PHILLIPS RIVER MINING LIMITED
ACN 004 287 790

SUPPLEMENTARY PROSPECTUS

1. IMPORTANT INFORMATION

This is a supplementary prospectus (**Supplementary Prospectus**) to the replacement prospectus dated 24 December 2015 (**Replacement Prospectus**), issued by Phillips River Mining Limited (ACN 004 287 790) (**Company**) and should be read in conjunction with the Replacement Prospectus.

This Supplementary Prospectus is dated 18 February 2016 and was lodged with ASIC on that date. ASIC, ASX Limited and their respective officers do not take any responsibility for the contents of this Supplementary Prospectus.

This Supplementary Prospectus should be read together with the Replacement Prospectus. Other than as set out below, all details in relation to the Replacement Prospectus remain unchanged. Terms and abbreviations defined in the Replacement Prospectus have the same meaning in this Supplementary Prospectus. If there is a conflict between the Replacement Prospectus and this Supplementary Prospectus, this Supplementary Prospectus will prevail.

This Supplementary Prospectus will be issued as an electronic prospectus and may be accessed on the ASX platform and on the Company's website at Website: www.phillipsriver.com.au.

This is an important document and should be read in its entirety. If you do not understand it you should consult your professional advisers without delay.

2. EXECUTIVE SUMMARY

The Company has issued this Supplementary Prospectus in order to:

a) provide additional information about the Offer in the form of several Reports; and

b) provide an update as to the current quantum of the loan from Kiwanda Mines to the Company.

This Supplementary Prospectus also contains details of the extension of the Offer period.

3. COMPETENT PERSON – ANDRE GAUTHIER

On 10 April 2015 the Company announced a Notice of General Meeting to be held on 15 May 2015 (**Notice of General Meeting**). Section 2 of Table 1 of Annexure B of the Explanatory Statement to the Notice of General Meeting contains information prepared by Mr Andre Gauthier, a Competent Person for JORC purposes.

The Company advises that the relevant professional body to which Mr Andre Gauthier belongs to qualify him as a Competent Person for JORC purposes is the Ordre des Ingénieurs du Québec (Quebec Institute of Engineers) which is a JORC Recognised Professional Organisation.

4. ADDITIONAL INFORMATION

4.1 Reports in relation to prospective assets

This Supplementary Prospectus provides additional information in relation to the Offer in the form of the following reports, which are attached as annexures to this Supplementary Prospectus. This information is additional information and is not a result of new circumstances.

4.2 Independent Geologist's reports

On 10 February 2016 the Company obtained two geologist's reports from Andre Gauthier attached at Annexure 1.

Mr Gauthier has received no professional fees from Phillips River for preparing the report or otherwise. Mr Gauthier's fees were paid by Lara Exploration.

Mr Gauthier has provided his written consent to the inclusion of the reports in this Supplementary Prospectus in the form and context in which it is set out in Annexure 1.

In June and July 2015 the Company completed a trenching program at Bahia Inglesa. The results of the trenching program are included as part of Annexure 1.

4.3 Legal Opinion (Columbian tenements)

On 31 October 2014 the Company obtained a legal opinion from Lloreda Camacho & Co. (Solicitors) in relation to the Columbian tenements.

4.4 Legal Opinion (Chilean mining concessions)

On 27 October 2014 the Company obtained a legal opinion from Carcelen, Desmadryl, Guzman & Tapia (Solicitors) in relation to the Chilean tenements.

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4.5 Expert' Report (Chilean exploration concessions)

On 23 October 2014 the Company obtained a report from Tecnomin Servicios Tecnicos Para La Mineria (Engineers) in relation to the Chilean exploration concessions.

4.6 Update

The Company has asked each of:

a) Lloreda Camacho & Co.;

b) Carcelen, Desmadryl, Guzman & Tapia; and

c) Tecnomin Servicios Tecnicos Para La Mineria,

for confirmation that there have been no material changes to the content of their reports since their issue dates. The company will disclose the reports and the confirmation as soon as it receives this confirmation.

5. LOAN FROM KIWANDA MINES

The Replacement Prospectus (at section 12 under the heading "Underwriting Agreement") describes a loan amount owing by the Company to Kiwanda Mines in relation to loans made to the Company for the purpose of maintaining the company.

As at 31 December 2015 (being the latest Company account date) the cash amount loaned by Kiwanda Mines to the Company was $1,553,032.20.

6. EXTENSION AND NEW APPLICATIONS

6.1 Extension of Offer

Due to the Supplementary Prospectus being issued so close to the current closing date of the Offer the closing date for acceptances under the Offer has been extended to **5.00pm Australian Eastern Daylight Time on 26 February 2016**.

The Company reserves the right to amend the Closing Date without notice, including (subject to the ASX Listing Rules and the Corporations Act), to close the Offer early, to extend the Offer, to accept late applications, either generally or in particular cases, or to withdraw the Offer before the allotment of New Shares.

If the Offer is withdrawn before the allotment of New Shares, all Application Monies will be refunded in full (without interest) as soon as practicable in accordance with the requirements of the Corporations Act.

6.2 New Applications

Applications by new investors **must** be made using the Application Form that is attached to or accompanying this Supplementary Prospectus. The Application Form contains detailed instructions on how it is to be completed. Applications

must not be made on the Application Form attached to or accompanying the Replacement Prospectus.

6.3 Issue of Shares

Subject to the Minimum Subscription being reached and ASX granting conditional approval for the Company to be admitted to the Official List, issue of Shares offered by this Prospectus will take place as soon as practicable after the Closing Date.

Pending the issue of the Shares or payment of refunds pursuant to the Prospectus, all application monies will be held by the Company in trust for the Applicants in a separate bank account as required by the Corporations Act. The Company, however, will be entitled to retain all interest that accrues on the bank account and each Applicant waives the right to claim interest.

7. WITHDRAWAL RIGHTS

If you are an Existing Applicant and want to exercise your right to withdraw your application for Shares and be repaid your application monies, you must provide the Company written notice, to the address set out below, of your wish to do so no later than **5.00pm Australian Eastern Daylight Time on 26 February 2016.**

Phillips River Mining Limited
C/- Advanced Share Registry Limited
PO Box 1156
Nedlands WA 6909

The details for the payment of the refund cheque and address to which it should be sent as set out in your written request must correspond to the details contained in the Application Form lodged by you.

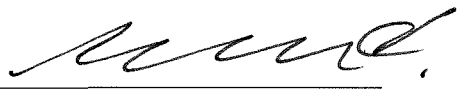
Any repayments made by the Company pursuant to an Existing Application exercising their right to withdraw their application will be made in full without interest.

If you do not wish to withdraw your application, you do not need to take any action.

8. DIRECTORS' AUTHORISATION

This Supplementary Prospectus is issued by the Company and its issue has been authorised by a resolution of the Directors.

In accordance with Section 720 of the Corporations Act, each Director has consented to the lodgment of this Supplementary Prospectus with the ASIC.



Christopher West
Director
For and on behalf of Phillips River Mining Limited

PHILLIPS RIVER MINING LIMITED
ACN 004 287 790

WARNING: This document is important. If you do not Understand this form, you should consult your professional adviser before investing.

SRN/HIN

Supplementary Prospectus - Entitlement and Acceptance Form

In this Sale of Entitlement Form, a word or phrase defined in the Replacement Prospectus issued by the Company on **24 December 2015** (**Replacement Prospectus**) or the Supplementary Prospectus issued by the Company on **18 February 2016** (**Supplementary Prospectus**) has the same meaning as in the Replacement Prospectus or Supplementary Prospectus.

As an Eligible Shareholder you are entitled to acquire New Shares at an issue price of $0.25 per New Share. You will receive an allocation of 10,000 New Shares. You may apply for more than 10,000 New Shares and these will be allocated subject to demand.

IF YOU ELECT TO PAY BY BPAY YOU DO NOT NEED TO COMPLETE AND RETURN THIS FORM YOUR APPLICATION WILL BE DETERMINED BASED UPON THE AMOUNT YOU SUBSCRIBE.

If you decide not to take up your Entitlement at all, you do not need to take any action. This Offer closes at 5:00pm (AEDT) on **26 February 2016.**

PLEASE COMPLETE BELOW (using block letters) – refer overleaf for details and further instructions on how to complete this form.
I/We apply for the following number of shares and attach a cheque, money order or bank draft in Australian currency drawn on an Australian branch of a financial institution for the amount payable:

A Entitlements applied for _____ at Price per New Share A$ 0.25 **B** Application Monies A$ _____

Email Address (only used for purpose of electronic communication of shareholder information)

_____

Telephone Number where you can be contacted during Business Hours _____ Contact Name (PRINT) _____

For payment by BPAY®, please follow the instructions:

D

BPAY **Biller Code:** **Ref:**

Telephone & Internet Banking – BPAY®
Contact your bank or financial institution to make this payment from your cheque, savings, debit, credit card or transaction account. More info: www.bpay.com.au

Cheques or bank drafts to be attached to this form and returned to admin@advancedshare.com.au

C Cheque Number _____ BSB ___ - ___ Account Number _____

Total Amount A$ _____

This Supplementary Prospectus is intended to be read with the Replacement Prospectus dated 24 December 2015 issued by Phillips River Mining Limited (ACN 004 287 790).

PHILLIPS RIVER MINING LIMITED
ACN 004 287 790

ENTITLEMENTS ISSUE CLOSES 5:00PM (AEDT) ON 26 FEBRUARY 2016

1. Completion of the Entitlement and Acceptance Form
If you are paying by BPAY just follow the BPAY instructions.
DO NOT COMPLETE THE FORM OR RETURN THE FORM IF PAYING BY BPAY.

Only complete the Entitlement and Acceptance Form if you are paying by cheque or bank draft.

If paying by cheque complete all relevant sections of the Supplementary Prospectus - Entitlement and Acceptance Form USING BLOCK LETTERS.

A. Application for New Shares
If paying by cheque, please enter into Section A the number of shares you wish to apply for.

B. Payment amount
Please enter into Section B the total amount of the cheque or bank draft for payment of your shares at the issue price of A$0.25 per share. To calculate the total amount required for payment, multiply the number of shares you wish to apply for in Section A by A$0.25.

