The mineralized domain was constructed primarily from the Ag grade assay data. The mineralized domain was not constrained by lithology (Figure 14-1, Figure 14-2 and Figure 14-3).

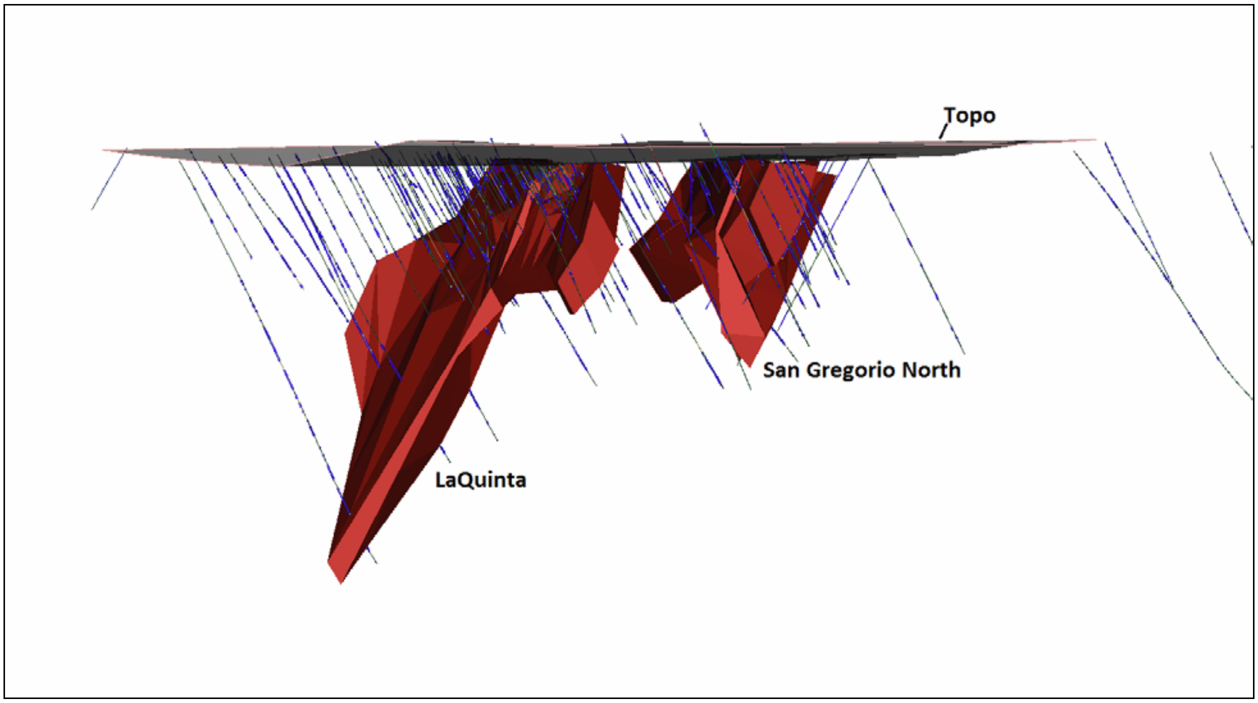


Figure 14-2: View of Topo & Mineralized Domain Looking NW

The La Quinta mineralized domain was defined using 99 drill holes and 5072 samples. The Gregorio North mineralized domain was defined using 25 drill holes and 1729 samples. The drill holes were drilled in a sectional pattern with a drill hole spacing ranging from 20 - 100 meters, in the La Quinta area, and 20 - 175 meters in the Gregorio North area (Figure 14-1). The mineralized domain was projected 100 meters beyond the last drill hole. Due to the potential for bulk open pit mining, a grade cut-off was not used when constructing the mineralized domain. However, if the last assay in the interval was less than 0.1 g/t Au, then it was not included in the mineralized domain unless it had a significant Ag grade component of 10 g/t Ag.

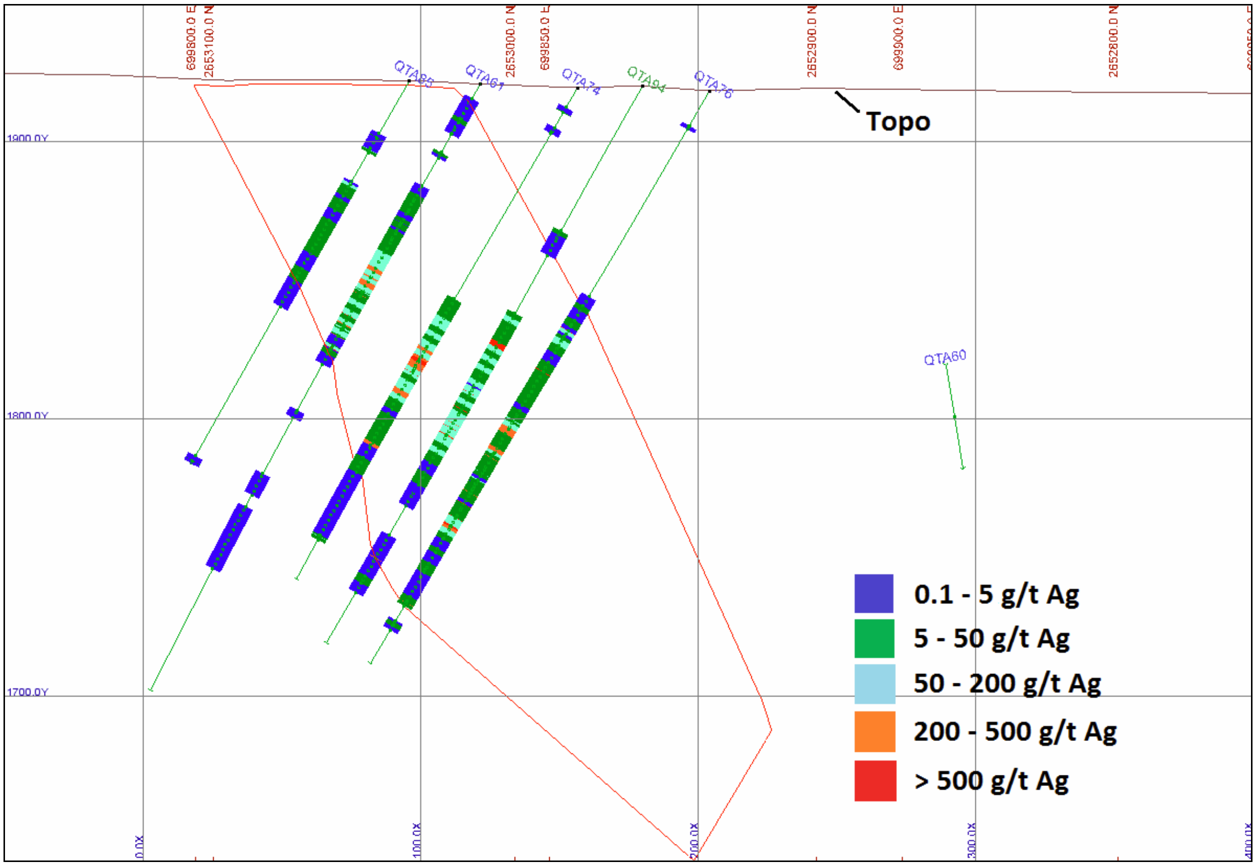


Figure 14-3: Sectional view of mineralized domain showing Ag assays (looking NE)

14.2.1.2 Data Analysis & Compositing

All the raw assays within the mineralized domains were extracted from the database for statistical analysis. This included a total of 6789 assay intervals, of which over 98% had an assay interval length of 2.0 meters (Figure 14-4 and Figure 14-5). The remaining assay intervals were of varying lengths between 0.03 & 3.7 meters. Considering the assay data statistics, with respect to interval length, Caracle Creek chose to composite the data to 2m intervals. The estimation parameters set for the mineral resources were not allowed to interpolate through un-sampled intervals. An Ag value of 0.1 g/t was assigned to the missing intervals (Half Detection Limit).

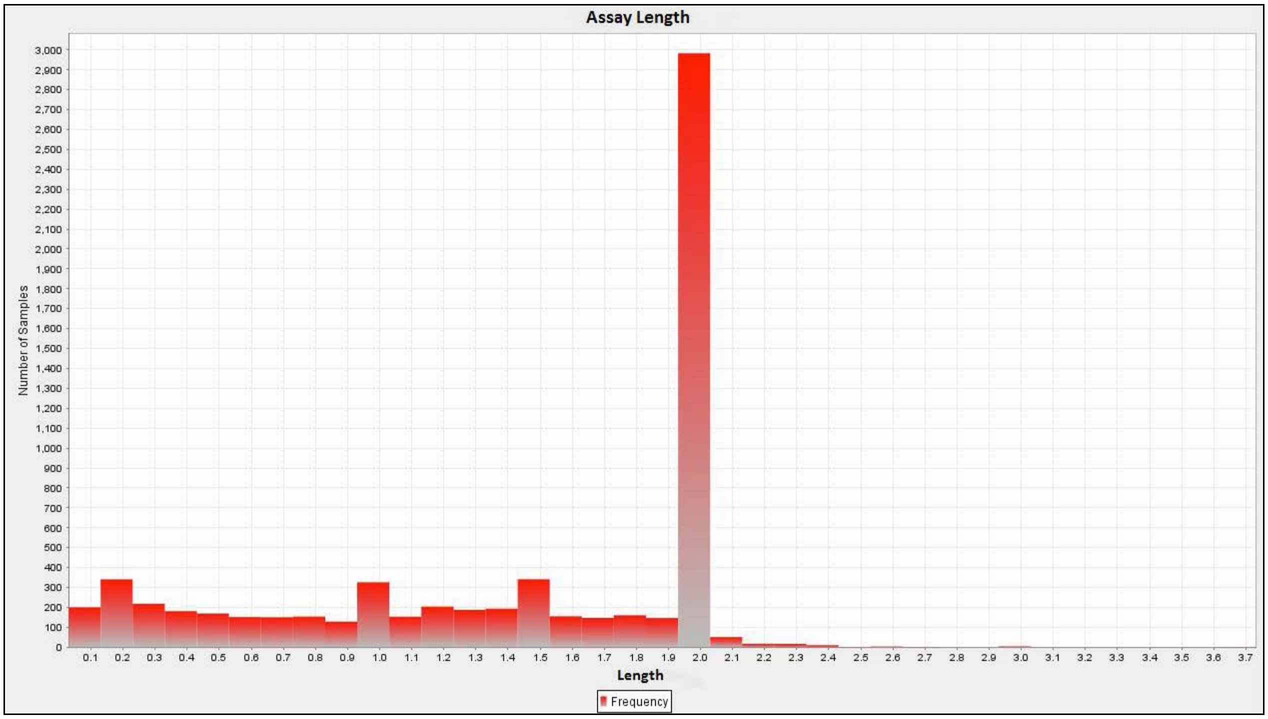


Figure 14-4: Histogram plot showing the distribution of assay lengths

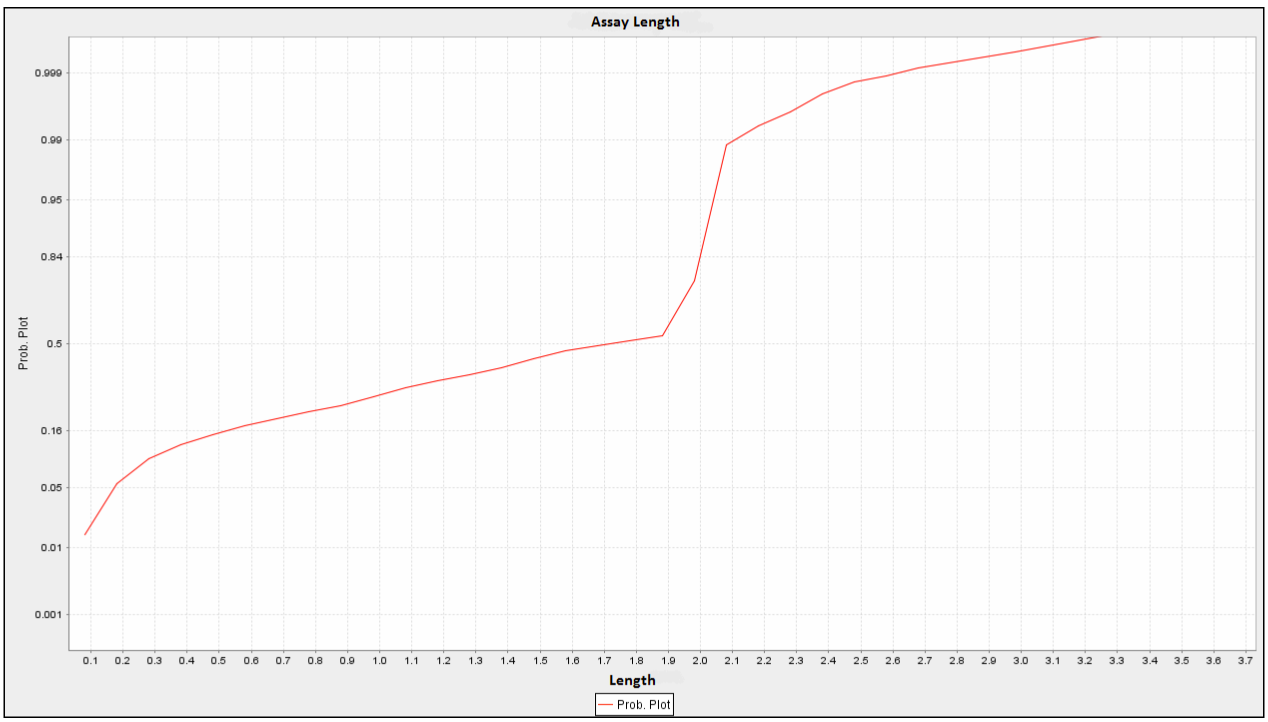


Figure 14-5: Probability plot showing the distribution of assay lengths

Basic assay statistics were calculated for all raw assays within the mineralized domain. See Table 14-3 for the results.

Table 14-3: Summary of raw assay data statistics for all samples within the mineralized domain

Sample Data	La Quinta Ag	La Quinta Au	San Gregorio Ag	San Gregorio Au
Number of Samples	5072	5072	1717	1717
Minimum Value (g/t)	0.1	0.01	0.1	0.0
Maximum Value (g/t)	13345.0	4.59	2240.0	1.72
Mean (g/t)	92.7	0.10	26.1	0.08
50th Percentile (Median) (g/t)	13.0	0.03	2.9	.03
95th Percentile (g/t)	406.9	0.39	177.0	0.39
Variance (g/t)	147164.7	0.06	13169.8	0.02
Standard Deviation (g/t)	383.6	0.25	114.8	0.13
Coefficient of Variation	4.1	2.45	4.4	1.59

Basic statistics were also calculated for the 2 m composites. See Figure 14-4 and Table 14-4 for the results.

Table 14-4: Summary of 2m composite data statistics for all samples within the mineralized domain

Sample Data	La Quinta Ag	La Quinta Au	San Gregorio Ag	San Gregorio Au
Number of Samples	3842	3842	2960	2960
Minimum Value (g/t)	0.1	0.02	0.1	0.0
Maximum Value (g/t)	2485.7	2.01	411.8	0.62
Mean (g/t)	37.9	0.06	7.5	0.07
50th Percentile (Median) (g/t)	10.6	0.03	0.1	0.03
95th Percentile (g/t)	161.4	0.20	36.1	0.25
Variance (g/t)	9216.8	0.01	579.3	0.01
Standard Deviation (g/t)	96.0	0.09	24.1	0.08
Coefficient of Variation	2.53	1.58	3.2	1.18

14.2.1.3 Grade Capping

Caracle Creek performed a capping analysis on the composited data using histogram plots and probability plots. Figure 14-6 shows the histogram plots for the Ag 2m composite data, including all outliers. Based on this analysis Caracle Creek capped the Ag composites at 1100.0 g/t.

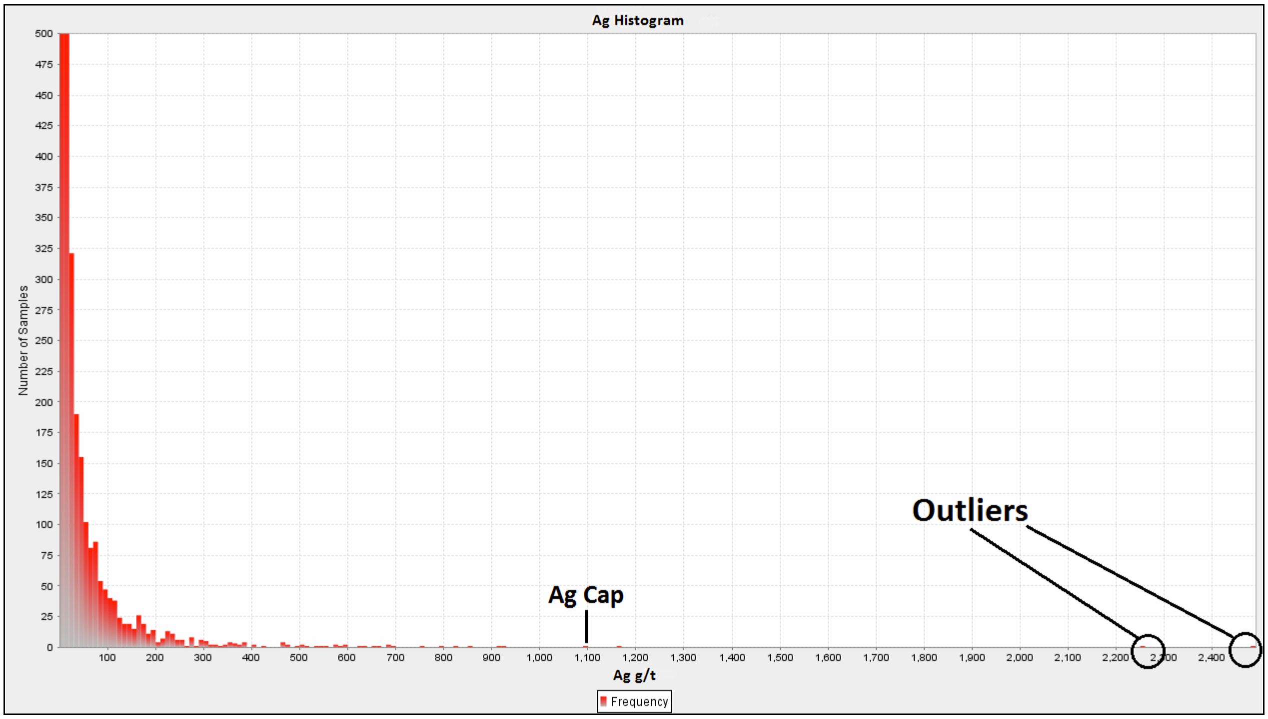


Figure 14-6: Histogram showing Ag composite grade distribution for the La Quinta area

14.2.1.4 Specific Gravity

Specific Gravity (SG) for the Concordia (La Quinta) area was determined using 173 SG samples within the mineralized domain. The block model was populated with SG values using these 173 SG samples via inverse distance interpolation. There were only 16 SG samples available for the Gregorio North area, therefore, the average of those samples (2.83) was assigned to each block. The tonnage for each block was calculated as follows:

Block volume (10m × 10m × 5m) × (SG) × (the proportion of the block within the solid)

14.2.2 Variography

Caracle Creek did not evaluate the 3D spatial distribution of Au or Ag using variograms.