C. Contact Details
Please enter the notice details of the applicant, including details of the address and e-mail.

D. CHESS details
CHESS HIN (if you want to add this holding to a specific CHESS holder, write the number in Section E).

E. Contact details
Please enter your contact telephone number where we may contact you regarding your acceptance, if necessary.

F. Cheque, money order or bank draft details
Please enter your cheque, money order or bank draft details in Section C. Cheques, money orders or bank drafts must be drawn on an Australian branch of an Australian bank in Australian currency, made payable to:

"Phillips River Mining Limited Share Issue A/C" and crossed "Not Negotiable".

G. Payment by BPAY®
For payment by BPAY®, please follow the instructions in Section D.

2. How to lodge your Entitlement and Acceptance Form
The completed Entitlement and Acceptance Form with the Application Monies may be mailed to the postal address, set out below.

Postal Delivery
Phillips River Mining Limited
C/- Advanced Share Registry Limited,
PO Box 1156,
Nedlands
WA 6909

Your completed Supplementary Prospectus - Entitlement and Acceptance Form and Application Monies must be received by the Company no later than 5:00pm (AEDT) on [26 February] 2016. Entitlement and Acceptance Forms received after 5:00pm (AEDT) on **26 February 2016** will be rejected and Application Monies (without interest) returned to the Applicant.
If you require further information on how to complete this Supplementary Prospectus - Entitlement and Acceptance Form, please contact the Company on (02) 9262 2922 during business hours.

A completed Supplementary Prospectus - Entitlement and Acceptance Form is an offer by an Eligible Shareholder or Entitlement Holder to the Company to subscribe for New Shares in the Australian dollar amount specified in the Supplementary Prospectus - Entitlement and Acceptance Form at the price on the terms and conditions set out in this Supplementary Prospectus and the Supplementary Prospectus - Entitlement and Acceptance Form. To the extent permitted by law, an application by an Eligible Shareholder or Entitlement Holder under the Offer is irrevocable.

The Company reserves the right to decline any Supplementary Prospectus - Entitlement and Acceptance Form in whole or in part, without giving any reason. A Supplementary Prospectus - Entitlement and Acceptance Form may be accepted by the Company (at its absolute discretion) in respect of the full number, or selected number, of New Shares specified in the Supplementary Prospectus - Entitlement and Application Form or any of them, without further notice to an Eligible Shareholder or Entitlement Holder. Acceptance of a Supplementary Prospectus - Entitlement and Acceptance Form will give rise to a binding contract.

We advise that the *Corporations Act 2001* requires information about you as a shareholder (including your name, address and details of the securities you hold) to be included in the register of Phillips River Mining Limited. If some or all of the information is not collected, it might not be possible to administer your shareholding. Information must continue to be included in the register if you cease to be a shareholder. Information in the register is available for inspection by you and the public (upon payment of a fee) as permitted under the *Corporations Act 2001*. These obligations are not altered by the Privacy Amendment (Private Sector) Act. The information is collected by the Phillips River Mining Limited, Advanced Share Registry Limited, and may also be disclosed to regulatory bodies (such as the Australian Taxation Office), print service providers and mail houses.

This Supplementary Prospectus is intended to be read with the Replacement Prospectus dated 24 December 2015 issued by Phillips River Mining Limited (ACN 004 287 790).

ANNEXURE 1
Geologist's Reports

Independent Geologist Report- Chilean Phosphate Assets

Phillips River Mining Limited

February 2016

Phillips River Mining Limited

Independent Geologists Report - Chilean PhosphateAssets

10 February 2016

Competent Person:

Andre Gauthier
Gold Holdings Limited
Member Quebec Institute of Engineers

Competent Person's Statement
The information in this Report is based on information compiled by Andre Gauthier who is qualified to provide such information under the 2012 edition of the JORC Code. Andre Gauthier is a consultant to Gold Holdings Limited and has been retained by Phillips River. Andre Gauthier is a Member of the Quebec Institute of Engineers which is a 'Recognised Professional Organisation' under the JORC Code.

Andre Gauthier has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity to which is being undertaken to qualify as a Competent Person as defined in the JORC Code.

Andre Gauthier has consented in writing to the inclusion of this Report in the Prospectus.

Also attached is the Table 1 Checklist of Assessment and Reporting Criteria in accordance with the JORC Code.

Table of Contents

List of Figures

List of Tables

ASL	Above Sea Level
Anticline	An anticline is a fold that is convex, with older layers closer to the centre or core
ASIC	Australian Securities and Investment Commission
ASX	Australian Securities Exchange
Kiwanda	Kiwanda Chile SA
AUD	Australian dollars
AusIMM	Australian Institute of Mining and Metallurgy
Cc	Cubic Centimetre
CCHEN	Comisión Chilena de Energía Nuclear
Cretaceous	Geological period (70 million years to 140 million years ago)
CORFO	Corporación de Fomento
EEM	Exploration expenditure multiples (method of mineral valuation)
Formation	A formation consists of a certain number of rock strata units that have a comparable lithology, facies, or other similar properties
gm.	Gram
ha	Hectare(s)
JORC	2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
km	Kilometre(s)
km^2	Square kilometre(s)
M	Million
Member	A lithostratigraphic unit of subordinate rank, comprising some specially developed part of a Formation
MEC	MEC Mining Pty Ltd
Mt	Millions of tonnes
Mtpa	Millions of tonnes per annum
NPV	Net present value
NTA	Net tangible assets
Philips	Phillips River Mining Ltd
RD	Relative density
T	Tonne
$ or USD	United States Dollar

Phillips River Mining Limited ("Phillips") has engaged Andre Gauthier to prepare an Independent Geologist Report for the Bahia Inglesa phosphate mine and surrounding exploration tenements in Chile (collectively termed as the "BI Project").

This report will be lodged with the Australian Securities and Investment Commission (ASIC) as part of the proposed capital raising and re-listing of the shares in Phillips River Mining Limited (Phillips River) on ASX. Phillips River is a publicly listed explorer and developer (ASX: PRH). Phillips River has signed a Heads of Agreement with Lara Exploration Ltd (TSXV: LRA) and its partner Kiwanda Mines LLC ("Kiwanda") to acquire certain rights and options associated with the BI Project.

The Bahia Inglesa phosphate project (the "BI Project") is located south of Bahia Inglesa on the Chilean coast near the town of Caldera in the Atacama region of Chile. The BI Project is well connected to the major Chilean highway "Panamerican Norte" by access roads.

Phosphate mineralisation at the BI Project is typical of sedimentary hosted phosphate deposits known as fosforitas of marine sedimentary origin. The limited exploration conducted so far has provided significant evidence of extensive mineralisation. Historical exploration was mostly conducted by government agencies during the 1970s and 1980s including drilling and subsequent Mineral Resource modelling, however a Mineral Resource has not been reported to the guidelines of an internationally recognised reporting standard like the JORC Code 2012. The mineral grades were estimated to be at or above 10% P_2O_5.

At the time of writing of this report small scale artisan mining activity was going on the BIFOX sub-project. The current mining operation is neither methodical nor based on technical studies and does not follow any mining sequence. The mined rock phosphate ore is processed in a small scale processing plant with no other beneficiation needed to produce a saleable product. The process plant is currently processing an average of 10,000 to 12,000 tonnes of natural phosphate per year across two 2 different products.

While some resource modelling has been completed in the past, there is insufficient informationabout the resource to provide a JORC estimate.

The KI Exploration area (KI sub-project) is an early stage exploration project.

1 Introduction

Phillips River Mining Limited ("Phillips") has requested an Independent Geologist Report on the SCM Bahia Inglesa phosphate mine and the surrounding exploration tenements (BIFOX and KI sub-projects) in Chile (collectively termed as"BI Project").

Phillips is a publicly listed explorer and developer (ASX: PRH) currently suspended. Phillips has signed a Heads of Agreement with Lara Exploration Ltd (TSXV: LRA) and its partner Kiwanda Mines LLC ("Kiwanda") to acquire certain rights and options associated with the BI Project.

1.1 Data sources

This report is based on the information provided by Philips River Mining, the technical reports of consultants and previous explorers, as well as other published and unpublished data relevant to the area. The report includes to a limited extent independent assessment of the quality of the geological data. The status of agreements, royalties or concession standing pertaining to the projects was not investigated.

The Report has relied upon information provided by the Company and information available in the public domain. Key sources are outlined in this Report and all data included in the preparation of this Report has been detailed in the references section. All information supplied has been accepted in good faith as being true, accurate and complete, after having made due enquiry as of February 2016.

1.2 Disclaimer and warranty

A draft version of this report was provided to the directors of Phillips River Mining for comment in respect of omissions and factual accuracy. Phillips River Mining has provided the author with an indemnity under which it provides compensation for any liability and/or any additional work or expenditure, which:

- Results from reliance on information provided by Philips River Mining and/or Independent consultants that is materially inaccurate or incomplete; or
- Relates to any consequential extension of workload through queries, questions or public hearings arising from this report.

This report may contain or refer to forward-looking information based on current expectations, including, but not limited to timing of mineral Resource estimates, future exploration or project development programs and the impact of these events on the Phillips River Mining. Forward-looking information is subject to significant risks and uncertainties, as actual results may differ materially from forecasted results.

The conclusions expressed in this Report are appropriate as at February 2016. All monetary values outlined in this report are expressed in United States dollars ($) unless otherwise stated.

Note on Concession Status and Material Contracts

The author has not independently verified the current ownership status and legal standing of the material tenements that are the subject of this Report. Instead it has relied on the advice provided to Phillips River Mining Limited by:

- Grasty Quintana Majlis & Cía Lawyers for KI
- Carcelen, Desmadryl, Guzman & Tapia Lawyers for BIFOX

that the material tenements underlying the mineral assets and this Report confirms that the material tenements are in good standing in all material respects.

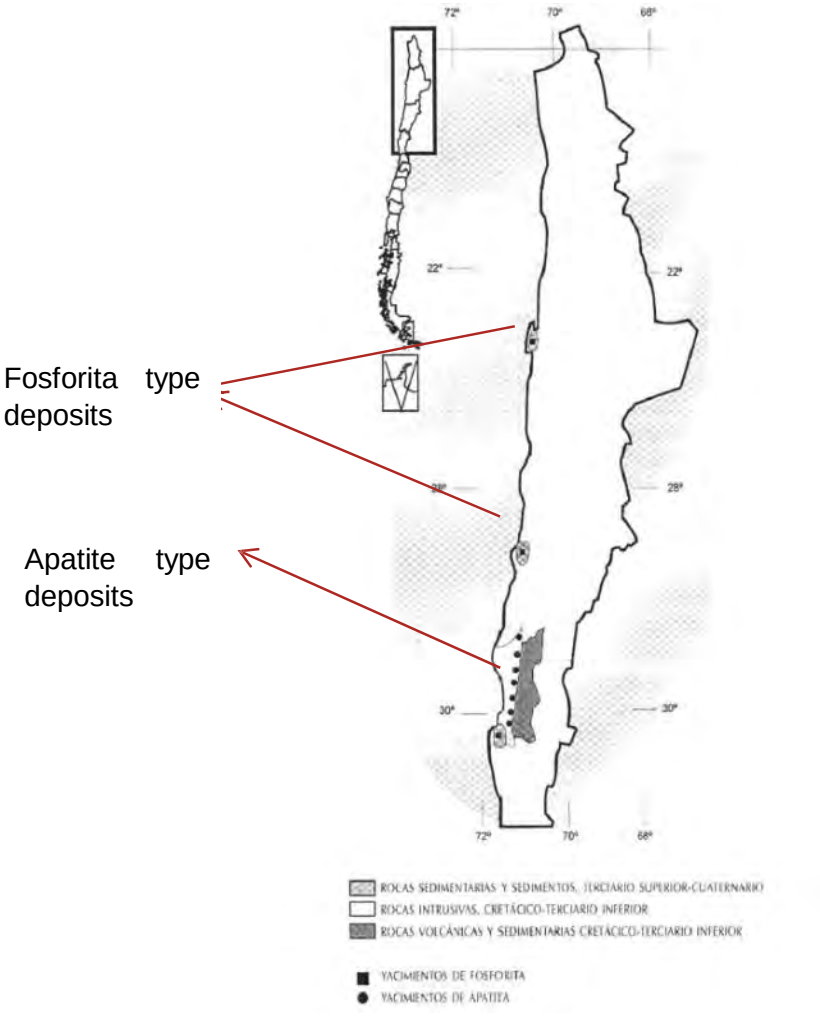
2 Phosphate in Chile

Chile has abundant mineral resources which are mostly confined to its northern desert region. The most important metal for Chile's mining industry is copper, for which Chile is known as the world largest producer. Other than copper, Chile is also known for its gold and Rare Earth Elements (REE) production.

Significant quantities of phosphate resources have been identified in Chile, the majority of which are yet to be developed. The National Service of Geology and Mining in Chile (SERNAGEOMIN) began the exploration of phosphatic deposits in Chile around 1963 beginning by Bahia Tongoy and in 1976 with the Project "Fosforitas de Mejillones", detecting the first large phosphate deposit in Chile. Later, between 1982 and 1985, Corporación de Fomento de la Producción and the Comisión Chilena de Energía Nuclear studied the area of Bahia Inglesa, detecting the second large phosphate deposit in Chile.

The majority of Chilean phosphate deposits can be considered of moderate quality. They are mainly located to the north from Mejillones (III Region to 23º, 06'S and 70º 27'W), Bahia Inglesa, BahiaSalado, Bahia Tongoy, Puerto Aldea and Pachingo to the south (Figure 2:1).

Figure 2:1 Phosphate Deposits in Chile



Source: Guarachi, 1989

Two major types of phosphatic mineral are found in Chilean phosphate deposits. One is fosforitas of marine sedimentary origin (secondary) with some associated apatite deposits and other is Apatitic igneous and metamorphic rocks of plutonic contact with associated granites (primary) Table 2:1 below show their distribution and grade.

Table 2:1 Distribution and Grade of Phosphate Deposits

Phosphatic Mineral	Associated Rocks	Location of Deposits	Average P_2O_5 %
Apatite	Igneous and Metamorphic granitical contacts with plutons	Western Sector of III and IV regions	12-30%
		Pampa Soledad	12-30%
Fosforites	Marine Sedimentary Rock, Fluorine carbonates apetites or francolites	Mejillones,II region	6.2
		Bahia Inglesa	7-17%
		Bahia Salado	7-17%
		III Region	5-20%
		Tongoy Guanaqueros-IV	4-22%
		Arauco, VIII region	Up to 3%

The phosphoric matrix of rocks of Mejillones and Bahia Inglesa are comprised of fluorine-carbonate apatite. They are “francolitas” of marine sedimentary origin with a high degree of isomorphic phosphate substitution by carbonate, therefore with good fertilizing value.

The annual production of phosphate is small scale and often poorly reported. Most of the phosphate resources are currently being exploited by artisanal mining method or with smaller equipment. The key phosphate producing regions in Chile are Bahia Inglesa and the deposits of Mejillones. Domestic production of phosphate in Chile has not been adequate to fill demand for fertilisers, which is rising, and Chile is a net importer of phosphate based fertilisers.

3 Bahia Inglesa Phosphate Project

3.1 Location, Infrastructure and Tenure

The Bahia Inglesa phosphate project ("BI Project") is located south of Bahia Inglesa on the Chilean coast near the town of Caldera in the Atacama region of Chile (Figure 3:1).

The regional capital of Atacama region, Copiapó, is located 806 km north to the Chilean capital city of Santiago. Majority of the Atacama region falls within the southern portion of the Atacama Desert. The Atacama Region is the third least populated region of the country, after Aysen and Magallanes. Of its total population, over 50% are located in the cities of Copiapó and Vallenar.

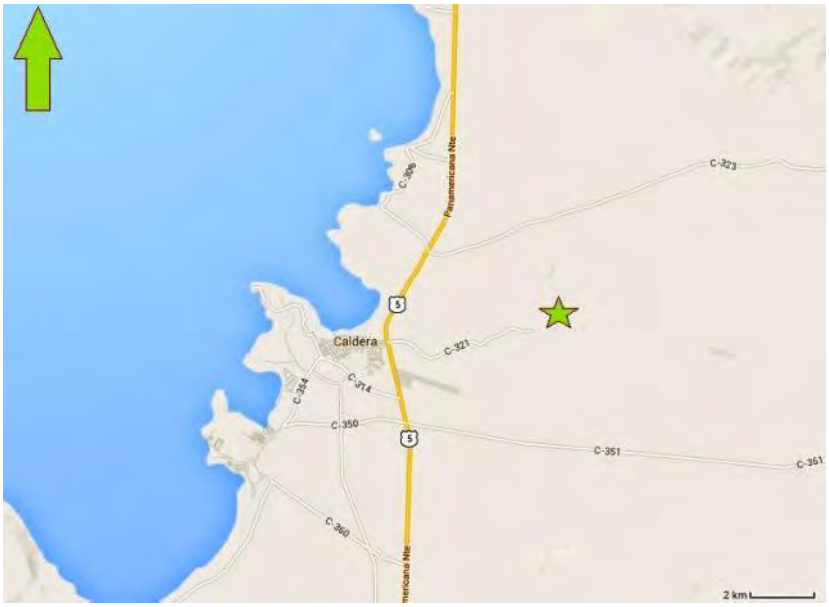
Figure 3:1 BI Project Location

The BI Project lies within the central western part of the state and located approximately 8 km straight south to the Port of Caldera. The port of Caldera is currently capable of loading copper and iron ore in handymax vessels with capacity up to 40,000t size (Figure 3:2).

Figure 3:2 Port of Caldera

Accessibility to the mine site is very good as it is connected to the Chilean highway "Panamerican Norte" by access road C-321 of approximately 5 km in length (Figure 3:3).

Figure 3:3 Location and Access to the BI Project



Source: Google Maps,

The region has an arid climate and is one of the driest deserts in the world with average rainfall of about 15 mm per year . The only significant surface water is the Copiapó River which runs along the south edge of the project area.

3.2 Ownership and Licenses

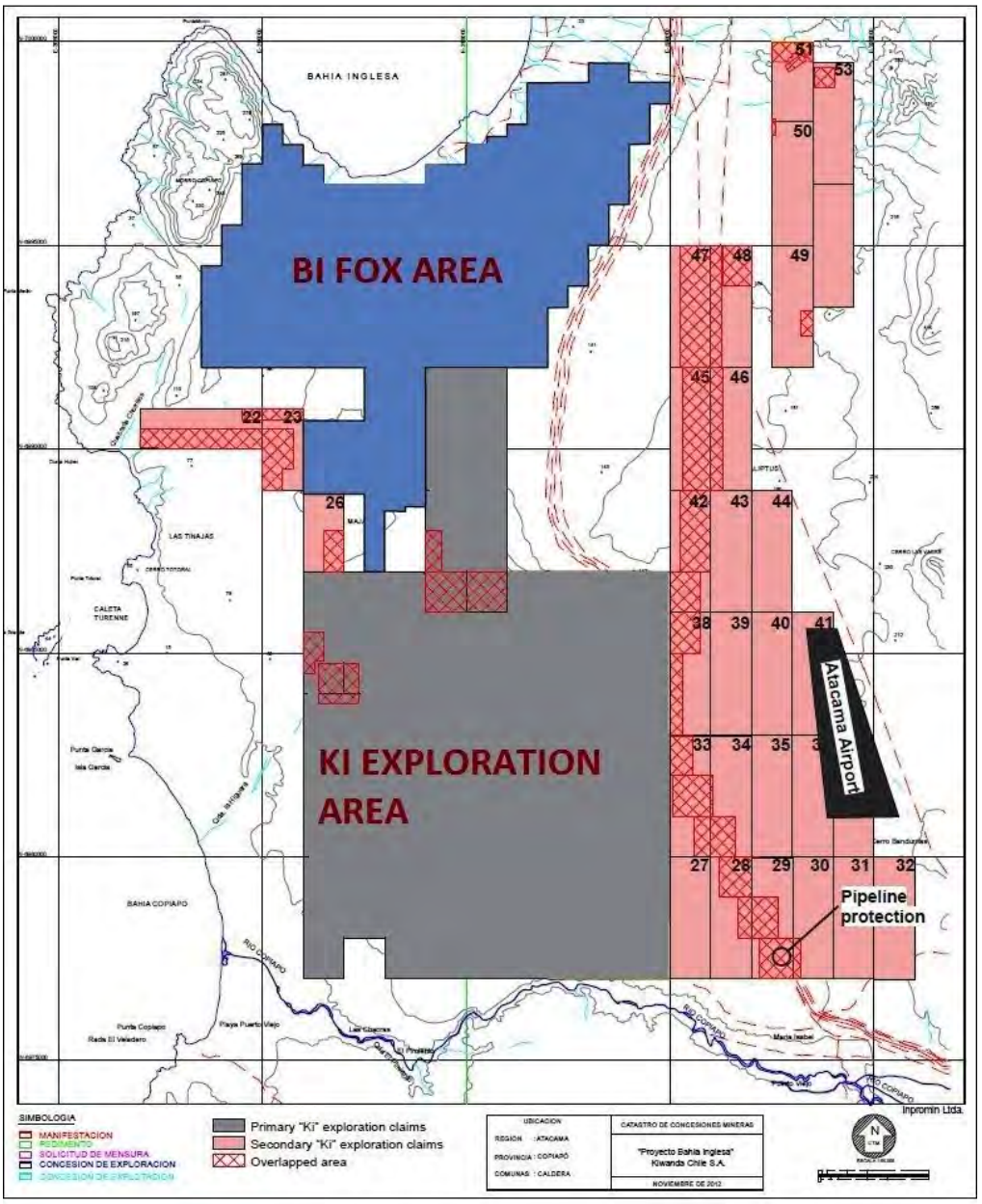
This report is prepared on the basis that Phillips River has an option to acquire the BI Project.