14.2.3 Block Model

The block model definitions for Nieves are shown in Table 14-5. Partial percents were used as part of the volume estimation. The block volumes were adjusted using the partial percents based on the proportion of the block that was inside the wireframed solids representing the mineralization. The block model origin coordinates are represented by the Maximum “X”, Maximum “Y” and Minimum “Z”. Positive rotation is clockwise about any axis. Based on the anticipated mining methods, the size of the mineralized domain and the drill hole spacing, Caracle Creek chose a block size of 10m × 10m × 5m. The model was rotated 38° counter-clockwise from north.

Table 14-5: Block model definitions for Nieves

	Y (m)	X (m)	Z (m)
Origin Coordinates (m)	2653210	698387	2000
Block Size	10	10	5
Rotation	0	-70	0
Number Of Blocks	210	130	215

14.2.3.1 Grade Estimation Strategy

Grade estimation was based on Inverse Distance (power of 2) using two passes. The first pass was the most restrictive in terms of search radius, the minimum/maximum number of samples required as well as the minimum number of holes required. The second pass was less restrictive under the same terms. The first pass populated approximately 40% of the blocks, with the rest of the blocks within the mineralized domain being populated by the second pass. The search ellipse radius and orientation were chosen based on the drill hole spacing. Table 14-6 summarizes the parameters used in the grade estimation. Table 14-7 shows the block model.

Table 14-6: Nieves Block Model Parameters

	Pass 1	Pass 2
Method of Interpolation	Inverse Distance Squared	Inverse Distance Squared
Search Radius	100 Meters	200 Meters
Search Type	Octant	Ellipsoidal
Min # of Samples	5	2
Max # of Samples	30	30
Min # of Holes	1	1

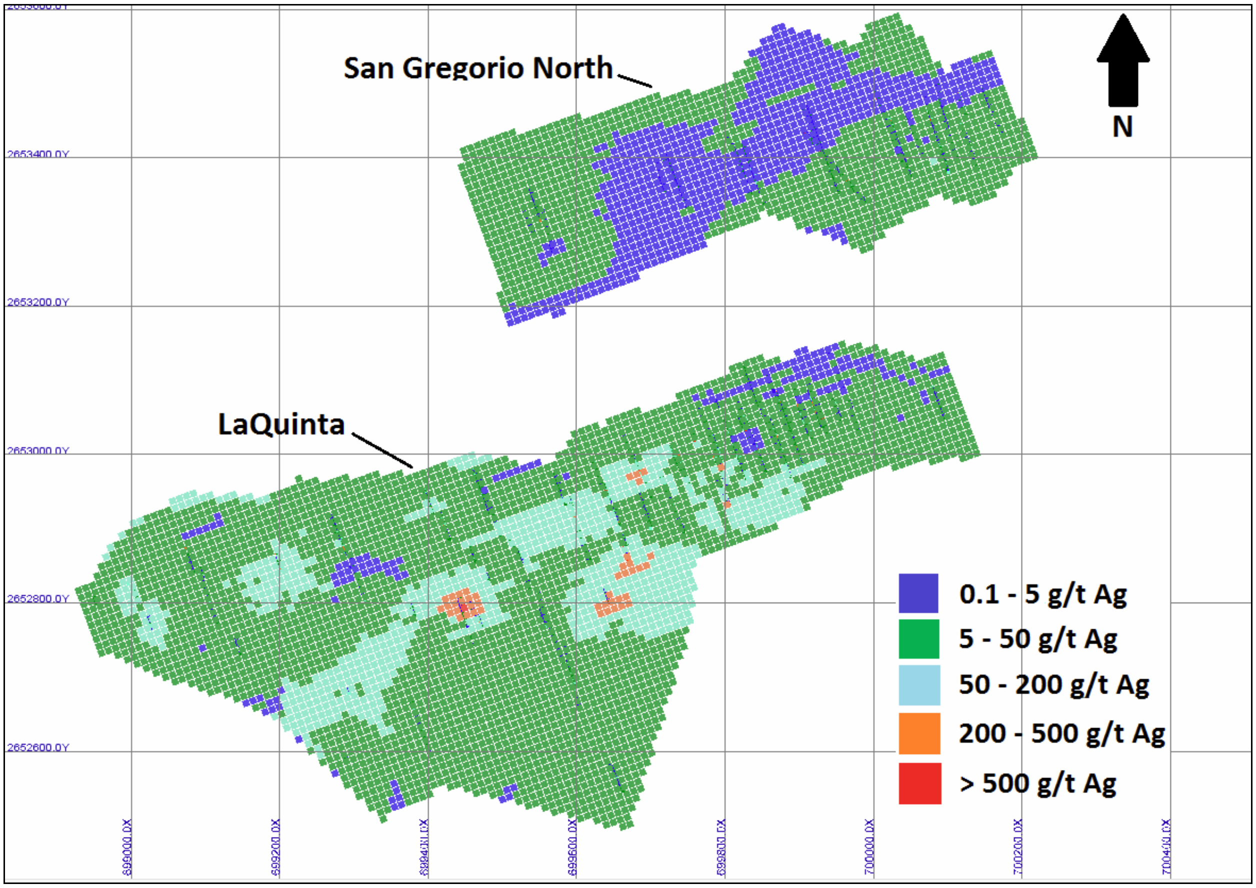


Figure 14-7: Plan View Showing Block Model

14.2.4 Resource Model Validation

The validity of the block model was evaluated using four techniques. 1) Caracle Creek constructed a parallel estimation model for Ag & Au using an inverse distance method of estimation (power of five). The results were within 10% deviation in total tonnes and Ag grade to that of the original model. 2) Statistical comparisons were made between the interpolated blocks from the inverse distance squared model and the 2m composites (Table 14-7). 3) The reported total block model tonnage and grade were also compared to a sectional volume method of estimation, which does not involve block modeling. A weighted average of all Au assays within the mineralized domain was calculated along with the volume of the mineralized domain. The results were within 10% to that of the original block grade estimation. 4) The interpolated block grades were visually checked on section and level plans and compared to the composited data.

Table 14-7: Ag Block Model vs. 2m Composite Statistical Analysis

Statistic	La Quinta		San Gregorio	
	Capped 2m Composites	ID2 Interpolation	Capped 2m Composites	ID2 Interpolation
# of Samples	3842	98586	2960	55716
Mean	37.9	27.6	7.5	12.6
Median	10.6	18.7	0.1	8.6
Variance	147164.7	854.3	579.3	134.2
Max Value	2485.7	598.5	411.8	137.2

14.2.5 Mineral Resource Classification

Based on the study reported herein, delineated mineralization at the Nieves Project is classified in part as mineral resource according to the following NI 43-101 definitions:

> *"In this Instrument, the terms "mineral resource", "inferred mineral resource", "indicated mineral resource" and "measured mineral resource" have the meanings ascribed to those terms by the Canadian Institute of Mining, Metallurgy and Petroleum, as the CIM Standards on Mineral Resources and Reserves Definitions and Guidelines adopted by CIM Council on December 11, 2005, as those definitions may be amended from time to time by the Canadian Institute of Mining, Metallurgy, and Petroleum."*

> *"A Mineral Resource is a concentration or occurrence of natural solid, inorganic or fossilized organic material in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge."*

Mineral resources are not mineral reserves as economic viability of the Property has not yet been shown. The terms Measured, Indicated and Inferred are defined in NI 43-101 as follows:

> *"A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity."*

"An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics, can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed."

"An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes."

The estimated tonnages for the mineralized domain at Nieves are classified as Indicated & Inferred resources, as described in the following section. Blocks were classified as indicated if they were populated during pass 1. All blocks populated during pass 2 were classified as inferred.

14.3 MINERAL RESOURCE STATEMENT

Mineral resources for Nieves were classified by Mr. Jason Baker, P.Eng, an appropriate independent qualified person. Classification was done in accordance with the CIM Standard Definition for Mineral Resources and Mineral Reserves (December 2005) guidelines. The mineral resources for the Nieves Project are reported at a cut-off grade of 15 g/t Ag. The Mineral Resource Statement for the Nieves Project is summarized in Table 14-8.

Table 14-8: Mineral Resource Statement1 (Caracle Creek, June 22nd 2012)

Vein	Area	Category	Quantity (tonnes)[2]	Grade[3] Ag g/t	Grade[4] Au g/t	Ounces[5] Ag	Ounces[5] Au
Concordia	La Quinta	Indicated	33,040,000	50.1	0.04	53,220,000	42,500
Concordia	La Quinta	Inferred	39,260,000	32.0	0.02	40,390,000	25,200
San Gregorio	North	Inferred	18,770,000	27.0	0.08	16,293,900	48,300

[1] Reported at a cut-off grade of 15 g/t Ag. Mineral resources are not mineral reserves and do not have demonstrated economic viability.
[2] Tonnes have been rounded to the nearest 10,000.
[3] Ag grade has been rounded to one (1) significant digit.
[4] Au grade has been rounded to two (2) significant digits.
[5] Ounces have been rounded to the nearest 100. One (1) troy ounce = 31.103 grams

The block model tonnage and grade were calculated at various cut-off grades in order to demonstrate the sensitivity of the resource estimate with respect to reporting cut-off grade. The results are shown in Table 14-9. It should be stressed to the reader that the figures presented in Table 14-9 are not to be misconstrued as a mineral resource as they are intended for the sole purpose of demonstrating the sensitivity of the resource estimate with respect to reporting cut-off grade.

Table 14-9: Block Model Quantities and Grades Reported at Various Cut-off Grades

Cut-Off Ag g/t	Area	Category	Tonnes	Ag g/t	Au g/t
5 g/t	La Quinta	Indicated	49,530,000	36.7	0.03
5 g/t	La Quinta	Inferred	67,240,000	22.6	0.02
5 g/t	San Gregorio	Inferred	56,830,000	14.8	0.06
15 g/t	La Quinta	Indicated	33,040,000	50.1	0.04
15 g/t	La Quinta	Inferred	39,260,000	32.0	0.02
15 g/t	San Gregorio	Inferred	18,770,000	27.0	0.08
25 g/t	La Quinta	Indicated	23,420,000	62.6	0.05
25 g/t	La Quinta	Inferred	22,050,000	41.5	0.02
25 g/t	San Gregorio	Inferred	7,350,000	39.8	0.11
35 g/t	La Quinta	Indicated	17,190,000	74.6	0.05
35 g/t	La Quinta	Inferred	12,470,000	50.7	0.02
35 g/t	San Gregorio	Inferred	3,710,000	50.1	0.13
45 g/t	La Quinta	Indicated	12,910,000	86.1	0.06
45 g/t	La Quinta	Inferred	7,100,000	58.8	0.03
45 g/t	San Gregorio	Inferred	2,070,000	58.6	0.15
75 g/t	La Quinta	Indicated	6,230,000	116.5	0.07
75 g/t	La Quinta	Inferred	1,050,000	92.5	0.05

***Note:** Au Grade has been rounded to two (2) significant digits. Ag grade has been rounded to one (1) significant digit. These figures are not to be misconstrued as mineral resource as they are intended for the sole purpose of demonstrating the sensitivity of the resource estimate with respect to reporting cut-off grade.*

Mineral resource estimates for the Nieves Project presented in this report are effective as of the 22nd day of June, 2012 (Table 14-8).

14.4 ISSUES THAT COULD AFFECT THE MINERAL RESOURCE

There are no known factors related to permitting, legal, title, taxation, socio-economic, environmental, and marketing or political issues which could materially affect the mineral resource at the time of reporting.

15 MINERAL RESERVE ESTIMATES

This section is not required for a Preliminary Economic Assessment.

16 MINING METHODS

16.1 OPEN PIT MINE PLAN

The Nieves silver deposit contains mineralization at or near the surface and is distributed in continuous veins that is ideal for open pit mining methods. The method of material transport evaluated for this study is open pit mining using two16.5-m^3 front end shovels as the main loading units with a 12.2-m^3 front end loader as a backup loading unit. The ore will be loaded into 90-tonne haul trucks and transported to the primary jaw crusher, which will be set up at the toe of the waste dump. The plan assumes that the project operator owns, operates, and maintains all equipment. The general site layout, including pits, waste dumps, the crusher site, infrastructure, and tailings pond, is shown on Figure 1-2.

Ore production is planned at a nominal rate of 10,000 tonnes per day (tpd), equivalent to 3.65 million tonnes per annum with a 10 year mine life. Mining is planned on a 7 day per week schedule, with two 12 hour shifts per day. Other mining schedules may prove to be more effective, but are not expected to significantly change project economics. Peak ore and waste production is estimated at 94,000 tpd during the first year and then slowing to an average rate of 62,000 tpd. The average life of mine stripping ratio is 5.36:1 waste-to-ore, using a 21.3 g/t AgEq cutoff. Lower grade material is stockpiled using 30.5 g/t AgEq cutoff in order to improve project economics which results in a maximum low grade stockpile of 2.8 million tonnes. Other cutoff scenarios using 19.4, 21.3, 23.7, 26.7 and 30.5 g/t were evaluated during the study but the chosen scenario resulted in the best IRR and NPV. Table 16-1 below lists the resources used in the mine production plan. The mine plan is preliminary in nature and includes inferred mineral resources that are considered too geologically speculative at this time to have the economic considerations applied to them to be categorized as mineral reserves.

Table 16-1: Resources Inside Pit Design

Pit Phase	Classification	Ore Tonnes X 1,000	Ag (g/t)	Au (g/t)	AgEq (g/t)	Ag (oz)	Au (oz)	AgEq (oz)
Phase 1	Indicated	10,617	65.2	0.06	67.4	22,268,479	19,608	23,009,813
Phase 1	Inferred	1,139	38.4	0.03	39.6	1,405,732	1,203	1,450,498
Phase 2	Indicated	8,872	57.5	0.04	58.9	16,394,161	11,869	16,801,719
Phase 2	Inferred	2,215	46.2	0.03	46.9	3,287,717	1,830	3,339,898
Phase 3	Indicated	8,114	52.8	0.04	54.0	13,777,644	9,335	14,085,645
Phase 3	Inferred	4,402	52.7	0.03	53.5	7,463,505	3,830	7,564,356
Total All Phases	**Indicated**	**27,603**	**59.1**	**0.05**	**60.7**	**52,440,284**	**40,811**	**53,897,177**
Total All Phases	**Inferred**	**7,756**	**48.8**	**0.03**	**49.5**	**12,156,954**	**6,863**	**12,354,752**

1) Prepared by Jeff Choquette, P.E., Mining Engineer, an independent Qualified Person within the meaning of NI43-101, using a reporting cut-off grade of 21.3 g/t AgEq.
2) AgEq values were calculated using a $26/oz silver price $1375/oz Au price, 81% Ag recovery 80% Au ecovery, 95% metal payable, 1.5 oz/t Ag dedut and 0.05/oz Ag deduct, $1/oz silver refining charge and $10/oz Au refining charge $300/wet tonne treatment charge and a $50/wet tonne shipping charge.

16.1.1 Pit Optimization

In order to evaluate the optimal ore throughput rate for the current resource model on the Nieves Silver Project a series of Whittle optimizations were completed. The first step involved the calculation of an AgEq value for use in the pit optimizations. The AgEq calculation was based on $1,375 gold and $26 silver. The calculation includes metal recoveries, expected smelter charges and refining. Table 16-2 below shows the parameters use in the AgEq calculation.

Table 16-2: AgEq Calculation Parameters

Metal	Price US$/oz.	Recovery %	Smelter Payable %	Smelter Deduct oz./t	Refining charge US$/oz.	Smelter Treatment Charge $/wmt conc.	Concentrate Shipping Charge $/wmt conc.
Ag	$26	81%	95%	1.5	$1	$300	$50
Au	$1,375	80%	95%	0.05	$10		

To assist in determining the optimal throughput a series of pit shells from 5 ktpd to 20 ktpd on 2.5 ktpd increments were run. For each processing rate 29 pit shells were generated based on a silver price starting at $8.32/oz. and ending at $52.00/oz. using $1.56 increments. The base mine operating costs for each case were then factored for the benches below the surface elevation by adding $0.0205 for every 5 meters in depth. Pit slopes were run at 43 degrees for all sectors which will allow room for insertion of haulage ramps and safety benches in the pit design stage. Table 16-3 shows the pit optimization parameters.