The project consists of two areas:

- The BIFOX sub-project (61.1 km^2), which includes the SCM Bahia Inglesa Mine; and
- A package of 64 exploration licenses covering 186 km^2 (KI Exploration Licenses or the KI sub-project)

Figure 3:4 and Table 3:1 shows the project tenement holdings which covering a total land area of approximately 247.1 km^2.

Figure 3:4 BI Project Tenements



Source: Kiwanda SA

Table 3:1 BI Project Tenements

Tenement Package	Area (km^2)
BIFOX	61.1
KI	186.0
Total Granted Area	247.1

The author has not independently verified the current ownership status and legal standing of the tenements that are the subject of this Report. Instead it has relied on the advice provided by:

- Grasty Quintana Majlis & Cía Lawyers for KI
- Carcelen, Desmadryl, Guzman & Tapia Lawyers for BIFOX

that the material tenements underlying the mineral assets and this Report confirms that the material tenements are in good standing in all material respects.

4 Geology

4.1 Deposit Type

The Bahia Inglesa phosphate deposits are typical of sedimentary hosted phosphate deposits worldwide. The primary mechanism for the formation of these deposits is the warming of cold phosphate rich upwelled deep ocean waters within shallow marine environments. The solubility of phosphate in cold sea water is about 0.3ppm whereas in warm saline water it's solubility decreases to <0.05 ppm, so phosphate precipitates as the sea water warms. Important factors controlling mineralization are the presence and scale of upwelling, current directions and coastal and sea floor geomorphology.

An important mechanism in producing economic deposits is the mechanical upgrading of the precipitated phosphate by current and wave action. The phosphate precipitates form layers which break into fragments (pellets) which are hard, heavy and possess a low aspect ratio relative to calcareous sand grains. Wave and current action is thought to winnow the finer material and concentrate the phosphate pellets.

Another factor contributing to the formation of economic phosphate deposits is the development of sea floor irregularities due to active structures. For example down dropping across a fault or rocky outcrop may focus winnowing ocean currents and also create a trap where phosphate pellets can accumulate.

A close analogue to the Bahia Inglesa deposits is the Sechura phosphate deposits in Peru. At Sechura, phosphate mineralization is hosted in Miocene shallow marine sediments in a 100 km by 40 km wide basin adjacent to the coast. Similar to Bahia Inglesa, the phosphate mineralization is largely pelletal and associated with diatomites and other bioclastic sediments. Also, like Bahia Inglesa, the host basin is partially separated from the coast by an outlier of basement rocks.

The Sechura Phosphate deposits are considered to be the largest phosphate resource in the world. The Bayovar phosphate mine was recently developed there by Vale, Mosaic and Mitsubishi and was due to have an annual production capacity of 3.9 million tons of phosphate rock by 2012 and eventually increase to up to 5.9 million tons/year.

4.2 Geological Setting and Mineralisation

The phosphate deposits are hosted in the Miocene to Pliocene Bahia Inglesa formation. The Bahia Inglesa formation is comprised of up to 42 m of siltstones, fine sands, shelly coquinas, pebble beds, and phosphatites, and represents a near shore shallow marine setting. It overlies crystalline basement composed of Palaeozoic metamorphic rocks and Cretaceous granitic rocks. It is partially covered in some localities by a thin cover of Pleistocene clastic and chemical sediments.

The principal target area lies in a 20 km by 12 km graben like area along the coast between Bahia Inglesa and the Copiapó River. The western boundary of this area is the Pacific Ocean except for the northern part where an outlier of basement rocks outcrops along the coast.

Within the broad target area outliers of basement occur and there are a number of sub-basins separated by basement highs. This is shown on the 3D fence diagram (Figure 4:2) reproduced from a CORFO/CCHEN reports and is interpreted from drilling data.

Phosphate mineralization occurs in the upper part of the Bahia Inglesa formation in 3 different stratigraphic locations. The Lower Phosphate Manto is an extensive unit 0.1 to 0.4 meters thick and is located above a sandy unit within the lower part of a siltstone unit. One to 2 meters above the Lower Phosphate Manto is the Main Manto which is up to 2 meters thick and consists of phosphate pebble conglomerate. The third type of mineralization is described as fluvial deposits which are up to 7 meters thick and consist of conglomeratic units interbedded with phosphatic sandstones. Clasts in the conglomerates are described as consisting of 70% phosphorite and 30% basement lithologies.

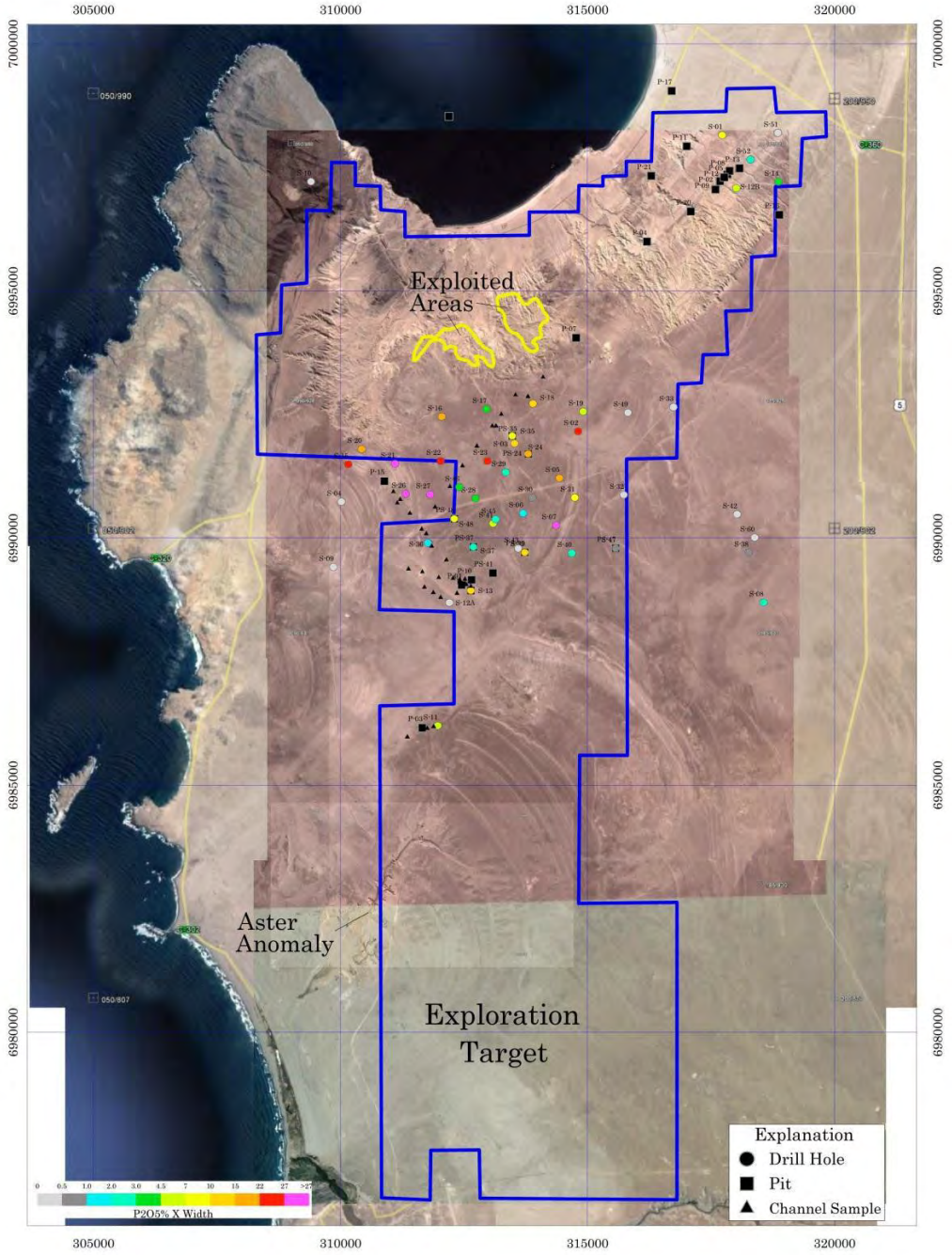
The climate of the BI Project area is hyper arid, with an average annual rainfall of 15mm. The only significant surface water is the Copiapó River which runs along the south edge of the project area. The Miocene-Pliocene Bahia Inglesa formation is a potential aquifer as an industrial development. A quebrada cutting into the Bahia Inglesa formation in the west central part of the area has encountered water. The Bahia Inglesa formation is potentially 100+ meters thick in the southern part of the area and depending on its thickness it could hold significant quantities of water.

4.3 Historical Exploration and Mineral Resource

The phosphate mineralisation was initially located on a follow up of airborne radiometric anomalies by the Chilean state agencies, Corporación de Fomento (CORFO) and Comisión Chilena de Energía Nuclear (CCHEN), looking for uranium

CORO/CCHEN conducted an extensive exploration program in the project area from 1983 to 1985. Work included geological mapping, 929 meters of reverse circulation drilling in 50 drill holes, 154 vertical meters of pitting in 27 pits and surface sampling, various metallurgical test works and resource studies. The location of the surface sampling, pits and drill holes are shown in the Figure 4:2. The cumulative P_2O_5% time's width is shown as a colour scale for the drill holes.

Figure 4:1 Historical Drilling



Since the CORFO/CCHEN work was undertaken, at and near surface phosphate deposits have been exploited in some areas. A satellite image of the surface mining is shown below.

Figure 4:2 Topography Render showing Sporadic Areas of Extraction

Source: MEC, BI(Bahia Inglesa) Assessment Report, May 2014

5 Current Artisanal Mining

The tenement has been the subject of intermittent historical mining. Currently a small scale mining activity was occurring on the BI mining area. The current mining operation is neither methodical nor supported by technical studies and does not follow any mining sequence.

The mined out areas consist of variable excavation sizes and depths, ranging from a 20m x 20m area with 2 to 5 meters of depth, up to 100 m x 60 m area and 4 meters of depth. More than 100 small scale individual mining areas were located during the preliminary investigation by MEC mining. The mined ore seam ranges from 20 cm up to 1 m over the previously exploited areas of the BI tenements (Figure 5:1).

5.1 Mining

The mining method used to date consists of excavating the overburden overlying the phosphate using a small machine and side casting to form a waste stockpile adjacent to the excavation. The extent of each excavation is bounded by how much waste can be piled up before the excavator can no longer spoil the material. This method has resulted in a poor resource recovery in the previously exploited areas, with large areas of land being possibly downgraded by the placement of waste piles and the need to remove this extra material should the phosphate in these areas be mined.

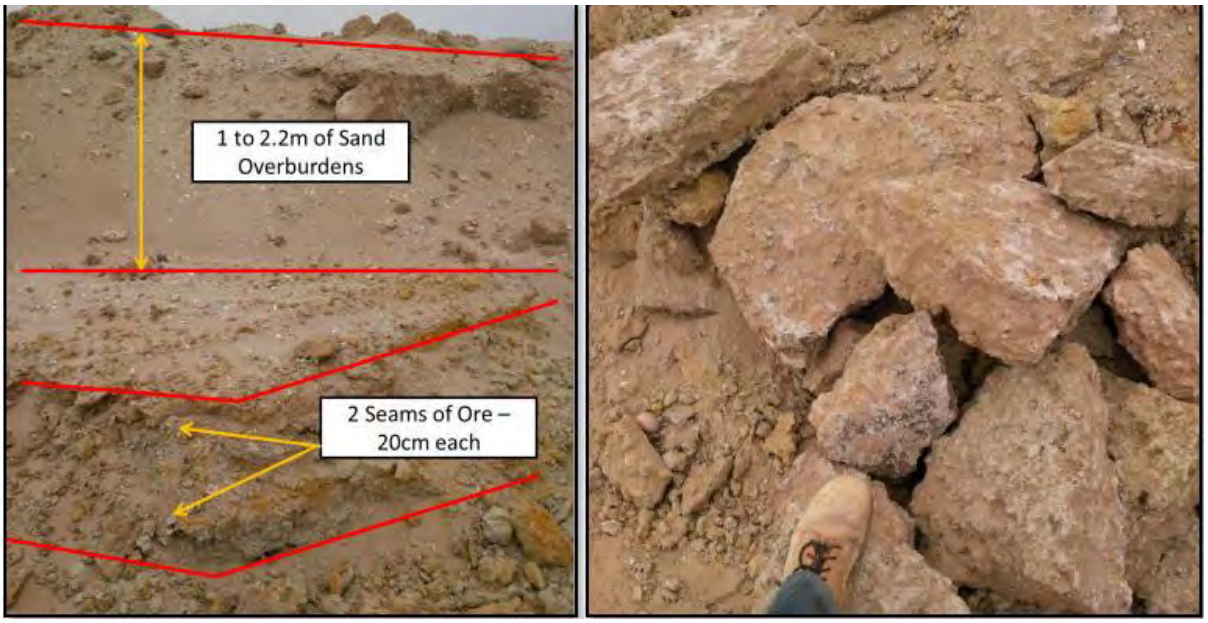
Figure 5:1 Exploited Area

Source: MEC, BI(Bahia Inglesa) Assessment Report, May 2014

Figure 5:2 shows the typical ore body profile. The overburden or waste cap cover is estimated to range from 1 m up to 2.2 m in the current mining areas. This waste material typical has been mined/removed with a 20 tonne to 30 tonne excavator or 5 tonne backhoe machinery.

The ore body typically breaks up easily with the bucket of the excavator. According to information supplied by BI, no blasting or hydraulic rock hammers have ever been used in the BI area to minethe ore body rock.

Figure 5:2 Typical Stratigraphic Profile



Source: MEC, BI(Bahia Inglesa) Assessment Report, May 2014

The current mining operation area is run as a haphazard and unplanned operation. This currently has the effect of downgrading potential resources through placement of spoil on top of phosphate bearing strata. In addition, the current mining operation may not be targeting the resource in a way that maximises economic value. There is therefore potential to increase the value of the current operation by investing in exploration and planning work to determine the best mine plan going forward.

5.2 Downstream Processing and Export Infrastructure

5.2.1 Crushing and Screening Plant

A general inspection of the Process Plant has been completed by MEC Mining Pty Ltd (MEC). Although a small scale crushing and screening plant does exist at site, the majority of the processing plant equipment has been decommissioned. The most significant de-commissioned components are the 2 large vertical elevator lifters, 2 x mills, 2 x bins, cyclones and connecting infrastructure as circled in red in Figure 5:3. The original Jaw crusher has also been de- commissioned as marked by the black circle in Figure 5:3.

Figure 5:3 Current Processing Facilities

Decommissioned Components Circled in Red

Source: MEC, BI(Bahia Inglesa) Assessment Report, May 2014

The quality and reliability of existing crushing and grinding equipment are estimated to be low at present. To increase the plant throughput, some key equipment would need to be repaired, upgraded or replaced to bring it back into service. Process plant is currently processing an average of 10,000 to 12,000 tonnes of natural phosphate per year across two 2 different product types:

- Fines/Powder product (1000kg bags); and
- Granular product (50kg bags).

The current working roster is 14 days working and 7 days off, working day shift only for an estimated 10 hours per day.

5.2.2 Process Plant Observations

The size and distribution of feed material from the mining operations is observed to be inconsistent. While no crusher stoppages were observed during the site visit, it is reasonable to expect that oversize feed would result in stoppages at the small jaw crusher, with the potential to slow production rates.

Figure 5:4 Crusher Feed Material

Source: MEC, BI(Bahia Inglesa) Assessment Report, May 2014

Figure 5:5 Typical Product

Source: MEC, BI(Bahia Inglesa) Assessment Report, May 2014

5.3 Export Infrastructure

There is an existing basic port facility at the town of Caldera, within a few kilometres of the mine. The facility is suitable for small coastal boats, but could potentially allow shipping of the product along the coast. Currently the product is trucked to local customers and approvals would need to be sought in order to use the port as an export facility. The mine is located within 5km of the main highway that runs the length of the Chilean coast.

6 Recent Exploration by Philips River Mining during 2015

Philips River Mining carried out a trenching programme in June 2015 to confirm, the results obtained during the historical drilling carried out by the Chilean state agencies, Corporación de Fomento and Comisión Chilena de Energía Nuclear as well as previous owner of the project.

The sample collected during the trenching scheme was checked at the onsite laboratory in Bahia Inglesa and further tested at a recognised laboratory in Canada.

The result obtained from the trenching program showed that the P_2O_5 grade, which is the main ingredient of rock phosphate is consistent with the previous results obtained during the earlier exploration program.

Relevant details of the report are included as part of this report in the attachment.

However, the exploration works conducted in the trenching programme by Philips River project do not provide the necessary information to estimate a JORC compliant Resource and Reserve Statement.

Philips River Mining is planning to conduct an exploration program in 2016/2017 to define a JORC compliant Resource on both the BIFOX mine and KI exploration area.

7 Budget Considerations

7.1 Future Activities

Phillips River has prepared a work programme and refurbishment schedule with MEC Mining as follows:

Upgrade to 50,000 tonnes per annum production

- 3 x 8 hour Shifts and a 24 hour operation.
- 6 days working, and Sunday Off.
- 1 shift per week for Maintenance.
- Basis of 4,166 tonnes per month or 50,000 tonnes per year.
- Estimated – 10 tonnes to 12 tonnes per hour average production.
- Feed Bin and Jaw Crushers
    - ROM Feed Bin - to be replaced and to include a grizzly - US$22,000
    - Receptacle Feeder/Grizzly Feeder – to be replaced - US$22,000
    - Jaw Crusher – to be replaced - US$36,000
        - Structures to support three new items - US$23,000

SUB Total Primary Crushing - US$103,000

- Conveyor 1 - Replacement - US$12,000

Plant A "Fines"

a. No expenditure required

Plant B "Granular – Pelletizer"

b. Grid Separator Cyclone – US$5,000
c. Granular Formation Drum - Repaired and relocated - US$10,000
d. Conveyors - to be refurbished or replaced US25,000
e. Over Bin Screen - to be Replaced and Diverting Chutes to be Installed US$25,000

Other

Delivery of Items to Site - US$10,000
Installations and Support – cranes, tooling and specialist people US$25,000
General repairs of Electrical System, Chutes, Conveyors US$30,000
SUB Total Processing US$142,000
Total – US$245,000

8 References

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Technomin, Report on Mining Cadastre, Project “KI”, 2013-2014

Attachment
Bahia Inglesa
Trench Sample Campaign Report
July 2015

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1 DISCLAIMER

The opinions expressed in this Report have been based on the information supplied by MEC Mining Latin America (MEC) and Phillips River Mining Limited (PRH) and its representatives in Chile and Australia, and have been provided in response to a specific request from PRH to do so.