Table 16-3: Pit Optimization Parameters

Area	Parameter
Mining	Base cost for processing rate -plus $0.0205 per 5m bench below surface.
Operating	Base operating cost for processing rate, plus G&A and environmental.
AgEq Price	$8.32 to $52.00 based on $1.56 increments (29 pits shells)
Initial Capital	Varies with process rate.
Discount rate	5%
Pit Slopes	43 degrees

The initial capital, ore processing plus G&A and mining costs were given a different value for each processing rate. The initial capital cost estimate started from the 15 ktpd process rate. The capital was then factored based on the change in processing rates to the power of 0.75. The ore processing plus G&A and mining costs also used the preliminary costs estimates for a 15 ktpd case but used a factor to the power of 0.2. Table 16-4 below lists the different capital and base operating costs used for each processing rate.

The NPV for each pit shell in each case was then calculated using the initial capital estimate for each processing rate and a 5% discount rate. The best NPV results from each set of optimizations was then assembled and graphed to determine the optimal processing rate. Based on these results the optimal processing rate for the current status of the project is 10 kptd. Table 16-4 shows a summary of the NPV's for the different processing rates. Note that the NPV's are preliminary results based on the rough pit shells and don't included any detail for pit ramps and safety benches included with a pit design.

Table 16-4: Optimization Capital and Operating Costs

Ore Processed (tpd)	Initial Capex	Operating Cost $/ton	Base Mining Cost $/ton	NPV @ 5%
5,000	$131,607,401	$12.41	$1.12	$126,006,028
7,500	$178,381,067	$11.44	$1.03	$138,871,987
10,000	$221,336,384	$10.80	$0.98	$140,204,765
12,500	$261,658,785	$10.33	$0.93	$135,739,850
15,000	$300,000,000	$9.96	$0.90	$128,715,010
17,500	$336,768,410	$9.66	$0.87	$105,488,780
20,000	$372,241,944	$9.40	$0.85	$85,629,369

16.1.2 Pit Design

The Nieves open pit is planned in three pit phases designed on the Concordia zone. The San Gregorio zone resulted in some mining in the pit optimization studies but it was minimal so this zone was not included in the mine plan but may become viable with additional drilling. The $23.92/oz Ag pit shell resulted in the highest NPV in the optimization study for the 10 ktpd case and thus was chosen as the basis for the final pit design. Since there has not been a geotechnical study completed on the project a conservative inter-ramp pit slope of 45° was chosen. Haul roads are designed at a width of 25 meters, which provides a safe truck width (6.5 meters) to running surface width ratio of 3.85. Maximum grade of the haul roads is 10%, except for the lowermost few benches where the grade is increased to 14% and the ramp width is narrowed to 14 meters to minimize excessive waste stripping. The pit design criteria are presented in Table 16-5.

Table 16-5: Pit Design Criteria

Mine Design Criteria	
Pit Design Criteria	**Parameter**
Inter Ramp Angles	45 Degrees
Face Angles	65 degrees
Catch Bench Berm	9 m
Catch Bench Vertical Spacing	20 m
Minimum Turning Radius	25 m
Road Widths	25 m
Road Grade	10%
Road Widths Pit Bottom	14 m
Road Grade Pit Bottom	14%

The pits were designed in three phases in order to balance the required stripping throughout the mine life. The first phase is based on a $11.44/oz. Ag pit shell, phase two is based on a $17.68/oz. Ag shell and as mentioned previously the final design is based on a $23.92/oz. Ag pit shell. The pit designs phases are shown in Figure 16-1 to Figure 16-3.

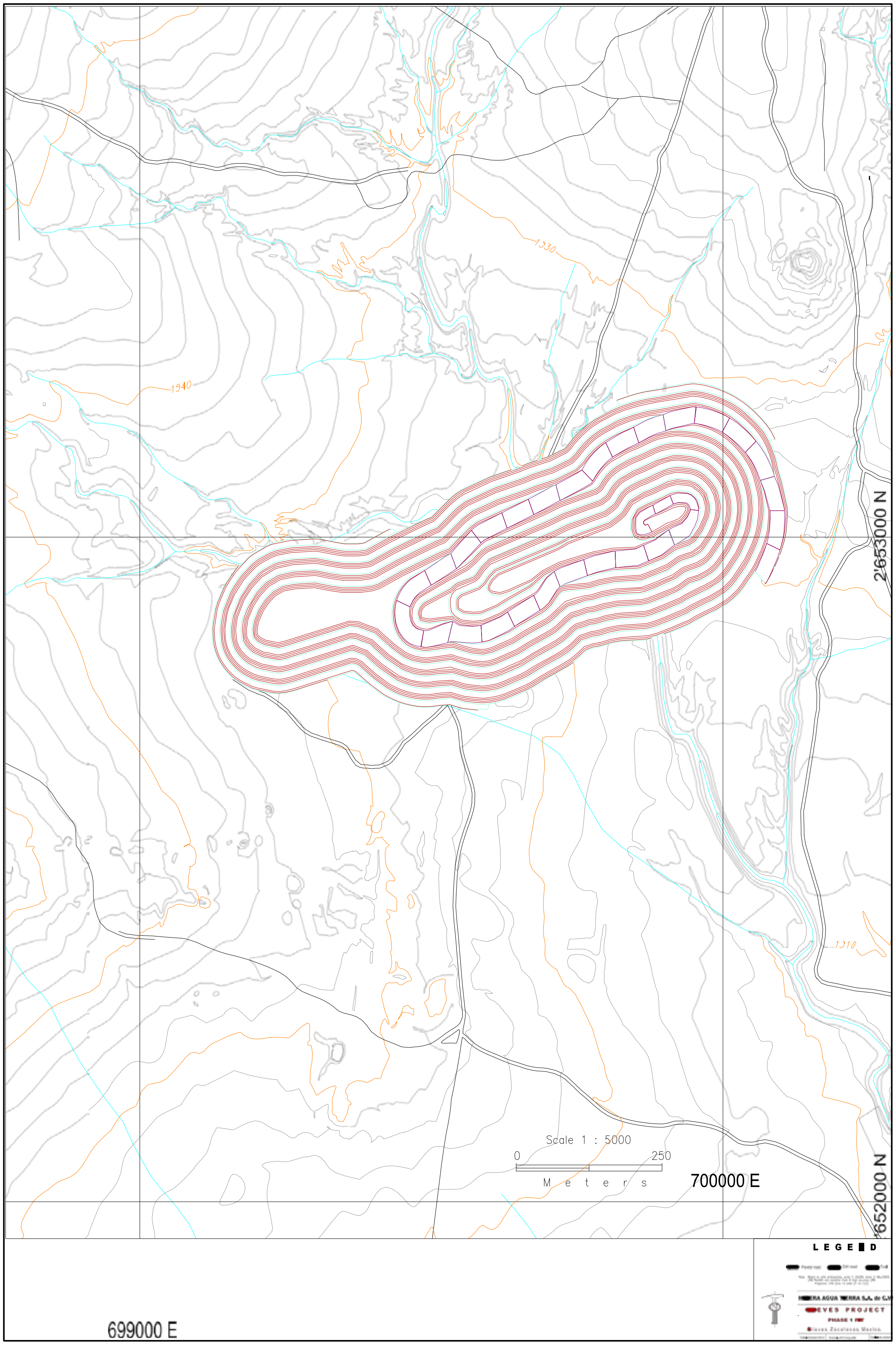


Figure 16-1: Phase 1 Pit Design

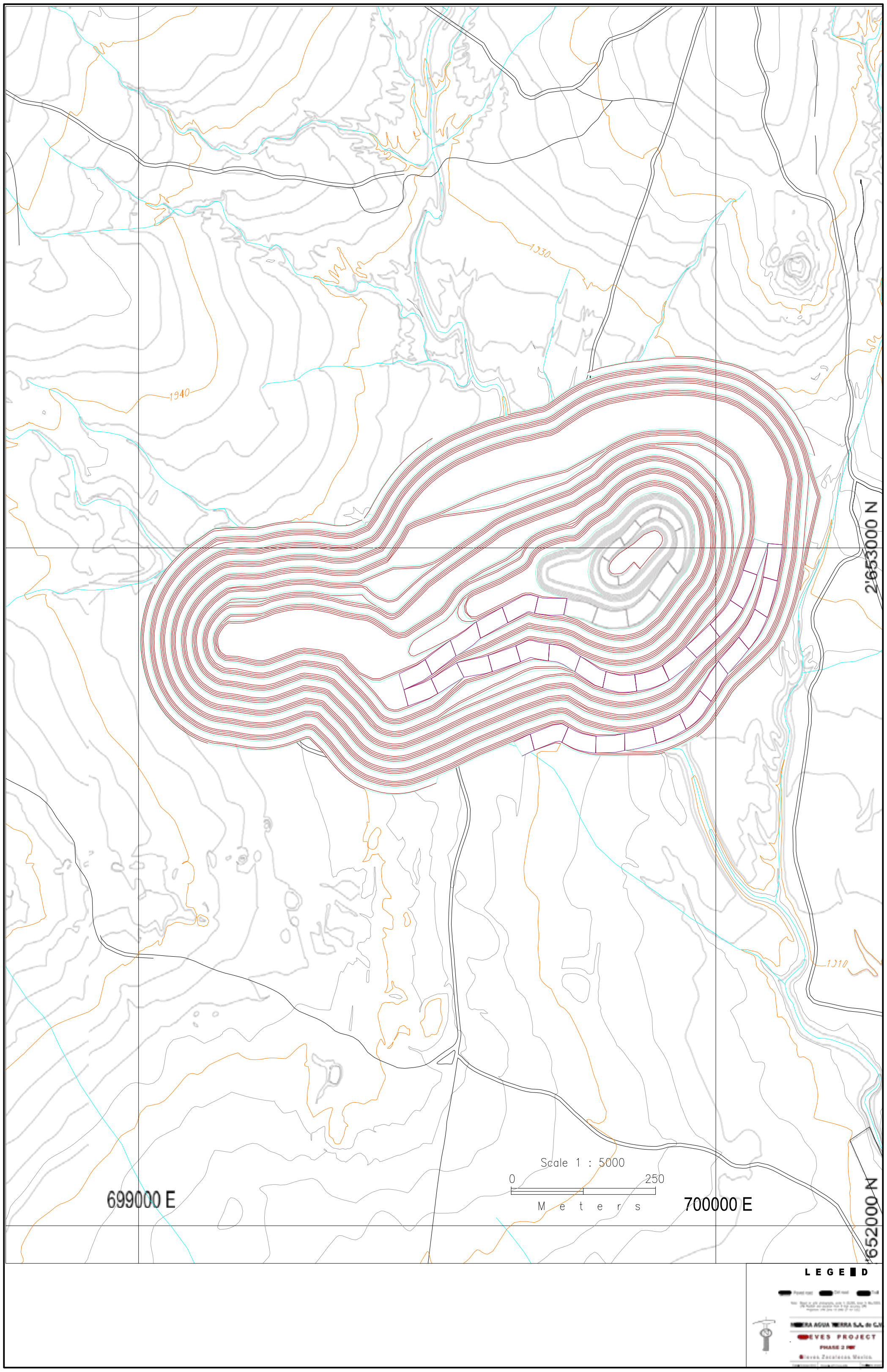


Figure 16-2: Phase 2 Pit Design

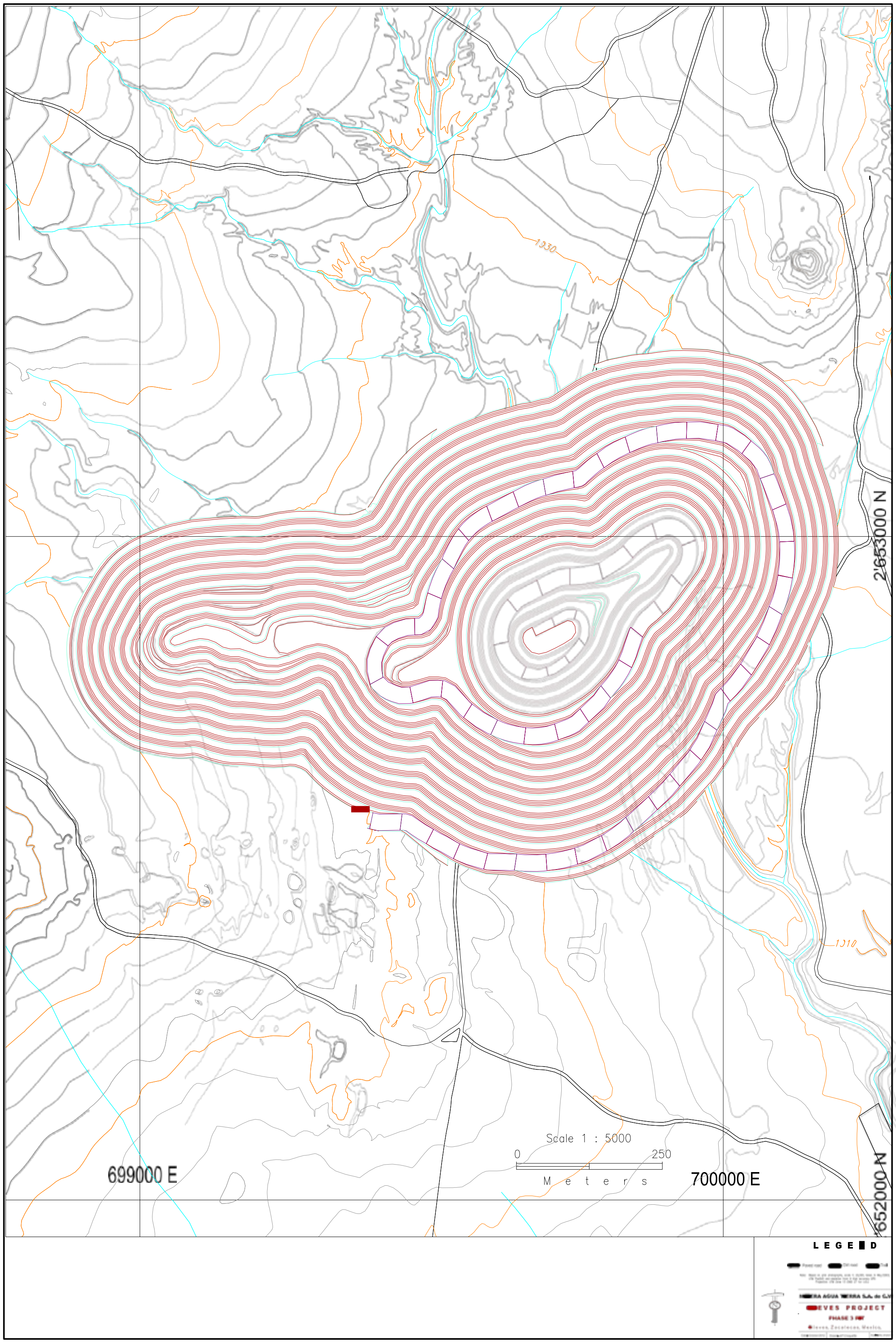


Figure 16-3: Phase 3 Pit Design

16.1.3 Waste Dump Design

The waste dump was designed near the pit ramp exit just south of the pit design. The dump was designed with a maximum slope angle of 2.5:1. The waste dump is designed with a capacity of 190 million tonnes to accommodate the mine plan. The location of the waste dump in relation to the other facilities is shown in Figure 1-2.

16.2 PRODUCTION SCHEDULE

The yearly mine production schedule is presented in Table 16-6. The production schedule is driven by the nominal ore rate of 10,000 tpd. The production schedule has been calculated on a monthly basis for the first three years and then yearly for the remaining life of the mine. The schedule shows ore being delivered to the mill during the first month of mining at a rate of 6,800 tpd with the mine being able to provide the required mill rate of 10,000 tpd starting in month six. Peak ore and waste production is estimated at 94,000 tpd during the first year and then slowing to an average rate of 62,000 tpd. The average life of mine stripping ratio is 5.36:1 waste-to-ore.

The mine schedule is preliminary in nature and includes inferred mineral resources that are considered too geologically speculative at this time to have the economic considerations applied to them to be categorized as mineral reserves. Thus, there is no certainty that the production profile concluded in the PEA will be realized. Actual results may vary, perhaps materially.

Table 16-6: Yearly Production Schedule

TOTAL MINE PRODUCTION	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	LOM
Ore	2,336,453	4,028,490	2,832,458	2,225,638	4,474,973	2,362,654	1,514,742	2,308,058	2,967,681	3,247,543	**28,298,690**
Ag g/t	56.01	78.02	84.01	60.81	64.65	60.56	51.50	55.36	55.55	67.26	**65.02**
Au g/t	0.06	0.06	0.06	0.05	0.04	0.03	0.04	0.04	0.03	0.03	**0.05**
Low Grade	1,639,086	894,736	493,976	914,699	844,835	355,524	263,558	685,823	676,071	292,179	**7,060,488**
Ag g/t	23.47	24.35	25.08	24.59	25.06	25.32	22.71	23.00	22.84	23.29	**23.98**
Au g/t	0.04	0.03	0.02	0.02	0.02	0.02	0.03	0.02	0.03	0.02	**0.03**
Waste	30,310,478	8,001,141	23,444,643	21,786,559	25,046,405	23,797,362	21,064,880	17,458,380	13,617,283	5,063,622	**189,590,753**
Total Tonnes Mined	**34,286,018**	**12,924,368**	**26,771,077**	**24,926,896**	**30,366,212**	**26,515,540**	**22,843,180**	**20,452,261**	**17,261,035**	**8,603,344**	**224,949,931**
Ore tpd	6,401	11,037	7,760	6,098	12,260	6,473	4,150	6,323	8,131	8,897	**8,447**
Mined tpd	93,934	35,409	73,345	68,293	83,195	72,645	62,584	56,034	47,291	23,571	**61,630**
Strip Ratio	7.62	1.63	7.05	6.94	4.71	8.75	11.85	5.83	3.74	1.43	**5.36**

The production schedule by pit phase is presented in Table 16-7. The first phase contains 11.7M tonnes of ore and low grade with a 3.26:1 strip ratio. Phase two contains about the same amount of ore and low grade with 11.1M tonnes and little higher strip ratio of 4.87:1. The last phase contains the highest amount ore and low grade, 12.5M tonnes, but also contains the highest strip ratio of 7.77:1.