2 INTRODUCTION

Phillips River Mining in June 2015 commissioned a sampling program at the BiFox phosphate mining area at Bahia Inglesa. The purpose of the sampling program was to enhance understanding of the ore body and enable the preparation of a preliminary mining strategy to produce 5,000 tonnes of run of mine ore per month, the maximum allowable under Chilean law without completing an Environmental Impact Declaration. A series of sample locations were planned, based on drill results from the exploration programs completed by CORFO (Work Development Corporation) and CCHEN (Chilean Nuclear Commission) in the 1980's, together with observations from the current mining pits. The sampling program was designed to target areas that were thought to contain readily mineable phosphate occurring close to the surface. Shallow trenching and sample collection was conducted between 23rd and 26th June 2015 under the supervision of MEC Mining geologist Roman Tejero and Phillips River Mining Geologist Carlos Theune.

3 PROJECT OVERVIEW

The Bahia Inglesa Phosphate project ("Bi Project") is located south of Bahia Inglesa on the Chilean coast near the town of Caldera in the Atacama Region of Chile. Caldera is 883 km north of the Chilean capital city of Santiago and 77 kilometers west of the regional capital of Atacama Region, Copiapó. The majority of the Atacama Region falls within the southern portion of the Atacama Desert. The Atacama Region is the third most sparsely populated region of Chile.

The nearest town to the project area is the coastal town of Caldera, located 8 km north of the BiFox mining area on the Panamerican Highway. Caldera is a port town having first exported silver from the rich Chañarcillo mine during the late 19th century. The port is equipped with a modern conveyor belt facility, loading iron ore and copper concentrates into 40,000t capacity handymax vessels. Caldera's population is 14,000 people and its economy is supported by the port facilities, fishing, aquaculture industries and tourism.

The project consists of two areas:

- The BIFox Area (61.1 km^2), which includes SCM Bahia Inglesa Mine; and
- A package of 64 exploration licenses covering 186 km^2 (KI Exploration Licenses or the KI sub-Project) adjacent to the BIFox Area

Tenement Package	Area (km^2)
BIFOX	61.1
KI	186.0
Total Granted Area	**247.1**

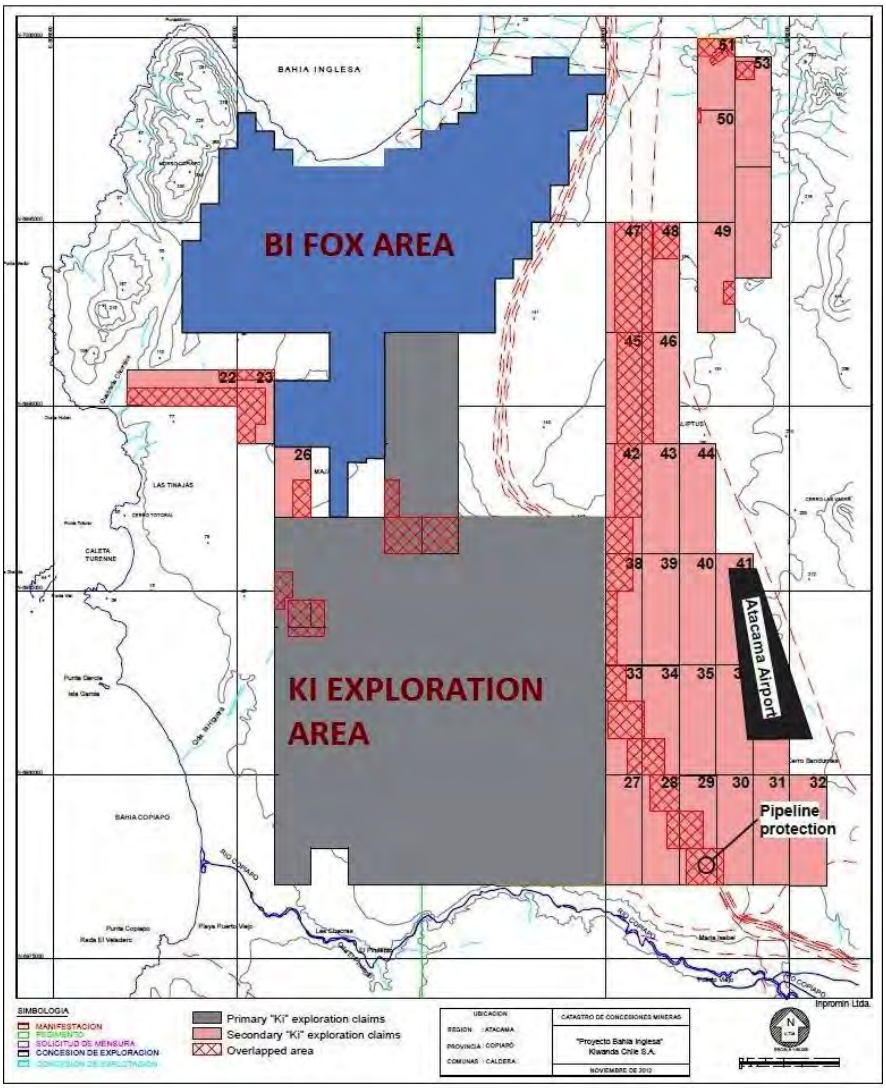


Figure 1 - Phillips River Mining Bahia Inglesa Tenements

4 SAMPLING PROGRAM DESIGN

A review of the historical geological studies of CORFO and CCHEN was conducted, and phosphate grade contour maps were created separately for both drilling and trench samples. Although not readily verifiable, it is thought that the drill sample phosphate grades from the historical drilling are not directly comparable to the historic trench sample grades due to sample contamination in the drill samples. To avoid confusion, separate maps were prepared for the drill hole P_2O_5 grades and the trench sample P_2O_5 grades (Figure 2 and Figure3).