Table 16-7: Production Schedule by Pit Phase

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	LOM
Phase 1 Pit Production											
Ore	2,336,453	4,026,000	2,550,095	-	-	-	-	-	-	-	8,912,548
Low Grade	1,639,086	892,817	311,519	-	-	-	-	-	-	-	2,843,422
Waste	30,310,478	7,479,490	572,485	-	-	-	-	-	-	-	38,362,453
Total Tonnes Mined	**34,286,018**	**12,398,308**	**3,434,098**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**50,118,423**
Phase 2 Pit Production											
Ore	-	2,490	282,363	2,225,638	4,380,000	1,990,814	-	-	-	-	8,881,305
Low Grade	-	1,919	182,457	914,699	830,688	276,198	-	-	-	-	2,205,962
Waste	-	521,651	22,872,159	21,786,559	8,045,772	745,394	-	-	-	-	53,971,534
Total Tonnes Mined	**-**	**526,060**	**23,336,979**	**24,926,896**	**13,256,459**	**3,012,406**	**-**	**-**	**-**	**-**	**65,058,800**
Phase 3 Pit Production											
Ore	-	-	-	-	94,973	371,841	1,514,742	2,308,058	2,967,681	3,247,543	10,504,838
Low Grade	-	-	-	-	14,147	79,325	263,558	685,823	676,071	292,179	2,011,104
Waste	-	-	-	-	17,000,633	23,051,968	21,064,880	17,458,380	13,617,283	5,063,622	97,256,766
Total Tonnes Mined	**-**	**-**	**-**	**-**	**17,109,753**	**23,503,134**	**22,843,180**	**20,452,261**	**17,261,035**	**8,603,344**	**109,772,708**

16.2.1 Production Schedule Parameters

The mine production schedule is based on a 7 day per week schedule, with two 12 hour shifts per day. There are four crews planned to cover the rotating schedule. Each 12 hour shift contains a half hour down for blasting and miscellaneous delays, a half hour for shift start up and shutdown and an hour for lunch and breaks for a total of 10 effective working hours. Table 16-8 below shows typical yearly schedule parameters and hours scheduled.

Table 16-8: Mine Schedule Parameters

Mine Schedule	
Crews	4
Shifts/day	2
Hours/shift	12 hr.
Lunch, Breaks, etc..	1 hr.
Blasting, Misc..	0.5 hr.
Startup & Shutdown	0.5 hr.
Days/Year	365 days
Scheduled Hours/Year	**8,760**

The amount of equipment required to meet the scheduled tonnages is calculated based on the mine schedule, equipment availabilities, usages and haul and loading times for the equipment. Equipment mechanical physical availabilities start at 94% for the trucks, drills and loading units. For each year of production the mechanical physical availabilities decrease by one percent, the use of availability for all of the equipment is calculated at 83% based on the breaks and down time in the schedule parameters. An additional 85% efficiency factor is applied to all of the equipment for calculating the total units of equipment required. The Table 16-9 below shows the equipment availability parameters.

Table 16-9: Equipment Availabilities

Equipment Availabilities	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Physical Availability	94%	93%	92%	91%	90%	89%	88%	87%	86%	85%
Use of Availability	83%	83%	83%	83%	83%	83%	83%	83%	83%	83%
Efficiency	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%

16.2.2 Drill and Blast Parameters

The design parameter used to define drill and blast requirements are based on a 200 mm blast hole on a 7.4m by 6.4m pattern in the ore zones and a 7.7 m by 6.7 m pattern in the waste zones. Benches will be blasted and mined on 10m levels with 1.9m of sub-drill. Buffer rows and pre-shear are planned to allow for controlled blasting and minimize damage to the highwalls. The number of blast holes and blast hole drills required each month or year is calculated based on the parameters shown in Table 16-10 and used in calculating the operating costs. The majority of the mine life requires two rotary production drills, a third smaller drill is planned for pre-shear drilling.

Table 16-10: Drill and Blast Parameters

Production & Wall Control Blast Pattern Data		Production Pattern				
DRILLING & BLASTING PARAMETERS		Ore	Waste	Wall Control Pattern		
	Units	Rock	Rock	Buffer	Buffer	Preshear
Tonnage Factor	dmt/cubic meter	2.835	2.780	2.840	2.840	2.840
Blast Pattern Details						
Bench Height	meters	10.00	10.00	10.00	10.00	10.00
Sub Drill	meters	1.90	1.90	1.00	1.25	0.00
Diameter of Hole	mm	200.00	200.00	200.00	200.00	114.00
Staggered Pattern Spacing	meters	7.40	7.70	3.70	7.40	1.40
Staggered Pattern Burden	meters	6.40	6.70	3.20	3.20	1.40
Drill Equivalent Square Pattern	meters	6.90	7.20	3.45	5.30	1.40
Hole Depth	meters	11.90	11.90	11.00	11.25	10.00
Height of Stemming or Unloaded Length	meters	4.00	4.00	9.00	6.00	
Material Quantity						
Volume Blasted/Hole	cubic meters	476	518	119	281	20
Tonnes Blasted/Hole	tonnes	1,350	1,441	338	798	56
Powder Factor						
Percent Emulsion		30%	30%	30%	30%	30%
Percent Anfro		70%	70%	70%	70%	70%
Density of Powder	g/cc	1.01	1.01	1.01	1.01	1.01
Loading Density	kg/m	31.67	31.67	31.67	31.67	10.29
Powder/hole	kg	250.17	250.17	63.33	166.25	5.01
Powder Factor	kg/t	0.185	0.174	0.187	0.208	0.090
Powder Factor	kg/bcm	**0.525**	**0.483**	**0.532**	**0.592**	**0.256**
Drill Productivities						
Penetration Rate	M/hr	40.00	40.00	35.00	35.00	25.00
Penetration Rate	M/min	**0.67**	**0.67**	**0.58**	**0.58**	**0.42**
Cycle Time Estimate						
Drilling Time	minutes	17.85	17.85	18.86	19.29	24.00
Steel Handling Time	minutes	0.00	0.00	0.00	0.00	0.50
Set up Time	minutes	3.30	3.30	3.30	3.30	2.00
Add Steel	minutes	0.00	0.00	0.00	0.00	2.00
Pull Rods	minutes	0.50	0.50	0.50	0.50	2.00
Total	**minutes**	**21.65**	**21.65**	**22.66**	**23.09**	**30.50**
Drilling Factors for Wall Control						
Wall Control Drill Holes Required	***Perimeter Blast***	-	-			
Pre-Shear Holes	holes/meter		**0.71**			
Buffer Holes - 2 Rows	holes/meter		**0.48**			
Material to Remove from Production Blast	tonnes/meter		**288.26**			

16.2.3 Load and Haul Parameters

The design parameter used to define the loading and hauling requirements are shown in Table 16-11 below. The main loading units will be two 16.5 m^3 front shovels with a 12.2 m^3 front end loader as a backup unit. The shovels were chosen over front end loaders as the main loading unit because of their higher loading rate versus the loaders which will be advantageous given the short cycle times of the trucks. 90 tonne haul trucks are the main hauling unit, the shovel is calculated to require 3 passes to load the trucks and the loader will require 4 passes. 139 tonne trucks were also evaluated in the schedule but the 90 tonne trucks were found to be more cost effective than the 139 tonne trucks. Haulage profiles for the ore and waste material from each pit phase were generated and used to calculate the truck cycle times which were used in the equipment requirement calculations.

Table 16-11: Load and Haul Parameters

Loading & Truck Match Calculation		16.5 CM Shovel		12.2 CM Loader	
		Ore	Waste	Ore	Waste
Bucket Capacity (heaped)	cm	16.50	16.50	12.20	12.20
Bank Material Weight Dry	kg/bcm dry	2835	2780	2835	2780
Bank Material Weight Wet	kg/bcm wet	2906	2850	2906	2850
Bulk Factor (Swell Factor)		1.35	1.35	1.35	1.35
Loose Material Weight Dry	kg/lcm dry	2,100.0	2,059.3	2,100.0	2,059.3
% Moisture		2.5%	2.5%	2.5%	2.5%
Bucket Fill Factor		0.90	0.90	0.90	0.90
Effective Bucket Capacity	cm	14.85	14.85	10.98	10.98
Wet Material Weight (LCM)	wmt/lcm	2.15	2.11	2.15	2.11
Dry Material Weight (LCM)	dmt/lcm	2.10	2.06	2.10	2.06
Tonnes/Pass	wmt	31.96	31.34	23.63	23.18
Truck Size Capacity (volume)	cubic m heaped	60.0	60.0	60.0	60.0
Truck Size Capacity (tonnes)	wmt	90.3	90.3	90.3	90.3
Theoretical Passes (volume)	passes	4.04	4.04	5.46	5.46
Theoretical Passes (tonnes)	passes	2.82	2.88	3.82	3.90
Actual Passes	passes	**3.0**	**3.0**	**4.0**	**4.0**
Truck Load - Volume (volume)	cm	44.6	44.6	43.9	43.9
Truck Load - Volume (tonnes)	wmt	95.9	94.0	94.5	92.7
Truck Load for Productivity	dmt	**93.6**	**91.7**	**92.2**	**90.4**
Truck Capacity Utilized (tonnes)	by weight	**106.2%**	**104.1%**	**104.7%**	**102.7%**
Truck Capacity Utilized (volume)	by volume	74.3%	74.3%	73.2%	73.2%
Average Cycle Time	sec	35	35	55	55
Truck Spot Time	sec	30	30	30	30
Load Time per Truck	sec	135	135	250	250
Load Time per Truck	minutes	2.25	2.25	4.17	4.17
Maximum Productivity	trucks/hr	26.7	26.7	14.4	14.4
Insitu Volume/Hour	bcm/hr	880.0	880.0	468.5	468.5
Tonnes/Hour	dmt/hr	2,494.8	2,446.4	1,328.1	1,302.4

16.3 PREPRODUCTION DEVELOPMENT

The preproduction requirements at Nieves are minimal given the presence of mineable ore near the surface. The mine will be able to provide 6,800 tpd of ore to the mill during the first month of mining and will be at full capacity by month six. The terrain is fairly flat which will make the construction of initial haul roads fairly inexpensive. An estimated allowance of $2.5M has been included in the initial capital to cover the costs of the initial road construction and any clearing, or grubbing that may take place.

16.4 MINING EQUIPMENT

The initial mine production equipment will include two 16.5 m^3 shovels. A 12.2 m^3 front end loader will function as a backup loading unit and infill for production when needed. Initially thirteen 90 tonne haul trucks are required to meet the production schedule, during year two an additional truck will be added to meet production requirements and during year three five more trucks will be added for a total of nineteen trucks. Two production drills will also be purchased initially with a third pre-shear drill also purchased for wall control purposes. Table 16-12 lists the initial and total equipment requirements.

Table 16-12: Mine Production Equipment

Description	# Initial Units	# Total Units
16.5 m^3 Front Shovel	2	2
12 m3 Loader	1	1
Production Drill	2	2
PreShear Drill	1	1
Haul Truck - 90t	13	19

Support equipment will consist of three dozers Cat D8, D9 and D10. A 16' road grader will service the haul roads along with a 10,000 gallon water truck. A 0.9 m^3 excavator will be purchased for scaling highwalls and other miscellaneous projects around the mine site. Six mobile light plants will be purchased for lighting the working areas during nighttime production. A maintenance service truck with a mobile crane will be purchased for field maintenance and a self-contained fuel lube truck will be purchased for infield fueling.

Table 16-13: Mine Support Equipment

Description	# Initial Units	# Total Units
16' Grader	1	1
Water Truck	1	1
448hp Dozer	1	1
347hp Dozer	1	1
580hp Dozer	1	1
Lube/Fuel/Service	3	3
Light Plants	6	6
Small Excavator 148 hp	1	1

16.4.1 Staffing

The required manpower for the mine department is calculated based on the equipment required to meet the production schedule. The yearly averaged manpower requirements are shown in Table 16-14 below. The average mine department personnel is expected to average 152 people.

Table 16-14: Mine Department Manpower

Manpower Summary	LOM Average
Mining G&A	
Mine Superintendent	1
Mine Foreman	4
Blasting Foreman	1
Maintenance Superintendent	1
Maintenance Foreman	4
Mine Salaried	**11**
Drilling and Blasting	
Driller	6
Blaster	2
Blaster Helper	2
Drilling and Blasting	**10**
Loading	
Loader Operator	4
Shovel Operator	7
Loading	**11**
Hauling	
Truck Driver	61
Hauling	**61**
Roads and Dumps	
Dozer Operator	8
Grader Operator	4
Utility Operator	4
Support	**16**
Mine Maintenance	
Lead Mechanic	4
Heavy Equipment Mechanic	4
Light Vehicle Mechanic	2
Welder/Mechanic	8
Apprentice	8
Planner	2
Electrician	2
Total Mine Maintenance	**30**
Total Mine OP Operations	**140**
Engineering and Geology	
Sr Mining Engineer	1
Jr Mining Engineer	1
Chief Surveyor	1
Surveyor	1
Engineering	**4**
Sr Geologist	1
Ore Control Geologist	1
Sampler	2
Geology	**4**
Total Mine OP Eng Geo	**8**
Total Mine Department	**152**

17 RECOVERY METHODS

The design basis for the ore processing facility is 10,000 dry metric tons per day (DTPD) or 3,650,000 dry metric tons per year (DTPY) on an operating basis of 91% availability.

Design ore grade to the process plant is estimated to average 32.0 gpt of silver and 0.04 gpt gold. The process plant design allows for sustained metal recovery of silver and gold. Figure 17-1 shows the site plan of the process area.

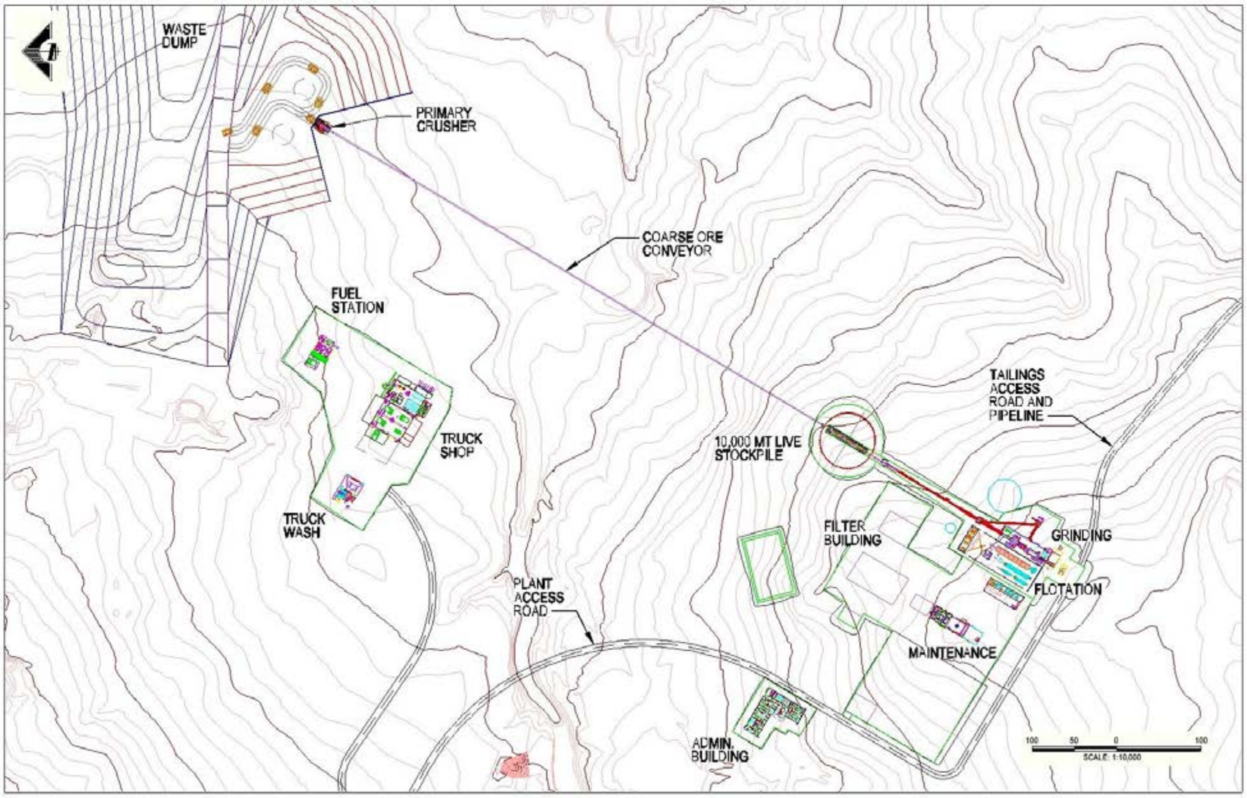


Figure 17-1: Process Area Site Plan

17.1 CRUSHING AND COARSE ORE STORAGE

Run of Mine (ROM) ore will be trucked from the mine to the primary crusher where it will be dumped directly into the crusher dump pocket that feeds a jaw crusher. If required, ROM ore may be dumped in a stockpile ahead of the primary crusher. A front end loader will be used to feed the crusher if needed. The crusher feed pocket will be designed to contain two truckloads of material.

ROM ore will discharge from the crusher dump hopper onto a vibrating grizzly feeder. The feeder will discharge oversize ore directly into a jaw crusher. Jaw crusher product will discharge onto the discharge conveyor. Undersize material that passes through the vibrating grizzly feeder will be combined with the jaw crusher product on the discharge conveyor. The discharge conveyor will discharge to the stockpile feed conveyor. The conveyor will transport the ore to a coarse ore stockpile.

A hydraulic rock breaker located at the crusher will be provided for breaking oversize ROM material.

Crushing production rate will be monitored by a belt scale mounted on the stockpile feed conveyor.

A "wet spray" system will be installed to suppress dust in ore feed streams, transfer points, and dump pocket. An air compressor and air dryer will be installed for operation and maintenance.

17.2 PRIMARY CRUSHED ORE RECLAIM

Primary crushed ore will be discharged to a stockpile. The coarse ore stockpile will have a 10,000 tonne live capacity. Dead storage may be recovered by bulldozer and/or a frond end loader.

Three draw points under the coarse ore stockpile will provide ore to three reclaim feeders, two operating and one standby, located in a tunnel. The reclaim feeders will discharge onto the SAG mill feed conveyor. Each feeder will be capable of feeding up to 500 tonnes per hour of ore to the SAG mill feed conveyor. The feeders will be variable speed and controlled to maintain a set point ore feed rate to the grinding circuit. One, two, or three feeders may be operated at any time. The control signal will be provided by a belt scale mounted on the conveyor downstream of the feed points. A metal detector will be installed over the SAG mill feed conveyor to remove tramp metal.

A "wet spray" system will be installed to suppress dust in ore feed streams, transfer points, and dump pocket. In addition, cartridge type dust collectors will be installed for dust control.

17.3 GRINDING

The grinding circuit will be designed to process an average of 10,000 mtpd at 91% availability on a 24 hour per day, 365 days per year basis. Ore will be ground to a final product size of 80% passing 104 microns in a semi-autogenous (SAG) primary and ball mill secondary grinding circuit.

Primary grinding will be performed in an 8.5 m diameter by 3.1 m (effective grinding length) long SAG mill with a 5,200 kW motor. The SAG mill will operate in closed circuit with a SAG mill discharge screen.

SAG mill discharge screen oversize will report to a series of two belt conveyors that will transport the oversize back to the SAG mill feed. The pebbles may be discharged directly to the SAG mill feed or they may be diverted to a pebble pile. SAG mill screen undersize will flow by gravity to the cyclone feed sump where it is combined with ball mill discharge.

Secondary grinding will be performed in a 5.0 m diameter by 10.1 m (effective grinding length) long ball mill powered by a 5,100 kW motor operated in closed circuit with hydrocyclones. The ball mill will discharge over a trommel screen. Ball chips will be rejected out the end of the trommel into a tote bin. Ball mill discharge will be combined with SAG mill discharge screen undersize in a grinding sump and will be pumped to hydrocyclones for classification. Combined slurry will be pumped using variable speed horizontal centrifugal slurry pumps to the primary cyclone cluster. Hydrocyclone underflow will report to the ball mill. Hydrocyclone overflow (final grinding circuit product) will flow by gravity to the rougher conditioner tank. Cyclone overflow will be sampled prior to rougher flotation.

A belt weigh scale will monitor the SAG mill discharge screen oversize that will be returned to the mill. The belt scale on the SAG mill feed conveyor will provide a signal for adjusting belt feeder speeds and makeup water addition.

Flotation reagents may be added to the SAG mill feed and may be added to the cyclone feed sump prior to flotation.

The grinding and flotation circuit plant floor will be concrete on grade with containment walls to contain spills within the floor area. The floor will be sloped to sumps that will pump the contained liquids and solids back to the mill feed. Steel framed maintenance platforms with steel grating will be provided.

17.4 FLOTATION AND REGRIND

The flotation circuit will consist of one train of rougher cells and one train of cleaner cells.

The rougher circuit will consist of one train of eight 100 m^3 tank type, forced air cells; with a drop between each cell and a conditioning tank ahead of the first cell. The eight cells will be used to float silver from the ore. Rougher flotation is expected to occur at a natural pH.

The cleaner train will consist of: a regrind mill, regrind cyclones, a conditioning tank, and one train of fourteen flotation cells, seven first cleaner cells, four second cleaner cells, and three third cleaner cells.

Cyclone overflow at approximately 30% solids will flow by gravity from the primary grinding circuit to the rougher conditioning tank. Slurry from the conditioning tank will overflow by gravity to the first rougher flotation cell. Rougher flotation tailings from the final rougher cell will be pumped to a high-rate tailings thickener.

Rougher flotation concentrate will flow by gravity to the regrind cyclone feed pump box. The slurry will be pumped from the pump box using variable speed horizontal centrifugal pumps (one operating and one stand by) to the regrind mill hydrocyclone cluster, or may be bypassed directly to the cleaner conditioner tank. Underflow from the regrind cyclone cluster will be returned, by gravity, to the regrind mill. Cyclone overflow from the regrind mill cyclone cluster will flow by gravity to the cleaner conditioner tank via the cleaner feed sampler.

Rougher concentrate will be reground to a final product size of 80% passing 20 to 30 microns in the regrinding circuit. Reground or bypassed concentrate will flow by gravity from the cleaner conditioner tank to the first cleaner flotation cells. The first cleaner concentrate will be pumped using froth pumps (one operating and one standby) into the second cleaner flotation cells and the tailing will be pumped (one operating and one standby) back to the rougher circuit or may be bypassed directly to the tail thickener. The second cleaner concentrate will be pumped using froth pumps (one operating and one standby) to the third cleaner flotation cells. The third cleaner concentrate will be pumped using froth pumps (one operating and one standby) to a concentrate thickener. Cleaner flotation is expected to occur at an increased pH.

Automatic samplers will be provided to sample and monitor designated streams.

Flotation reagents may be added into the rougher conditioner tank and/or may be stage added to the rougher flotation cells. In addition, flotation reagents may be added into the cleaner conditioner tank ahead of each row and/or may be stage added as needed into the cleaner cells.

17.5 DEWATERING AND FILTRATION

Concentrate from the third cleaner flotation cells will be pumped to a concentrate thickener. Concentrate thickener overflow from will be pumped to the cyclone feed sump for re-use in the process or may be bypassed to the process water pond. Concentrate thickener underflow will be pumped (one operating pump and one standby) to an agitated storage tank and then to a pressure filter. Flocculant will be added as needed to aid in solids settling in the thickener. There will be a single concentrate filter.

Filter cake from the concentrate filter will drop onto a discharge conveyor that will feed a concentrate bin feed conveyor. Concentrate from the discharge conveyor may be bypassed to a bulk concentrate storage area. Concentrate from the bin feed conveyor will discharge to a bagging system. Bagged concentrate will be loaded by fork lift in trucks for shipping.

A truck scale will be located near the concentrate load out area.

A metal clad concentrate handling building will house the filter, thickener, concentrate packaging, electrical, and load out. The floor will be concrete on grade with curbs to contain spills within the floor area. The floor will be sloped to sumps and pumps that will pump the collected liquids and solids back to the process. Steel framed maintenance platforms with steel grating will be provided.

17.6 FLOTATION TAILING TREATMENT

The rougher flotation tailings will be pumped to a high rate tailings thickener. Flocculant and dilution water will be added to the thickener feed to aid in settling.

The withdrawal rate of settled solids will be controlled by a variable speed thickener underflow pump to maintain either thickener underflow density or thickener solids loading. Underflow from the tailing thickener will be pumped using three horizontal centrifugal slurry pumps (two fixed speed, one variable speed, three operating, three standby), at 50 to 65% solids, to the TSF.

The thickener overflow will be pumped, using fixed speed horizontal centrifugal pumps, to the process water pond.

The tails thickener, a high rate thickener, will be mounted on steel legs on foundations. A concrete containment area with slab on grade and cast-in-place curbs will contain rain runoff and process spills. A sump pump will transfer the containment water and/or spills back to the thickener.

17.7 REAGENT STORAGE AND MIXING

Reagents requiring handling, mixing, and distribution system include:

- Collector(s)
- Frother(s)
- Flocculant
- Antiscalant

The dry reagents will be stored under cover, then mixed in reagent tanks and transferred to distribution tanks for process use.

Liquid reagents will be off-loaded to storage tanks and transferred to distribution tanks for process use.

17.8 WATER SYSTEM

Water for will be supplied from a variety of sources over the life of mine (LOM).

Process water will be recycled from the tailings thickener and TSF. The reclaimed water will be pumped to the process water pond located close to the plant.

Make up water is introduced to the system to account for evaporation losses. Make up water will be pumped to a fresh/fire water tank. The fresh/fire water tank will supply the requirements for reagents, crushing area dust suppression, and for use as makeup water in ore processing. In addition, fresh water will be delivered to the truck shop, the truck wash, and the warehouse, laboratory, and administration buildings. Fresh water will be supplied from wells. Water from the wells will be pumped to a Fresh water tank. The fresh water tank will supply the requirements for reagents, crushing area dust suppression, and for use as makeup water in ore processing. In addition, fresh water will be available at the truck shop, the truck wash, and the warehouse laboratory, and administration buildings.

Potable water will come from the Fresh/Fire water tank. The water will be distributed from a 30 m^3 capacity storage tank following treatment (filtering and chlorinating) in a potable water treatment plant.

17.9 COMPRESSED AIR

An air compressor and air receiver will be installed for operation and maintenance at the primary crushing area. Plant air compressors will provide service and instrument air for grinding through the tailings operations. An air dryer will remove moisture in instrument air. Plant air and instrument air receivers will be provided.

Individual low pressure blowers will be located in the flotation area to provide air to the rougher flotation and cleaner flotation cells.

A tank mounted reciprocating air compressor will be installed for operation and maintenance at the truck shop.

18 PROJECT INFRASTRUCTURE

18.1 TRANSPORTATION

The Nieves project will have convenient ground transportation for construction and operation of the project. Within close proximity is federal Mexican Highway "Cerraterra Federal 49" that runs northwest from Rio Grande to Juan Aldama Municipality. An existing paved road leads east 17 km from a turn off on highway east adjacent to the Nieves property.

No rail or port facilities are planned or required for this project.

18.2 POWER

Comisión Federal de Electricidad (CFE) is the regional supplier of power in Mexico. This power is carried largely on Mexico's high voltage transmission systems.

Power for the project facilities will be provided from a connection to the local transmission grid that runs along Highway 49. A new substation would likely be required, along with a new 17 km 115 kV power line to the site.

18.3 WATER

The Nieves project will likely require 50 to 100 liters per second of fresh water to sustain operations. While no water exploration has been completed for the Nieves project to date, past experience in the area indicates that water is available in deep regional aquifers. It was a assumed that a water well field could be found within close proximity of the project.

18.4 TAILING STORAGE FACILITY

The Nieves project tailing storage facility (TSF) will be constructed utilizing downstream dam construction and located south of the processing facility. The TSF location was selected primarily because adjacent hills make it topographically accommodating to an economical tailing dam design. Tailing slurry will be pumped from the processing facility at 55% solids. Material will then be deposited utilizing a pipeline with spigots at strategic locations. Solids will settle in the dam and supernatant water will be recycled back to the processing facility.

A three year starter dam will be constructed as part of the original capital project that will hold 10.5 million tonnes of tailing. Starting in year three, the dam will be "raised" by adding material on top and downstream of the dam. This will allow the dam to hold more tailing material. The dam will be raised multiple times throughout the mine life. The costs for raising the dam are allocated in sustaining capital. The ultimate capacity of the dam is 35.4 million tonnes.

It is assumed for the purposes of this project that the tailing facility will be unlined. It was also assumed that the dam will be constructed of local borrow material and that the constructed side slopes will be 3 (horizontal) to 1 (vertical).

19 MARKET STUDIES AND CONTRACTS

No marketing studies were completed for this study. It was assumed for the purposes of this PEA that concentrate can be sold to a Mexican smelter.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

20.1 ENVIRONMENTAL STUDY RESULTS AND KNOWN ENVIRONMENTAL ISSUES

This section contains the results of environmental studies and a discussion of any known environmental issues that could materially impact the project.

20.1.1 Environmental Characterization

20.1.1.1 Typical Weather Patterns at the Project Site

Typical weather patterns at the project site include the following:

1. **Climate Type**

   According to Koppen's classification modified by E. Garcia (1988), the typical weather in the project zone belongs to the dry climate group (BS), dry climate type (BS0) and partially dry climate type (BS1).

2. **High Temperatures**

   The average temperature in January is around 12°C and rises to 23°C in August. The area has an average annual temperature of 17.9°C.

3. **Precipitation**

   The annual proportional precipitation in the zone is 383.1 mm. The months of July and August are the rainiest, with rains between 84.9 and 86.4 mm respectively. March has historically been the driest month, with only 1.7 mm of rain.

   The zone is not susceptible to hurricanes or tropical cyclones.

4. **Air Quality**

   The project zone is located in the Santa Rita mining district, where there are many (sometimes very old) mining construction sites, waste rock areas and, leach pads that could imply impacts on the air quality of the zone.

20.1.2 Seismic Activity

The project will built in an area where there is no historical record of earthquakes. There have been no earthquakes reported in the last 80 years, and no ground accelerations from earthquakes are expected beyond the 10% of the gravity acceleration caused by earthquakes.

In general, all volcanoes in Mexico are located over 100 kilometers away from the project site. Therefore, if one of them became active, it would not represent a risk for the zone.

20.1.3 Hydrologic and Underground Surface Information

According to the names given by the National Water Commission (CONAGUA), the project area is located in the R. Aguanaval hydrologic basin, below the hydrologic basin called Hydrologic RH36Dc Río Agua Naval-Río Grande. This represents an endorheic (or closed) basin that deposits its current water under the hydrologic basin RH36Db R. Aguanaval-P. Deriv. Sombreretillo.

Inside the project area are many intermittent creeks that only run when it is raining. Meanwhile, the municipality has one important river available, which is Rio Aguanaval or de Nieves. In Colonial times it had been named Rio de Medina, Río de Alonso López de Lois, de Urdiñola and later after the colonial times it was called Guanaval or Benaval. Currently the river is called Aguanaval or Nieves.

20.1.3.1 Underground Water

The project site is located on the aquifer named by the National Water Commission as 3217 El Palmar. It has an annual average recharge of 69.1 million m^3, which represents a concessional underground water volume of 48.4 million m^3 and an annual average underground water survey of 10.5 million m^3.

20.1.4 Land Use and Vegetation

The project area is located in the Santa Rita mining district, where there are several old mining works, leaching pads, and waste rock dumps, with relative flat topography, covered by alluvial or rock materials. The vegetation on the site is primarily Creosote (Larrea tridentata), Texas Sage (Leucophyllum frutescens), A. Gray (Mimosa zygophylla), chaparro prieto (Castela texana), huizache (Acacia sp.) mesquite (Prosopis Grandulosa, nopaleras (opuntia sp.), tesajillo (Opuntia leptocaulis), Agave lechugilla and maguey (Agave sp.).

The fauna on site is typical for the Zacatecas desert; however, very rarely because of its proximity to buildings and human activities, the site fauna is represented by hares (Lepus sp.) rabbits (Sylvilagus audobony parvulus), roadrunners (Geococcxys californainus), house sparrow (Passer domesticus), rattlesnake (Crotalux sp.), and lizard (Family iguadinae).

20.1.5 Regiones Terrestres Prioritarias (RTP) or Priority/Protected Land Areas

The closest RTP is located more than 50 kilometers to the west of the project site.

20.1.6 Important Areas for the Conservation of Birds

AICA C62, called Sierra de Valparaíso, is located more than 50 kilometers directly south of where the Nieves project will be developed. At a similar distance, to the west, AICA NO-52 (Sierra de Organos) is located in the state of Durango.

20.1.7 Regiones Hidrologicos Prioritarias (RHP) or Priority/Protected Hydrological Areas

The closest RHP, RHP-51 Camacho-Gruñidora, is located more than 25 kilometers to the west of the project site.

20.1.8 Natural Protected Areas

The project site is not located inside a Natural Protected area. The closest protected area is the National Park Sierra de Organos, in the municipality of Sombrerete, Zacatecas, at a distance of more than 60 km to the southwest of the project site.

20.2 REGULATIONS AND MANAGEMENT REQUIREMENTS (PERMITS/AUTHORIZATIONS)

This section contains an analysis of the regulations relevant to the development of the Nieves Project, as well as management requirements, including permits and authorizations.

The Nieves Project consists of carrying out work and activities related to the exploration, exploitation and mineral extraction/beneficiation reserved by the Federation in the terms of Article 27 of the Mexican Constitution and in the Mining Law, as well as the change in land use from forest land for this purpose.

By virtue of the aforementioned laws, it will be necessary to submit an environmental impact manifest (Manifiesto de Impacto Ambiental, or MIA) that relates to the possible impacts on the environment that the Nieves Project activities could cause.

20.2.1 Project Compatibility with Participatory Planning Instruments

Carrying out Nieves Project activities is compatible with the policies and guidelines set forth in federal and local plans and development programs. The authorizations and permits to be requested from the required authorities correspond to a project compatible with existing legal systems and environmental policy instruments.

a) The development of the Nieves study does not contravene any legal provision or policy which is explicitly in the laws, regulations and Official Mexican Standards, which are applicable in the field of pollution prevention and the use, preservation and restoration of natural resources.

b) In the case that negative impacts to the environment are detected during the course of the environmental impact assessment, the Company will determine the appropriate measures to prevent, mitigate, or compensate for any possible adverse environmental impacts resulting from the activities.

c) The Company must comply fully with the applicable legal systems, as well as with the environmental protection provisions that the Secretariat of the Environment and Natural Resources determines at the time that the Project is subject to evaluation.

20.2.2 Viability Criteria

Because of the aforementioned requirements, the following list of declarations form the general criteria for viability applicable to the Nieves Project:

1. The project is not located in any other area that prohibits its execution, such as a protected natural area or an area of priority conservation.

2. The management of the species of plants, which are cataloged by the Mexican Official Norm NOM-059-SEMARNAT-2010 will be handled in accordance with the Rescue Program in the authorized areas ensuring their conservation. Additional effects on surfaces are not anticipated from the presence of the project's catalog of natural elements.