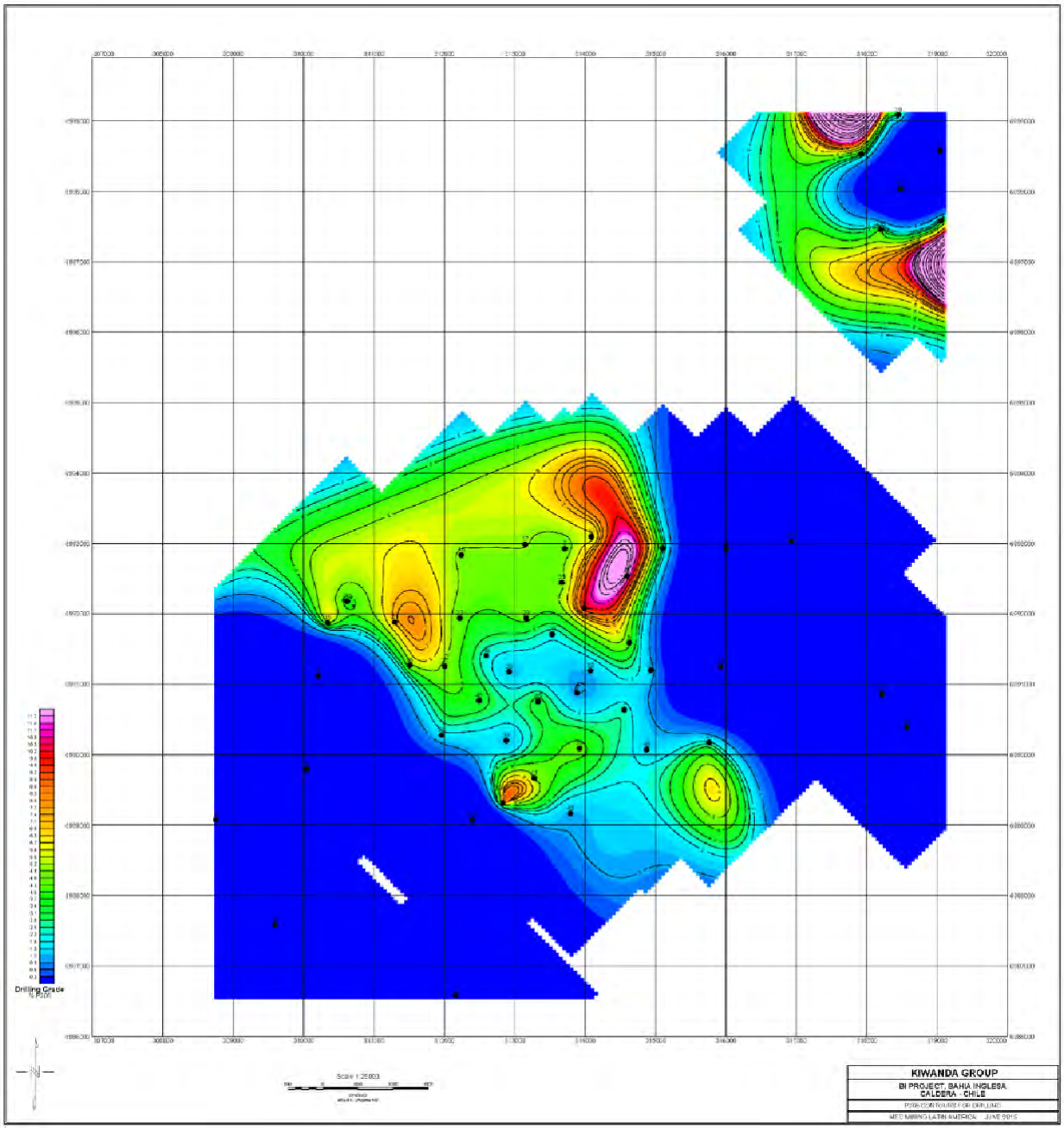


Figure 2 - Contour of P_2O_5 Grade for the CORFO and CCHEN Drill Holes

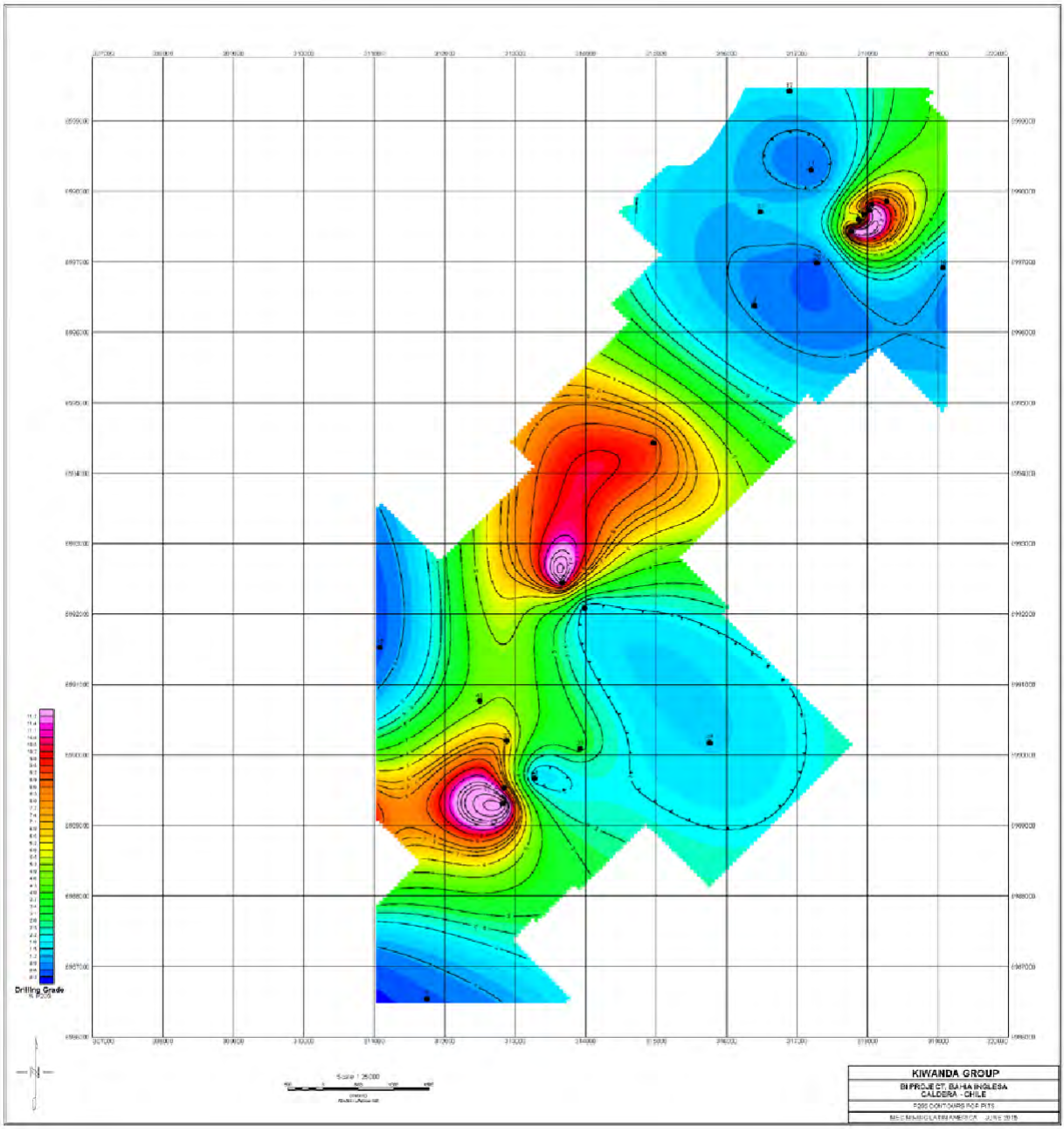


Figure 3 - Contour of P_2O_5 Grade for CORFO and CCHEN Trenches

Based on the historical drill and trench sample results, initially two targets areas were selected for testing by trenching. The “Central Target” is located southwest of the current mining area, and the “Northern Target” is located 5 km north-east of the current mining area (Figure 4).

In the “Central Target” area, 3 adjacent historic high grade P_2O_5 intercepts were recorded across an area measuring approximately 1.5km x 0.75km. A total of 12 trenches were proposed to test the continuity and grade of the ore body in the “Central Target” area. The proposed trenches were located in a cross pattern with each trench located 200 meters from an historic high grade drill hole or trench.

In the “Northern Target” area, 3 historic trenches recorded high grade P_2O_5 over a strike length of approximately 0.7km. A total of 6 trenches were proposed for the “Northern Target” to test the continuity and extent of high grade ore in all directions (Figure 4).

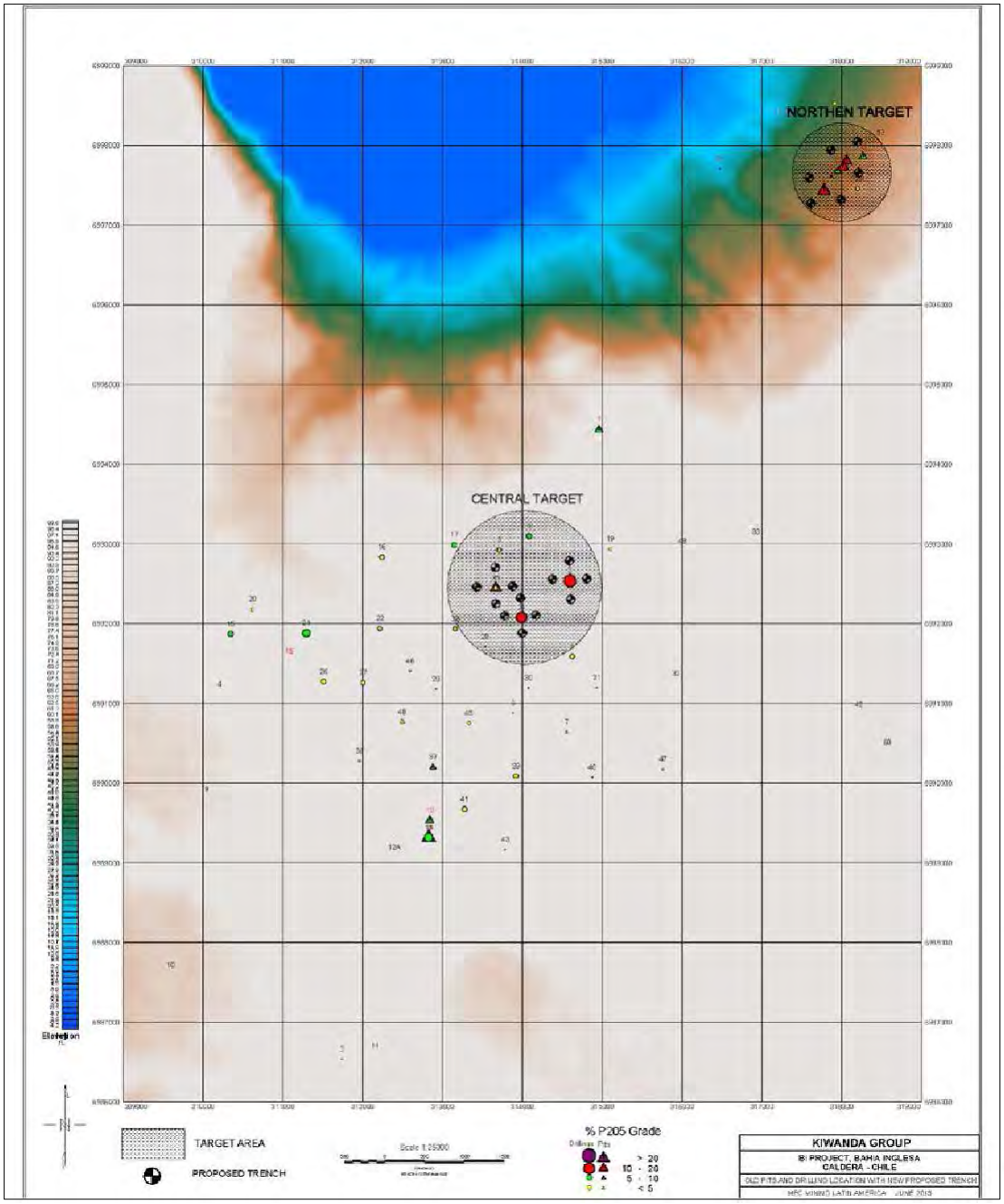


Figure 4 - Proposed Trenching Program

The coordinate system was first calibrated by locating an historic trench in the field to test its physical location against the historically recorded coordinates. An adjustment of 56m in the Northing, 31m in the Easting and 6m in relative level was necessary to calibrate the historic coordinate system to WGS84. The locations of the planned trenches were adjusted accordingly.

The final number and location of trenches was adjusted by the supervising geologist throughout the program as observations enabled a better understanding of the geology. The actual trench locations are shown in Figure 5. The "Central Target" was tested largely as planned, however due to the limited time and 5km travel distance to the "Northern Target", several trenches were instead completed in each of two additional target areas located closer to the processing plant.