3. Air quality will not be changed by the development of the mining project.

4. In the long term, the Company can mitigate the project implementation impacts on the land through the development of a Management Plan for soils, which will allow topsoil to be kept and later used during the reclamation and closure program.

5. The project's impact on surface and groundwater hydrology can be mitigated such that operating the project will have no impact on the ecological balance of the area's environmental system.

6. Acid drainage will be prevented through the appropriate management of materials with sulfides. Drainage will be proportionately reduced, and the probability of acid generation will be low.

7. The Company will develop an environmental monitoring program with the purpose of monitoring the effectiveness of preventive measures, environmental mitigation and compensation.

8. As far as environmental risks are concerned, there will be a safety program provided that includes the actions, techniques and methodologies required to reduce the likelihood of the occurrence of unwanted events, as well as to reduce their impacts to the environment and to human health and safety.

9. To minimize the chance of environmental risks occurring, various measures will be applied, including the land stability analysis.

20.3 POTENTIAL SOCIAL & COMMUNITY REQUIREMENTS AND PLANS

This section contains a discussion of any potential social or community related requirements and plans for the project and the status of any negotiations or agreements with local communities.

20.3.1 Background

20.3.1.1 Socio-economic environment

Nieves is the town with largest population in the Municipality, and it is located near to the proposed site location.

20.3.1.2 Demographics

According to the Census of Population and Housing 2010 developed by the National Institute of Geography and Computer Science (INEGI, from its Spanish acronym), the total population of Nieves is 5,653 people, of which 2,688 are men and 2,965 are women.

Nieves is considered a migrant city. Because the migratory flow is very high, this dynamic demographic causes depopulation of the communities and aging of its population.

20.3.2 Economy and Employment

20.3.2.1 Characteristics of the economically active population

Nieves has an economically active population of 1,978 people, of which 1,430 are men and 548 are women. There are 2,319 individuals who are not economically active, of which 558 are men and 1,761 are women.

The occupied population was established at around 1,896 people, of which 1,346 are male and 547 are female. The unemployed population totals 82 people.

20.3.2.2 Key economic processes, products and commercial activities of the municipality:

The economic activity in Nieves and in general in the municipality is primarily agriculture. Specifically, livestock activities are extensively carried out in an area of 165,579 hectares.

The municipality has not had an industrial development, today having an onyx factory as well as a hulling mill that produces milk, cream and cheese.

As far as the natural conditions in or around the municipality, there are no locations for developing tourism.

Percentagewise, 16.3% of the economically active population is engaged in primary sector activities; 29.01% participate in the secondary sector, and 51.66% participate in the tertiary sector. This infers that the population develops their productive activities outside the town of Nieves.

20.3.2.3 Marginalization

The indicators of social backwardness and lag in housing in the town of Nieves is found at a very low level. At the same time, there has been a breakthrough in the gloom of the lag in the indicators between 2005 and 2010.

20.3.2.4 Health

The institution that has greatest impact with their respective coverage in the insured population is the *Instituto Mexicano del Seguro Social* (IMSS, or Social Security) that covers 2,683 of the 4,155 rights holders. There are 1,486 residents without health insurance to health services. The *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* ("ISSSTE") caters to 983 beneficiaries, and in both categories the IMSS provides service to 389 people.

20.3.2.5 Education

Elementary education infrastructure consists of three federal elementary schools that cater for close to 750 students with 42 teachers in the same number of classrooms.

It also has a federal technical secondary or middle school campus which is attended by more than 300 students, taught by 15 teachers in 11 classrooms.

Finally, Nieves is also has a technical agricultural secondary school and a normal high school.

The population aged 15 and up with incomplete elementary school education amounts to 685 people and the average schooling grade level is 8.23.

20.3.2.6 Housing

In Nieves, the census found 1,379 households, of which 1,014 are male-headed households and 365 are female-headed households.

The average number of occupants per household is 4.1 people, with an average number of occupants per room of 0.97.

20.4 SOCIAL AND COMMUNITY NEEDS

As has been pointed out in previous paragraphs, the indicators of social backwardness and lag in housing in the town of Nieves is found to be very low. What can be inferred from this is that the income of the population enables them to maintain worthwhile housing conditions.

Additionally, during the period between the years 2005 and 2010, efforts were made to combat the lag.

However favorable conditions may be with regards to the social backwardness indicators, there is a factor that explains this: the high rate of population migration is a factor that has led to Nieves being the main starter location of the population that goes toward the U.S. in Zacatecas

(47.7% of the homes receive remittances from nationals living abroad). While more than 50% of the population still lives in Nieves, they are dedicated to the tertiary economic sector, since there is no industry in the town.

That is to say, uprooting happens when the lack of local employment opportunity encourages potential workers to go abroad.

Therefore, the main social and community needs would need to be focused to address the following aspects:

- Providing well-paid and long-term employment opportunities that allow the population to establish roots in the community and to build long-term projects for themselves and in the community, as well as other integral developments.
- The aforementioned will also strengthen aspects of health, education, communication and infrastructure in the area, generating a regional development center.
- Strengthening the identity of the Nieves residents through putting down roots.

20.4.1 Status of Agreements with the Community

According with the information provided by the Company, exploration activities made in the project area cover suburban land, small privately owned parcels (ranches) and municipal property.

With regard to the ejidos, there is an agreement with the ejido Nieves, which was signed with the representatives of the Ejido, including its commissariat. Beyond that, any other agreements with landowners have been made verbally without any formality.

It is desirable that in the future, and especially in the event that the project becomes profitable, that formalizing legal possession and occupation of the land be considered, in case outright acquisition of the land is not chosen.

As far as Ejidos are concerned, the land occupation agreements must have been worked out in compliance with requirements established by the Land Law so as to have legal certainty of being able to carry out project activities on the site, as well as for processing and acquiring permits/authorizations of any kind, especially for environmental issues or studies.

With regards to private property, the contract should be drawn up under the requirements established by the Civil Code of the State of Zacatecas.

The enterprise may take into account that one way to legally be able to occupy project area land is through the processing and acquisition of a decree for temporary occupation, as outlined in the terms of the Mining Law. This option should be analyzed according to the conditions under which one may negotiate for the occupation of the land.

20.5 MINE CLOSURE

This section includes a discussion of mine closure (remediation and reclamation) requirements and costs. The main objectives for the recovery of the mine are:

- Prepare the land for productive use in the long term and / or for the establishment of wildlife habitat.
- Leave the mine areas stable and safe/secure.
- Prevent erosion by reforestation of affected areas and to encourage and facilitate drainage.
- Prevent environmental contamination, both present and future.

Having as general activities:

- General dismantling of the infrastructure and the removal of machinery and equipment.
- Detoxification and physical stabilization of the leach pads.
- Restoration and Reforestation of areas disturbed by mining activity.

The list of the most important activities performed on the stage of closure/abandonment of the mine, depending on the mining work is as follows:

- **Pit**
  - Removal of all types of explosives and cancellation of the permit;
  - Removal of equipment and support facilities;
  - Construction of berm and security fence around the pit;
  - Work surface runoff control;
  - Closure and restoration of roads; and
  - Scarification of soil and planting seeds.

- **Crushing plant**
  - Dismantling of equipment and facilities;
  - Cleaning and waste disposal area;
  - Land grading and scarifying; and
  - Reforestation (planting seeds and plantations).

- **Waste dumps**
  - Relaxation of slopes and soil scarification. According to NOM-155-SEMARNAT-2007;
  - Work surface runoff control;
  - Assessing the quality of exposed soil;
  - Establishment of herbaceous substrate; and
  - Establishment of tree substrate.

- **Leaching pad**
  - Dismantling and removal of process equipment;
  - Detoxification process (irrigation with water or application of other treatment);

- Sampling to assess the quality of the solutions, according to NOM-155-SEMARNAT-2007;
- Notification to CNA regarding usage or discharging solutions to environment;
- Characterization of waste material and sludge neutralized in pools;
- Filling of pools;
- Smoothing of slopes in backyards and scarification of the soil. According to NOM-155-SEMARNAT-2007;
- Establishment of herbaceous; and
- Establishment of tree layer.

- **Processing plant**
  - Decommissioning (first phase of the metallurgical process order);
  - Decommissioning (second phase, to neutralization);
  - Demolition of fixed works which are not of interest to owners of surface land;
  - Cleaning and proper disposal of waste;
  - Land grading and scarifying; and
  - Reforestation.

- **Support facilities (workshop, laboratory, etc.).**
  - Dismantling of equipment and facilities;
  - Closure of septic tanks and trash;
  - Cleaning and waste disposal;
  - Cleaning and treatment of areas impacted by oil spills;
  - Scarification of the land; and
  - Planting native seeds.

- **Roads**
  - Agree with the landowners which roads will remain;
  - Closure of inactive roads;
  - Land grading and drainage works; and
  - Scarification and planting native seeds.

21 CAPITAL AND OPERATING COSTS

In general M3 based this capital cost estimate on its knowledge and experience of similar types of facilities and work in similar locations. Resources available to M3 included recent cost data collected for a nearby mining project now in the detailed engineering phase, and plant designs for similar process plants under construction, design or study in other locations.

To assist in the estimating, M3 used quantity estimates, and in some cases costs, supplied by specialist sub consultants, including Hard Rock Consulting.

21.1 CAPITAL COSTS

21.1.1 Process Plant & Infrastructure

21.1.1.1 Assumptions

The project is assumed to be constructed in a conventional EPCM format, i.e. Nieves will retain a qualified contractor to manage and design the project; bid and procure materials and equipment as agent for Nieves; bid and award construction contracts as agent; and manage the construction of the facilities as agent.

Nieves will order major material supplies (i.e., structural and mechanical steelwork) as well as bulk orders (i.e., piping and electrical). These will be issued to construction contractors on site using strict inventory control.

All costs to date by Owner are considered as sunk costs. Any costs incurred for this preliminary economic assessment, the upcoming pre-feasibility study and the completion of any future feasibility study (including field drilling and lab testing) are not included.

"Initial Capital" is defined as all capital costs through to the end of construction or the end of Year 1 of the mine life defined as the year in which commercial scale production starts. Capital costs predicted for later years are carried as sustaining capital in the financial model.

This is a capital sensitive project, so it is assumed that value engineering for the processing facility will be required to keep costs down. The capital estimate shown is on the low side of benchmark ranges evaluated.

It was assumed that no geo synthetic liner would be required for the Tailing Facility, and local borrow material is available.

All costs are in 2nd quarter 2012 US dollars.

21.1.1.2 Estimate Accuracy

The accuracy of this estimate for those items identified in the scope-of-work is estimated to be within the range of plus 30% to minus 30%; i.e., the cost could be 30% higher than the estimate or it could be 30% lower. Accuracy is an issue separate from contingency, the latter accounts for undeveloped scope and insufficient data (e.g., geotechnical data).

The following is a summary of the approach used to estimate the costs in the project.

- **Processing Facilities:** Costs for the processing facilities were developed by utilizing a major equipment list and benchmarking similar projects.
- **Infrastructure:** Costs for power line was estimated based on a cost per kilometer for a similar installation. Other infrastructure costs were estimated based on similar projects.
- **Indirect:** Indirect costs are based on standard percentages of direct level costs. EPCM, mobilization, commissioning, owner's costs and first fills are included in indirect costs.
- **Contingency:** Contingency was assumed to be 20% of the total contracted cost.

Table 21-1: Process & Infrastructure Capital Cost Estimate Summary

Description	PEA Level Costs	Cost Areas Include
Direct Level Costs		
Site General	11,000,000	Roads, plant site civil and misc project infrastructure
Primary Crusher and Stacking Conveyor	7,500,000	Primary Jaw crusher, stacking conveyor
Reclaim and Conveying	6,000,000	Reclaim tunnel and SAG feed conveyor
Grinding and Classification	22,000,000	Grinding mills, Building, hydrocyclones, pumps, etc.
Flotation and Regrind	13,000,000	Rougher and cleaner cells, regrind mills, samplers, etc.
Concentrate Thickening and Filtration	6,500,000	Concentrate thickeners, filters, and load out building
Reagent Storage	4,500,000	Tanks, Agitators, Flocculant Make Down, Dry Storage, etc.
Tailing Handling	4,500,000	Tailing thickener, piping and distribution to the tailing Impoundment
Tailing Impoundment	20,000,000	3 Year Starter Dam, No Liner, no Diversion
Power and Electrical	7,500,000	High voltage transmission line, upgrade of CFE infrastructure, and on site power transmission
Water Systems	4,000,000	Well Field, Fresh Water Distribution and Process Water Distribution Systems
Ancillary Facilities	9,000,000	Ancillary Buildings, Mine Support Facilities, Fueling, etc.
Total Direct Level Costs	**115,500,000**	
Indirect Costs		
Construction Contractor Camp and Bussing Costs	3,000,000	Cost to operate construction camp and bussing system for construction
Mobilization	577,500	Cost for contractors to mobilize to site.
EPCM	18,480,000	Engineering, Procurement and Construction Management
First Fills, Spares, Pre-Commissioning and Commissioning	4,042,500	
Contingency	28,320,000	For unknown costs within current scope
Owner's Costs	17,325,000	Land tenure, owner's staff, legal, early staffing, training, site security, etc.
Total Indirect Level Costs	**71,745,000**	
Total Direct + Indirect Costs	**187,245,000**	

21.1.1.3 Documents

Documents available to the estimators include the following:

• Design Criteria	(No)
• Equipment List	(Major Equipment)
• Equipment Specifications	(No)
• Construction Specifications	(No)
• Flowsheets	(Yes)
• P&IDs	(No)
• General Arrangements	(PEA Level)
• Architectural Drawings	(No)
• Civil Drawings	(PEA Level)
• Concrete Drawings	(No)
• Structural Steel Drawings	(No)
• Mechanical Drawings	(No)
• Electrical Schematics	(No)
• Electrical Physicals	(No)
• Instrumentation Schematics	(No)
• Instrument Log	(No)
• Pipeline Schedule	(No)
• Valve List	(No)
• Cable and Conduit Schedule	(No)

21.1.2 Mine Capital Costs

The mine capital cost estimate for the Nieves Silver Project includes recent price quotes from projects using similar size equipment or from Cost Mine Handbooks. A breakdown of the total estimated mine capital cost is presented in Table 21-2. The preproduction development estimate of $2.5M is not included in the total below nor is the estimate for mine buildings and infrastructure which are included in the site infrastructure capital.

Table 21-2: Mine Capital Cost Estimate

Description	# Initial Units	# Additional Units	# Total Units	$/Unit	Initial Capital Cost	Sustaining Capital Cost	Total Capital Cost
16.5 m3 Front Shovel	2	0	2	$5,000,000	$10,000,000	$0	$10,000,000
12 m3 Loader	1	0	1	$2,125,000	$2,125,000	$0	$2,125,000
Production Drill	2	0	2	$950,000	$1,900,000	$0	$1,900,000
PreShear Drill	1	0	1	$750,000	$750,000	$0	$750,000
Haul Truck - 90t	13	6	19	$1,600,000	$20,800,000	$9,600,000	$30,400,000
16' Grader	1	0	1	$850,000	$850,000	$0	$850,000
Water Truck	1	0	1	$850,000	$850,000	$0	$850,000
448hp Dozer	1	0	1	$970,000	$970,000	$0	$970,000
347hp Dozer	1	0	1	$665,000	$665,000	$0	$665,000
580hp Dozer	1	0	1	$1,400,000	$1,400,000	$0	$1,400,000
Lube/Fuel/Service	3	0	3	$125,000	$375,000	$0	$375,000
Light Plants	6	0	6	$22,000	$132,000	$0	$132,000
Small Excavator 148hp	1	0	1	$190,000	$190,000	$0	$190,000
Misc Equip	1	0	1	$500,000	$500,000	$0	$500,000
Pickups	10	0	10	$40,000	$400,000	$0	$400,000
Equipment Rebuilds						$21,484,489	$21,484,489
Total					**$41,907,000**	**$31,084,489**	**$72,991,489**

21.2 SUSTAINING CAPITAL COST ESTIMATE

Sustaining capital costs were also evaluated for the project. Costs were estimated for future costs as shown in Table 21-3.

Table 21-3: Summary of Sustaining Costs (in Millions of $)

	Mining	Tailing	Total
1	$ 2.176	$ -	$ 2.176
2	$ 1.671	$ -	$ 1.671
3	$ 10.399	$ 11.00	$ 21.399
4	$ 2.430	$ -	$ 2.430
5	$ 2.594	$ 11.00	$ 13.594
6	$ 2.567	$ -	$ 2.567
7	$ 2.588	$ -	$ 2.588
8	$ 2.524	$ 11.00	$ 13.524
9	$ 2.289	$ -	$ 2.289
10	$ 1.847	$ -	$ 1.847
Total	**$ 31.085**	**$ 33.00**	**$ 64.085**

Sustaining capital costs include indirect costs, but do not include contingency. All sustaining costs are in Q3, 2012 dollars.

21.3 OPERATING COST

The average Operating Costs over the life of the mine include mine, process plant, general & administration, and refining and treatment charges. These are included in Section 22. See Table 21-4 for more detail.

Table 21-4: Average Operating Cost Summary

Mining	$	6.75
Process Plant Operating Costs		
Labor	$	0.51
Maintenance Parts and Services	$	0.70
Power	$	3.34
Reagents	$	2.20
Steel Consumption	$	2.29
Supplies and Services	$	0.40
Total Process Plant	***$***	***9.43***
G&A Operating Costs	$	1.41
Total Operating Costs/ tonne milled	$	17.59

21.3.1 Mine Operating Costs

Mine operating cost estimates are based on scheduled production, equipment requirements, operating hours, hourly equipment operating costs, and manpower requirements. Cost factors are based on past project experience and equipment usage estimates from the Cat handbook and Cost Mine handbook. The total mine operating costs are estimated to average $1.10/tonne mined or $6.75/tonne milled. Mine wages and salaries are estimated from work on past projects in Mexico with similar size and location to Nieves. The scheduled hours are based on the 12 hour shift operating schedule averaged over the year with 3% scheduled overtime. During times of major equipment rebuilds 80% of the maintenance labor costs are distributed to the mine equipment and charged to sustaining capital. The remaining 20% remains in operating costs for routine maintenance items. The payroll burdens are estimated to be 35% of the total payroll amount. The required manpower for the mine department is calculated based on the equipment required to meet the production schedule. The yearly averaged manpower requirements are listed in Table 16-14.

Monthly required operating hours are calculated for each piece of equipment based on the production schedule, equipment availabilities, usages, and the load and haul parameters. Cost factors are based on past project experience and equipment usage amounts from the Cat handbook and Cost Mine handbook. The diesel fuel cost is estimated at $0.85/liter.

22 ECONOMIC ANALYSIS

The Nieves project economics were completed using a discounted cash flow model. The financial indicators examined for the project included the Net Present Value (NPV), Internal Rate of Return (IRR) and payback period (time in years to recapture the initial capital investment). Annual cash flow projections were estimated over the life of the mine based on capital expenditures, production costs, transportation and treatment charges and sales revenue. The life of the mine is approximately 10 years. Since this is a preliminary report, these estimates are based off of mineral resources. According to NI 43-101, mineral resources that are not mineral reserves do not have demonstrated economic viability.

22.1 ASSUMPTIONS

Major assumptions in the cash flow model

It was assumed that a smelter in Mexico could take and treat the concentrate; therefore, shipping costs were included at $50/tonne. If concentrate would be taken outside of Mexico, the shipping costs would increase.

22.2 PRODUCTION STATISTICS

Mine production is reported as ore and waste from the mining options. The annual production figures were obtained from the mine plant

The life of mine ore quantities and ore grade are presented in Table 22-1 below.

Table 22-1: Mine Production

Ore Ktonnes	Waste ktonnes	Average Annual Silver Grade (g/t)	Average Annual Gold Grade (g/t)
35,359	189,591	56.822	0.042

<u>Process Plant Production Statistics</u>

The following products will be produced from the Process Plant:

- Flotation Concentrate in Super Sacks

The estimated recoveries for each metal are as follows:

- Silver 86%
- Gold 86%

Life of mine saleable production is presented in Table 22-2 below.

Table 22-2: Commodity Production

	Silver (koz)	Gold (koz)
Metal Production	52,365	25

Smelter Return Factors

The process plant product will be shipped from the site to smelting and refining companies. The smelter and refining treatment charges will be subject to negotiation at the time of final agreement.

A smelter may impose a penalty either expressed in higher treatment charges, or in metal deductions to treat concentrates that contain higher than specified quantities of certain elements. It is expected that the concentrate will not pose any special restrictions on smelting and refining, and that the concentrates will be marketable to smelting and refining companies. The smelting and refining charges calculated in the financial evaluation include charges for smelting and refining these products. The off-site charges that will be incurred are presented in Table 22-3 below.

Table 22-3: Smelter Return Factors

Payable Metal - Ag (%)	95.00%
Payable Metal - Au (%)	95.00%
Deduction Ag- ozs/t	1.5
Deduction Au- ozs/t	0.05
Smelter Treatment Charges - ($/t)	300
Refining Charge - Ag ($/oz)	1
Refining Charge - Au ($/oz)	10
Transportation Charge ($/wt)	50

22.3 REVENUES

Annual revenue is determined by applying estimated metal prices to the annual payable metal before treatment, refinery and transportation charges for each operating year. Sales prices have been applied to all life of mine production without escalation or hedging.

The evaluation used a deck of prices with silver and gold prices calculated by M3 based on weighted average prices for NI 43-101 reporting purposes, 60% historical prices; 40% futures forecast prices. Metal prices used for this study were based on round numbers that were lower than the 60-40 weighted average.

Metal sales prices used in the evaluation $27.00/ounce and $1,300/ounce for silver and gold respectively.

22.3.1 Other

Salvage Value

An allowance of $5 million has been included in the cash flow analysis as a return of capital from the salvage and resale of equipment at the end of mine life.

Fees and Royalties

Royalties are calculated at 2% of the net smelter returns, plus an initial 2 Million dollar payment.

Income Taxes

Taxable income for income tax purposes is defined as metal revenues minus operating expenses, royalty, property and severance taxes, reclamation and closure expense, depreciation and depletion. Income tax rates for state and federal, all-in, are 28%.

22.4 FINANCIAL MODEL

Table 22-4 shows the financial model for the project.

Table 22-4: Financial Model

Base Case	Total	-2	-1	1	2	3	4	5	6	7	8	9	10
Mining Operations													
Ore													
Beginning Inventory (kt)	28,299	28,299	28,299	28,299	25,962	21,934	19,101	16,876	12,401	10,038	8,523	6,215	3,248
Mined (kt)	28,299	-	-	2,336	4,028	2,832	2,226	4,475	2,363	1,515	2,308	2,968	3,248
Ending Inventory (kt)	-	28,299	28,299	25,962	21,934	19,101	16,876	12,401	10,038	8,523	6,215	3,248	-
Silver Grade (g/t)	65.016	-	-	56.014	78.017	84.005	60.808	64.647	60.562	51.500	55.360	55.545	67.260
Gold Grade (g/t)	0.045	-	-	0.058	0.063	0.058	0.051	0.042	0.032	0.042	0.036	0.034	0.033
Lead Grade (%)	0.07%	0.00%	0.00%	0.04%	0.06%	0.09%	0.05%	0.07%	0.08%	0.03%	0.06%	0.09%	0.11%
Zinc Grade (%)	0.09%	0.00%	0.00%	0.06%	0.09%	0.11%	0.07%	0.09%	0.10%	0.05%	0.08%	0.10%	0.13%
Contained Silver (kozs)	59,153	-	-	4,208	10,105	7,650	4,351	9,301	4,600	2,508	4,108	5,300	7,023
Contained Gold (kozs)	41	-	-	4	8	5	4	6	2	2	3	3	3
Contained Lead (klbs)	44,383	-	-	1,957	5,595	5,682	2,355	6,906	4,167	1,102	3,206	5,823	7,589
Contained Zinc (klbs)	57,334	-	-	3,142	7,727	6,994	3,533	9,274	5,000	1,670	4,020	6,739	9,236
Low Grade Ore													
Beginning Inventory (kt)	7,060	7,060	7,060	7,060	5,421	4,527	4,033	3,118	2,273	1,918	1,654	968	292
Mined (kt)	7,060	-	-	1,639	895	494	915	845	356	264	686	676	292
Ending Inventory (kt)	-	7,060	7,060	5,421	4,527	4,033	3,118	2,273	1,918	1,654	968	292	-
Silver Grade (g/t)	23.981	-	-	23.472	24.347	25.083	24.589	25.059	25.324	22.711	23.004	22.836	23.289
Gold Grade (g/t)	0.028	-	-	0.037	0.032	0.024	0.025	0.025	0.022	0.029	0.021	0.025	0.020
Lead Grade (%)	0.03%	0.00%	0.00%	0.01%	0.02%	0.02%	0.02%	0.04%	0.04%	0.02%	0.04%	0.06%	0.07%
Zinc Grade (%)	0.04%	0.00%	0.00%	0.03%	0.03%	0.04%	0.04%	0.05%	0.05%	0.04%	0.06%	0.07%	0.08%
Contained Silver (kozs)	5,444	-	-	1,237	700	398	723	681	289	192	507	496	219
Contained Gold (kozs)	6	-	-	2	1	0	1	1	0	0	0	1	0
Contained Lead (klbs)	4,519	-	-	434	355	240	383	652	314	128	650	894	470
Contained Zinc (klbs)	6,878	-	-	1,120	671	403	726	913	392	221	862	1,043	528
Waste													
Beginning Inventory(kt)	189,591	189,591	189,591	189,591	159,280	151,279	127,834	106,048	81,002	57,204	36,139	18,681	5,064
Mined (kt)	189,591	-	-	30,310	8,001	23,445	21,787	25,046	23,797	21,065	17,458	13,617	5,064
Ending Inventory (kt)	-	189,591	189,591	159,280	151,279	127,834	106,048	81,002	57,204	36,139	18,681	5,064	(0)
Total Material Mined (kt)	217,889	-	-	32,647	12,030	26,277	24,012	29,521	26,160	22,580	19,766	16,585	8,311

Base Case	Total	-2	-1	1	2	3	4	5	6	7	8	9	10
Process Plant Operations													
Beginning Ore Inventory (kt)	-	-	-	-	738	2,001	1,677	1,168	2,838	1,896	24	-	-
Mined Ore (kt)	35,359	-	-	3,976	4,923	3,326	3,140	5,320	2,718	1,778	2,994	3,644	3,540
Mined Ore - Processed (kt)	35,359	-	-	3,238	3,660	3,650	3,650	3,650	3,660	3,650	3,018	3,644	3,540
Ending Ore Inventory (Stockpile)	-	-	-	738	2,001	1,677	1,168	2,838	1,896	24	-	-	-
Silver Grade (g/t) - Processed	56.822	-	-	46.434	78.014	76.523	46.618	64.647	56.910	35.602	47.762	49.476	63.630
Gold Grade (g/t) - Processed	0.042	-	-	0.052	0.063	0.056	0.042	0.042	0.033	0.035	0.033	0.032	0.032
Contained Silver (kozs)	64,597	-	-	4,834	9,180	8,980	5,471	7,586	6,697	4,178	4,634	5,796	7,241
Contained Gold (kozs)	48	-	-	5	7	7	5	5	4	4	3	4	4
Recovery Silver (%)	86.00%	0.00%	0.00%	86.00%	86.00%	86.00%	86.00%	86.00%	86.00%	86.00%	86.00%	86.00%	86.00%
Recovery Gold (%)	86.00%	0.00%	0.00%	86.00%	86.00%	86.00%	86.00%	86.00%	86.00%	86.00%	86.00%	86.00%	86.00%
Dry Concentrate (kt)	288			22	41	40	24	34	30	19	21	26	32
Recovered Silver (kozs)	55,553	-	-	4,157	7,895	7,723	4,705	6,524	5,759	3,593	3,985	4,985	6,228
Recovered Gold (kozs)	41	-	-	5	6	6	4	4	3	3	3	3	3
Payable Metals													
Payable Silver (kozs)	52,365			3,918.4	7,441.8	7,279.6	4,434.7	6,149.8	5,428.7	3,386.9	3,756.7	4,698.6	5,870.2
Payable Gold (kozs)	25			3.36	4.12	3.44	2.84	2.43	1.77	2.43	1.62	1.85	1.41
Income Statement ($000)													
Metal Prices													
Silver ($/oz)	$27.00			$27.00	$27.00	$27.00	$27.00	$27.00	$27.00	$27.00	$27.00	$27.00	$27.00
Gold ($/oz)	$1,300.00			$1,300.00	$1,300.00	$1,300.00	$1,300.00	$1,300.00	$1,300.00	$1,300.00	$1,300.00	$1,300.00	$1,300.00
Revenues													
Silver Revenue ($ 000)	$1,413,867			$105,796	$200,928	$196,550	$119,738	$166,046	$146,575	$91,445	$101,432	$126,862	$158,496
Gold Revenue ($ 000)	$32,851			$4,372	$5,356	$4,474	$3,687	$3,157	$2,307	$3,156	$2,103	$2,399	$1,839
Total Revenues	$1,446,718		$0	$110,168	$206,284	$201,024	$123,425	$169,203	$148,882	$94,601	$103,535	$129,261	$160,335

Base Case	Total	-2	-1	1	2	3	4	5	6	7	8	9	10
Operating Cost													
Mining	$238,851			$26,129	$15,461	$25,932	$25,416	$28,496	$27,567	$27,041	$25,830	$21,999	$14,980
Process Plant	$333,437			$30,532	$34,514	$34,420	$34,420	$34,420	$34,514	$34,420	$28,459	$34,361	$33,380
General Administration	$49,856			$4,565	$5,161	$5,147	$5,147	$5,147	$5,161	$5,147	$4,255	$5,138	$4,991
Treatment & Refining Charges													
Smelter Treatment Charges	$93,908			$7,027	$13,345	$13,055	$7,953	$11,029	$9,735	$6,074	$6,737	$8,426	$10,527
Silver Refining Charges	$52,365			$3,918	$7,442	$7,280	$4,435	$6,150	$5,429	$3,387	$3,757	$4,699	$5,870
Gold Refining Charges	$253			$34	$41	$34	$28	$24	$18	$24	$16	$18	$14
Transportation Charges	$15,651			$1,171	$2,224	$2,176	$1,325	$1,838	$1,623	$1,012	$1,123	$1,404	$1,755
Total Operating Cost	$784,322		$0	$73,377	$78,188	$88,043	$78,723	$87,103	$84,046	$77,104	$70,177	$76,045	$71,517
Royalty	$27,691		$2,000	$1,960	$3,665	$3,570	$2,194	$3,003	$2,642	$1,682	$1,838	$2,294	$2,843
Salvage Value	-$5,000			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Reclamation & Closure	$10,000			$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Production Cost	$817,013		$2,000	$75,337	$81,853	$91,612	$80,917	$90,106	$86,687	$78,786	$72,015	$78,339	$74,360
Operating Income	$629,705		-$2,000	$34,831	$124,431	$109,412	$42,508	$79,097	$62,195	$15,815	$31,520	$50,922	$85,975
Initial Capital Depreciation	$231,652		$0	$28,957	$28,957	$28,957	$28,957	$28,957	$28,957	$28,957	$28,957	$0	$0
Sustaining Capital Depreciation	$64,085			$272	$481	$3,156	$3,460	$5,159	$5,480	$5,803	$7,494	$7,508	$25,274
Total Depreciation	$295,737		$0	$29,229	$29,437	$32,112	$32,416	$34,115	$34,436	$34,760	$36,450	$7,508	$25,274
Net Income After Depreciation	$333,968	$0	-$2,000	$5,603	$94,994	$77,300	$10,092	$44,982	$27,759	-$18,945	-$4,931	$43,414	$60,701
Income Taxes	$101,596	$0	$0	$1,009	$26,598	$21,644	$2,826	$12,595	$7,772	$0	$0	$12,156	$16,996
Net Income After Taxes	$232,372		-$2,000	$4,594	$68,395	$55,656	$7,266	$32,387	$19,986	-$18,945	-$4,931	$31,258	$43,705

Base Case	Total	-2	-1	1	2	3	4	5	6	7	8	9	10
Cash Flow													
Operating Income	$629,705	$0	-$2,000	$34,831	$124,431	$109,412	$42,508	$79,097	$62,195	$15,815	$31,520	$50,922	$85,975
Working Capital													
Account Recievable (60 days)	$0	$0	$0	-$18,110	-$15,800	$865	$12,756	-$7,525	$3,340	$8,923	-$1,469	-$4,229	-$5,108
Accounts Payable (30 days)	$0	$0	$0	$6,031	$395	$810	-$766	$689	-$251	-$571	-$569	$482	-$372
Inventory - Parts, Supplies	$0	$0	$0	-$5,000	$0	$0	$0	$5,000	$0	$0	$0	$0	$0
Total Working Capital	$0	$0	$0	-$17,079	-$15,404	$1,675	$11,990	-$1,836	$3,089	$8,352	-$2,038	-$3,747	-$5,480
Capital Expenditures													
Initial Capital													
Mine	$44,407	$12,450	$11,205	$20,751	$0	$0	$0	$0	$0	$0	$0	$0	$0
Process Plant	$169,920	$17,676	$117,235	$35,009	$0	$0	$0	$0	$0	$0	$0	$0	$0
Owners Cost	$17,325	$1,733	$12,128	$3,465	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sustaining Capital													
Mine	$31,085	$0	$0	$2,176	$1,671	$10,399	$2,430	$2,594	$2,567	$2,588	$2,524	$2,289	$1,847
Process Plant	$33,000	$0	$0	$0	$0	$11,000	$0	$11,000	$0	$0	$11,000	$0	$0
Total Capital Expenditures	$295,737	$31,859	$140,568	$61,402	$1,671	$21,399	$2,430	$13,594	$2,567	$2,588	$13,524	$2,289	$1,847
Cash Flow before Taxes	$333,968	-$31,859	-$142,568	-$43,649	$107,356	$89,688	$52,068	$63,666	$62,717	$21,579	$15,958	$44,886	$78,648
Cummulative Cash Flow before Taxes		-$31,859	-$174,426	-$218,076	-$110,720	-$21,032	$31,035	$94,702	$157,419	$178,998	$194,955	$239,842	$318,490
				1	1	1	0	-	-	-	-	-	-
Taxes													
Income Taxes	$101,596	$0	$0	$1,009	$26,598	$21,644	$2,826	$12,595	$7,772	$0	$0	$12,156	$16,996
Cash Flow after Taxes	$232,372	-$31,859	-$142,568	-$44,658	$80,757	$68,044	$49,242	$51,072	$54,944	$21,579	$15,958	$32,730	$61,652
Cummulative Cash Flow after Taxes		-$31,859	-$174,426	-$219,084	-$138,327	-$70,283	-$21,041	$30,030	$84,975	$106,554	$122,511	$155,242	$216,893
				1	1	1	1	0	-	-	-	-	-
Economic Indicators before Taxes													
NPV @ 0%	0%	$333,968											
NPV @ 2.5%	2.5%	$259,133											
NPV @ 5%	5.0%	$199,224											
NPV @ 8%	8.0%	$142,319											
IRR		21.9%											
Payback	Years	3.4											
Economic Indicators after Taxes													
NPV @ 0%	0%	$232,372											
NPV @ 5%	5%	$122,989											
NPV @ 8%	8%	$77,116											
IRR		15.7%											
Payback	Years	4.4											

23 ADJACENT PROPERTIES

The Nieves Property is not directly bordered by any other mining concessions.

24 OTHER RELEVANT DATA AND INFORMATION

No additional information or explanation is necessary to make this technical report more understandable.

25 INTERPRETATION AND CONCLUSIONS

The Nieves project is located in a socially and economically stable part of the world where Mining is prevalent. The climate is moderate and local infrastructure is present. Topography for the project is favorable and will allow for economical construction. A state highway runs adjacent to the site, eliminating many logistical problems typically associated with mining projects. The permitting process in Mexico is well defined.

M3 reviewed Metallurgical data and test work provided by Quaterra. This data was used to develop the project flow sheets and design criteria. No unproven technologies are planned for the Nieves project. Many process plants of this size have been constructed in the past and this project can be constructed on a reasonable schedule.

Hard Rock Consulting notes that, as far as the mining plan is concerned, the Nieves silver project in its current state shows potential. The current plan only includes resources from the Concordia Vein; there is potential with additional drilling to expand the current pit to include the San Gregorio inferred resource which was not included in this study. There are also two other vein systems on the property: the California and Santa Rita, which with further exploration may be able to add to the project.

The project should proceed further to a pre-feasibility study.

26 RECOMMENDATIONS

26.1 CARACLE CREEK RECOMMENDATIONS

The following work is recommended by Caracle Creek:

1. More SG sampling in the Gregorio North area to increase the confidence level of the tonnage estimate. Once achieved, it may be possible to add more indicated resource in this area.

2. Further infill drilling is recommended for the Gregorio North area as well as the westerly area of the Concordia (La Quinta). This can increase the amount of indicated resource at the same time possibly increase the grade.

3. Due to the anticipated mining method (bulk open pit mining) it is recommended that all intervals within the defined mineralized domain be sampled.

4. Exploration drilling in the West Santa Rita area to test the geophysical anomaly and the down dip extent of the mineralization identified on the surface.

5. Drill testing of the new geophysical targets in the other areas.

6. Drilling along the California vein system to determine the extent of the mineralization. Table 26-1 summarizes the budget for the recommended exploration program.

Table 26-1: Recommended Exploration Budget on the Nieves Property

ITEM	UNIT	No. of UNITS	COST/UNIT	TOTAL COST (CDN$)
Additional SG data (~880 samples)	sample	880	$ 13	$ 11,440
Drilling				
Drilling	m	10,000	$ 120	$ 1,200,000
Assays, QA/QC	m	9,000	$ 20	$ 180,000
Wages, vehicles, support, miscellaneous				$ 300,000
Updated NI43-101 Independent Technical Report and updated resource				$ 70,000
TOTAL				**$ 1,761,440**

26.2 HARD ROCK CONSULTING RECOMMENDATIONS

The following is recommended by Hard Rock Consulting:

1. The current mine plan contains a significant amount of indicated material, 78% of the material, with a small amount of additional drilling the project could be advanced to the pre-feasibility stage with the calculation of reserves.

2. Continue the metallurgical testing and investigate the possibility to recover lead and zinc as there are significant amounts of each metal contained in the ore.

26.3 M3 RECOMMENDATIONS

M3 recommends that the project proceed to a pre-feasibility study at a cost of approximately $3 million. Some additional recommendations with regards to metallurgical testwork are as follows.

26.3.1 Metallurgy

Complete additional metallurgical drilling to obtain data required to define process equipment. Further metallurgical testing will be necessary to confirm the silver recovery and reagent consumption. The metallurgical tests recommended for the next phase of testing include the following major activities.

26.3.1.1 Test Program Major Activities

Sample selection and additional:

- Drilling
- Mineralogy
- Comminution
- Flotation
- Concentrate Dewatering
- Variability testing
- Physical properties
- ARD and tailing characterization
- Concentrate quality (marketing)

26.3.1.2 Metallurgical Test Program Schedule and Cost

Once core is available, the overall test program will require several months to one year to complete at a cost of approximately $1 million.

27 REFERENCES

Buchanan, L.J., 1981: Precious metal deposits associated with volcanic environments in the Southwest; in Dickinson, W.R. and Payne, W.D., eds. Relations of tectonics to ore deposits in the southern Cordillera, Arizona Geological Society Digest, v. 14, p. 237-262.

Cavey, G., 1999: Summary Report on the Nieves Property, Zacatecas, Mexico; Report for Quaterra Resources Inc.

Corbett, G.J., 2002: Epithermal Gold for Explorationists; AIG Presidents Lecture, AIG Online Journal April 2002, AIG website: www.aig.asn.au.

Corbett, G.J., 2004, Epithermal and porphyry gold – Geological models in Pacrim Congres 2004, Adelaide, The Australasian Institute of Mining and Metallurgy, p. 15-23.

Corbett, G.J., and Leach, T.M., 1998: Southwest Pacific rim gold-copper systems: Structure, alteration and mineralization; Economic Geology, Special Publication 6, 238 p., Society of Economic Geologists.

Dill, D.B., 1954: Nieves, Valencianna and Miguel Auza Silver Districts of Northwestern Zacatecas; Servicios Industriales Peñoles S.A. de V.V., Archio Oficina, Torreon, Coahila, Mexico.

Folinsbee, J. and Pojhan, A., 2010: Preliminary metallurgical testing on a global composite, Nieves project, Mexico, KM2653, p. 49.

G&T Metallurgical Services Ltd., 2010a. Metallurgical Assessment of the Nieves Project, KM2653. G&T Metallurgical Services Ltd., Kamloops, B.C., Canada, June 30 2010.

G&T Metallurgical Services Ltd., 2010b. Supplemental Metallurgical Testing of the Nieves Project, Zacatecas, Mexico, KM2740. G&T Metallurgical Services Ltd., Kamloops, B.C., Canada, August 30, 2010.

Garcia, M.E., Querol, S.F. and Lowther, G.K., 1991: Geology of the Fresnillo mining district, Zacatecas; in: Salas, G.P., ed., Economic Geology, Mexico, Geological Society of America, Boulder, CO, DNAG Volume P-3, p. 383-394.

Gemmell, J.B., Simmons, S.F. and Zantop, H., 1988: The Santo Nino silver-lead-zinc vein, Fresnillo District, Zacatecas, Mexico; Part I Structure, vein stratigraphy, and mineralogy; Economic Geology, v. 83, no. 8, p. 1597-1618.

Hedenquist, J.W., Izawa, E, Arribas, A, and White N.C., 1996: Epithermal Gold Deposits: Styles Characteristics and Exploration; Society of Resource Geology, resource Geology Special Publication Number 1, Tokyo, Japan, 24 p.

Long, S.D. 2008: Assay quality assurance-quality control program for drilling projects at the pre-feasibility to feasibility report level, third edition, Mining Consulting Group, Amec, Phoenix Arizona, unpublished report.

Ruvalcaba-Ruiz, D.C. and Thompson, T.B., 1988: Ore deposits at the Fresnillo Mine, Zacatecas, Mexico; Economic Geology, v. 83, no. 8, p. 1583-1596.

Simmons, S.F., 1991: Hydrologic implications of alteration and fluid inclusion studies in the Fresnillo District, Mexico; evidence for a brine reservoir and a descending water table during the formation of hydrothermal Ag-Pb-Zn orebodies; Economic Geology, v. 86, no. 8, p1579-1601.

Simmons, S.F., Gemmell, J.B. and Sawkins, F.J., 1988: The Santo Nino silver-lead-zinc vein, Fresnillo District, Zacatecas; Part II, Physical and chemical nature of ore-forming solutions; Economic Geology, v. 83, no. 8, p. 1619-1641.

Sketchley, D.A., 1998: Gold deposits: Establishing sampling protocols and monitoring quality control, Exploration and Mining Geology, v. 7, p.129-138.

Smee, B.W. 2008: Analytical quality control in mineral exploration and mining: compliance with NI 43-101 or “How to bulletproof your database and never fail an audit”, Smee and Associates Consulting Ltd, North Vancouver, unpublished report for Century Systems users conference.

Smee, B.W., 2010: Certificate of analysis, Quaterra standard KM 2653, Smee and Associates Consulting Ltd., Consulting Geochemistry/Geology, 2p.

Stone, M., 2009: Independent Technical Report, The Nieves Silver Project, Zacatecas, Mexico, 104p. Stone, M., 2010: Independent Technical Report, Nieves Property, Zacatecas State, Mexico, 116p.

Turner, T., 1999: The Nieves District, Zacatecas, Mexico, A geologic report; Report for Western Copper Holdings Ltd.

Wendt, C. J., 2002: The Geology and Exploration Potential of the Juanicipio Property, Fresnillo District, Zacatecas, Mexico; Technical Report for Mega Capital Investments.

Wetherup, S. W., 2006: Independent Technical Report, Nieves Silver Project, Zacatecas, Mexico, 56p.

APPENDIX A: PEA CONTRIBUTORS AND PROFESSIONAL QUALIFICATIONS

CERTIFICATE of QUALIFIED PERSON

I, Joshua W. Snider., do hereby certify that:

1. I am currently employed as an Engineer and Project Manager by:

   M3 Engineering & Technology Corporation
   2051 W. Sunset Road, Ste 101
   Tucson, Arizona 85704
   U.S.A.

2. I am a graduate of the University of Arizona and received a Bachelor of Civil Engineering in 1996.

3. I am a:
   Registered Professional Engineer in the State of Arizona (No.41971)

4. I have practiced engineering and project management at M3 Engineering for 16 years.

5. I have read the definition of "qualified person" set out in National instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

6. I am responsible for the preparation of Sections 2, 3, 4, 18, 19, 21, 22, 23, and 24; I am also responsible in part for sections 1, 25 and 26 of the technical report titled "Nieves Project, Form 43-101 Technical Report, Preliminary Economic Assessment, Zacatecas, Mexico" dated October 31, 2012 (the "Technical Report")

7. I have had no prior involvement with the property that is the subject of the Technical Report.

8. I visited the Nieves Site in October 2012.

9. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

10. I am independent of the Quaterra Resources applying all of the tests in section 1.5 of National Instrument 43-101.

11. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

12. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including

electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 31st day of October, 2012.

Signature of Qualified Person

Joshua Snider
Print name of Qualified Person

Registered Professional Engineer (Civil)
CERTIFICATE NO.
41971
JOSHUA W.
SNIDER
DATE SIGNED
ARIZONA U.S.A.

CERTIFICATE of QUALIFIED PERSON

I, Jeffery W. Choquette, P.E., do hereby certify that:

1. I am currently employed as Principal Engineer by:

   Hard Rock Consulting, LLC
   1030 Johnson Road, Ste. 300
   Golden, Colorado 80401
   U.S.A.

2. I am a graduate of Montana College of Mineral Science and Technology and received a Bachelor of Science degree in Mining Engineering in 1995.

3. I am a:

   - Registered Professional Engineer in the State of Montana (No. 12265)
   - QP Member in good standing of the Mining and Metallurgical Society of America (No. 01425QP)

4. I have practiced mining engineering and project management for 16 years. I have worked for mining and exploration companies for 16 years and as a consulting engineer for one and a half years.

5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.

6. I am responsible for the preparation of Sections 16, 25 and 26 of the technical report titled “Nieves Project, Form 43-101F1 Technical Report, Preliminary Economic Assessment, Zacatecas, Mexico” dated October 31, 2012 (the "Technical Report").

7. I have had no prior involvement with the property that is the subject of the Technical Report.

8. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

9. I am independent of Quaterra Resources Inc., applying all of the tests in section 1.5 of NI 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 31st day of October, 2012.

“signed” Jeffery W. Choquette

____
Signature of Qualified Person

Jeffery W. Choquette
Print name of Qualified Person

CERTIFICATE of QUALIFIED PERSON

I, Thomas L. Drielick, P.E., do hereby certify that:

1. I am currently employed as Sr. Vice President by:

   M3 Engineering & Technology Corporation
   2051 W. Sunset Road, Ste. 101
   Tucson, Arizona 85704
   U.S.A.

2. I am a graduate of Michigan Technological University and received a Bachelor of Science degree in Metallurgical Engineering in 1970. I am also a graduate of Southern Illinois University and received an M.B.A. degree in 1973.

3. I am a:

   - Registered Professional Engineer in the State of Arizona (No. 22958)
   - Registered Professional Engineer in the State of Michigan (No. 6201055633)
   - Member in good standing of the Society for Mining, Metallurgy and Exploration, Inc. (No. 850920)

4. I have practiced metallurgical and mineral processing engineering and project management for 41 years. I have worked for mining and exploration companies for 18 years and for M3 Engineering & Technology Corporation for 23 years.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

6. I am responsible for the preparation of Sections 13, 25 and 26 of the technical report titled "Nieves Project, Form 43-101 Technical Report, Preliminary Economic Assessment, Zacatecas, Mexico" dated October 31, 2012 (the "Technical Report").

7. I have had no prior involvement with the property that is the subject of the Technical Report.

8. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

9. I am independent of Quaterra Resources Inc., applying all of the tests in section 1.5 of NI 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 31st day of October, 2012.

Thomas L. Drielick

Signature of Qualified Person

Thomas L. Drielick

Print name of Qualified Person

CERTIFICATE of QUALIFIED PERSON

I, Zsuzsanna Magyarosi, P.Geo., do hereby certify that:

1. I am currently employed as Senior Geologist for the geological consulting firm of Caracle Creek International Consulting Inc. Canada (CCIC).

   Caracle Creek International Consulting
   25 Frood Road
   Sudbury, Ontario, Canada, P3C 4Y9
   Telephone: 705-671-1801
   Email: zmagyarosi@caraclecreek.com

2. I am a graduate of Brock University, St. Catharines, Ontario, Canada and received a B.Sc. degree in Geology in 1996. I am also a graduate of Carleton University, Ottawa, Ontario, Canada and received a M.Sc. degree in 1998 and a Ph.D. degree in 2002.

3. I am a member of the Association of Professional Geoscientists of Ontario (Member #2031).

4. I have worked on exploration projects worldwide including: Canada (Ontario, British Columbia, Yukon, Quebec and Newfoundland), Finland and have worked on gold, Ni-Cu-PGE and VMS deposits since 1996.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

6. I am responsible for the preparation of Sections 5, 6, 7, 8, 9, 10, 11, 12, 15 and jointly responsible for Sections 25 and 26 of the technical report titled "Nieves Project, Form 43-101F1 Technical Report, Preliminary Economic Assessment, Zacatecas, Mexico" dated October 31, 2012 (the "Technical Report").

7. I have had no prior involvement with the property that is the subject of the Technical Report.

8. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

9. I am independent of Quaterra Resources Inc., applying all of the tests in section 1.5 of NI 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 31st day of October, 2012.

"signed"_Zsuzsanna Magyarosi

____
Signature of Qualified Person

Zsuzsanna Magyarosi ______________________
Print name of Qualified Person

CERTIFICATE of QUALIFIED PERSON

I, Jason Baker, P.Eng., do hereby certify that:

1. I am currently employed as a Mining Engineer by:

   Caracle Creek International Consulting Inc.
   34 King Street East , 9th Floor
   Toronto, Ontario
   Canada
   M5C 2X8

2. I am a graduate of Dalhousie University and received a Bachelor of Engineering degree in Mining Engineering in 2000.

3. I am a:

   - Registered Professional Engineer in the Province of Nova Scotia (APENS No. 9627)
   - Registered Professional Engineer in the Province of British Columbia (APEGBC No. 37720)

4. I have practiced mining engineering and project management for 13 years. I have worked for mining and exploration companies for 13 years and for Caracle Creek International Consulting Inc. for 2 years.

5.

6. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

7. I am responsible for the preparation of Sections 14 of the technical report titled "Nieves Project, Form 43-101F1 Technical Report, Preliminary Economic Assessment, Zacatecas, Mexico" dated October 31st, 2012 (the "Technical Report").

8. I have had no prior involvement with the property that is the subject of the Technical Report.

9. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

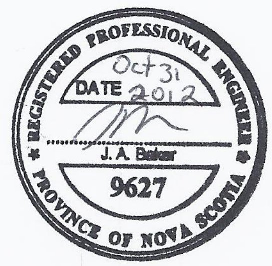
10. I am independent of Quaterra Resources Inc., applying all of the tests in section 1.5 of NI 43-101.

11. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 31st day of October, 2012.

"signed"_Jason Baker

____
Signature of Qualified Person



Jason Baker
Print name of Qualified Person

CERTIFICATE of QUALIFIED PERSON

I, Doris M.Fox, M.Sc., P.Geo., PMP, do hereby certify that:

1. I am currently employed as Senior Associate Geologist:

   Caracle Creek International Consulting Inc.
   34 King Street East, 9th Floor
   Toronto, ON.
   Canada, M5C 2X8

2. I am a graduate of Saint Mary's University and received a Bachelor of Science Double Major degree in Geology / Geography in 2000. I am also a graduate of McGill University and received an Master of Science degree in Earth Sciences in 2002.

3. I am a:

   - Registered Professional Geologist in good standing in the Province of Ontario (No. 1430)

4. I have practiced mineral exploration and project management for 10 years. I have worked in academic research for 4 years.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

6. I am responsible for the preparation of Sections 12.1 (Site Visit) and jointly responsible for sections 5, 7, 8, 10.2 and 10.1 of the technical report titled "Nieves Project, Form 43-101F1 Technical Report, Preliminary Economic Assessment, Zacatecas, Mexico" dated October 31, 2012 (the "Technical Report").

7. I have had no prior involvement with the property that is the subject of the Technical Report.

8. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information required to be disclosed to make the report not misleading.

9. I am independent of Quaterra Resources Inc., applying all of the tests in section 1.5 of NI 43-101.

10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

Dated this 31st day of October, 2012.

"signed" Doris M. Fox.

____
Signature of Qualified Person

PROFESSIONAL GEOSCIENTIST
DORIS M. FOX
PRACTISING MEMBER
1430
ONTARIO

Doris M. Fox
Print name of Qualified Person