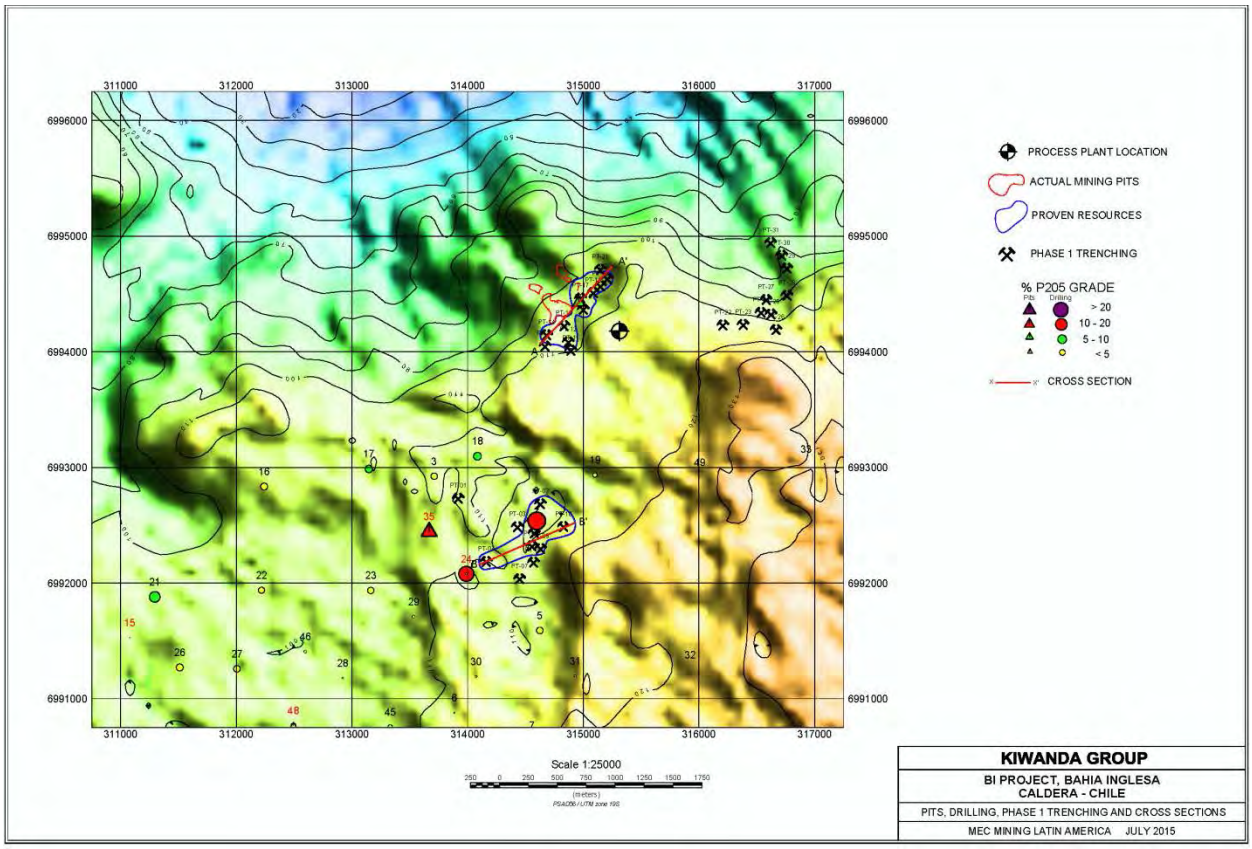


Figure 5 - Sample Trench Locations

The trenching program was conducted at the BI FOX Project from June 23rd to June 26, 2015. The equipment used for the trenching was a 34 ton Doosan excavator, hired from the current mining contractor on the BIFox property. In order to complete the maximum number of trenches possible within the limited time available for the program, access ramps into the trenches were not installed. Samples were taken by collecting selecting samples from the material excavated from the trench. The phosphate ore is readily distinguishable from the overlying and underlying waste due to its hardness and nature of the phosphoritic crusts, see Fig.6.

Figure 6 – Phosphorite sample.

In the Central Target area 10 trenches were completed. The trench locations were adjusted to focus on the areas near the crystalline basement outcrop in the east side of the Central Target area, where it was thought the phosphorite horizons would be shallower and more likely to be located by the excavator. Trenches PT-02, PT-04, PT-05, PT-06, PT-09 and PT-10 encountered phosphorite horizons.

Due to the 5km distance to the planned “Northern Target” area and the excavator travel time required, the decision was made to focus efforts on areas closer to the processing plant. No trenching was completed at the Northern Target.

‘Trenches PT-11 to PT-21 were completed adjacent to the current mining area in an area referred to as the “Mining Area” target. Eight of the 11 trenches dug in this area intersected phosphorite horizons.

The final campaign of trenching was conducted to the east of the process plant in an area where no previous exploration data was available, referred to as the “Eastern Target”. Ten trenches, PT-22 to PT-31 were completed. Three of the 10 trenches intersected relatively thick phosphate bearing horizons.

5 TRENCHING RESULTS

A summary of the location of the completed trenches is shown in Table 1.

Trench_ID	UTM mN	UTM mE	rL (m)	Depth (m)	Intercepts (m)
PT-01	6992726	0313919	101	3.0	
PT-02	6992679	0314630	103	10.5	4.50 – 4.70
PT-03	6992480	0314430	93	4.0	
PT-04	6992179	0314262	99	5.0	2.25 – 2.55
					2.95 – 3.25
					3.45 – 3.55
PT-05	6992314	0314556	98	2.7	1.90 – 2.30
PT-06	6992426	0314576	103	3.0	1.80 – 2.10
PT-07	6992030	0314450	107	4.0	
PT-08	6992173	0314571	104	4.0	
PT-09	6992291	0314631	105	3.0	2.00 – 2.20
PT-10	6992481	0314829	111	3.0	1.95 – 2.05
PT-11	6994006	0314893	99	3.0	
PT-12	6994079	0314871	102	3.0	1.95 – 2.15
PT-13	6994043	0314670	108	3.0	
PT-14	6994140	0314684	106	4.0	3.00 – 3.30
PT-15	6994219	0314835	104	1.0	0.40 – 0.70
PT-16	6994360	0315000	104	2.0	0.30 – 0.45
PT-17	6994457	0314977	104	2.0	0.75 – 0.90
PT-18	6994505	0315086	105	3.0	2.10 – 2.30
PT-19	6994561	0315149	104	1.7	1.00 – 1.30
PT-20	6994624	0315208	105	2.0	1.20 – 1.30
PT-21	6994705	0315148	105	2.0	
PT-22	6994224	0316208	108	1.0	
PT-23	6994228	0316382	107	2.0	
PT-24	6994333	0316537	108	3.0	1.5 – 2.20*
PT-25	6994318	0316624	107	2.0	
PT-26	6994185	0316667	110	3.20	
PT-27	6994444	0316581	98	1.5	0.00 – 0.60
PT-28	6994481	0316761	95	12.0	10.00 – 10.30
PT-29	6994716	0316760	90	3.0	
PT-30	6994827	0316715	93	4.0	
PT-31	6994937	0316621	89	4.0	

* = This intercept refers to a conglomerate with reworked phosphorite pebbles/boulders.

Table 1 - MEC Trench Locations and Mineralized Intercepts

A total of 33 samples were collected from the trenches for analysis. These samples were sent to the AcmeLabs facility in Santiago. AcmeLabs is an internationally certified laboratory. The samples were prepared in the Acme preparation facility in Santiago and sent to Acme's Vancouver lab for P_2O_5 content analysis. Some duplicates of these samples were sent to the Bifox laboratory at the process plant for check analyses. A list of the samples and a brief description of each sample is provided below (Table 2).

Sample_ID	PT Number	Description	Thickness of P seams	% P_2O_5 AcmeLabs	% P_2O_5 BiFox
5430	PT-02	Phosphorite crust	0.20 m	18.65	19.4
5431	PT-02	Limonitic Sandstone	-	0.21	1.6
5432	PT-02	High Limonitic Sandstone	-	0.46	0.3
5433	PT-04	Conglomerate	-	1.28	1.4
5434	PT-04	Phosphorite crust 1	0.30 m	15.56	16.4
5435	PT-04	Phosphorite crust 2	0.30 m	13.14	13.6
5436	PT-04	Phosphorite crust 3	0.10 m	8.16	8.5
5437	PT-04	Limonitic sandstone	-	7.91	8.2
5438	PT-05	Phosphorite crust	0.40 m	14.62	14.9
5439	PT-05	Limonitic Sandstone	-	1.40	1.5
5440	PT-06	Phosphorite crust	0.30 m	10.88	11.1
5441	PT-06	Limonitic Sandstone	-	0.44	1.6
5442	PT-07	Conglomerate	-	2.96	3.8
5443	PT-08	Limonitic Sandstone	-	0.33	3.7
5444	PT-09	Phosphorite crust	0.20 m	15.89	17.6
5445	PT-10	Phosphorite crust	0.20 m	18.06	18.3
5446	PT-10	Limonitic Sandstone	-	0.80	0.9
5447	PT-12	Phosphorite crust	0.20 m	17.56	18.0
5448	PT-14	Phosphorite crust	0.30 m	14.23	14.5
5449	PT-15	Phosphorite crust	0.30 m	17.10	17.7
5450	PT-16	Phosphorite crust	0.15 m	18.87	18.5
5451	PT-17	Phosphorite crust	0.15 m	21.59	20.2
5452	PT-18	Phosphorite crust	0.20 m	22.40	22.5
5453	PT-19	Phosphorite crust	0.30 m	23.55	24.0
5454	PT-20	Phosphorite crust	0.10 m	17.63	17.2
5455	PT-24	Conglomerate	-	18.58	18.7
5456	PT-26	Coquina Limestone	-	0.37	0.7
5457	PT-27	Phosphorite crust	0.60 m	19.15	19.0
5458	PT-27	Limestone (Mudstone)	-	1.08	1.0
5459	PT-27	Limonitic Sandstone	-	0.25	0.4
5460	PT-28	Phosphorite crust	0.30 m	16.59	17.1
5461	PT-28	Limestone (Mudstone)	-	2.65	2.7
5462	Hand_S	Phosphorite crust	-	17.46	17.7

Table 2 - Samples Taken for Analysis

6 POTENTIAL PHOSPHATE

Trench sampling campaigns were completed in 3 areas on the BIFox Area. The location of the trenches relative to historical work and current mining activities is shown on Figure 8. The trenching intersected phosphorite in all 3 areas where trenching was conducted. Based on the phosphorite intersections, the phosphorite was established for the Central and Current mining Area Targets. The phosphorite areas are open ended in some directions and there remains significant potential for expansion both within these areas and in other areas.

- Central Area Target of potential shallow depth phosphate expansion will be from PT-10 to the north-east, east and south-east.
- Current Mining Area Target of potential shallow depth phosphate expansion will be from PT-14 to the west.

In the Eastern Target area, the trenching identified relatively thick phosphorite horizons, however additional testing will be required to delineate the extent of this mineralization.

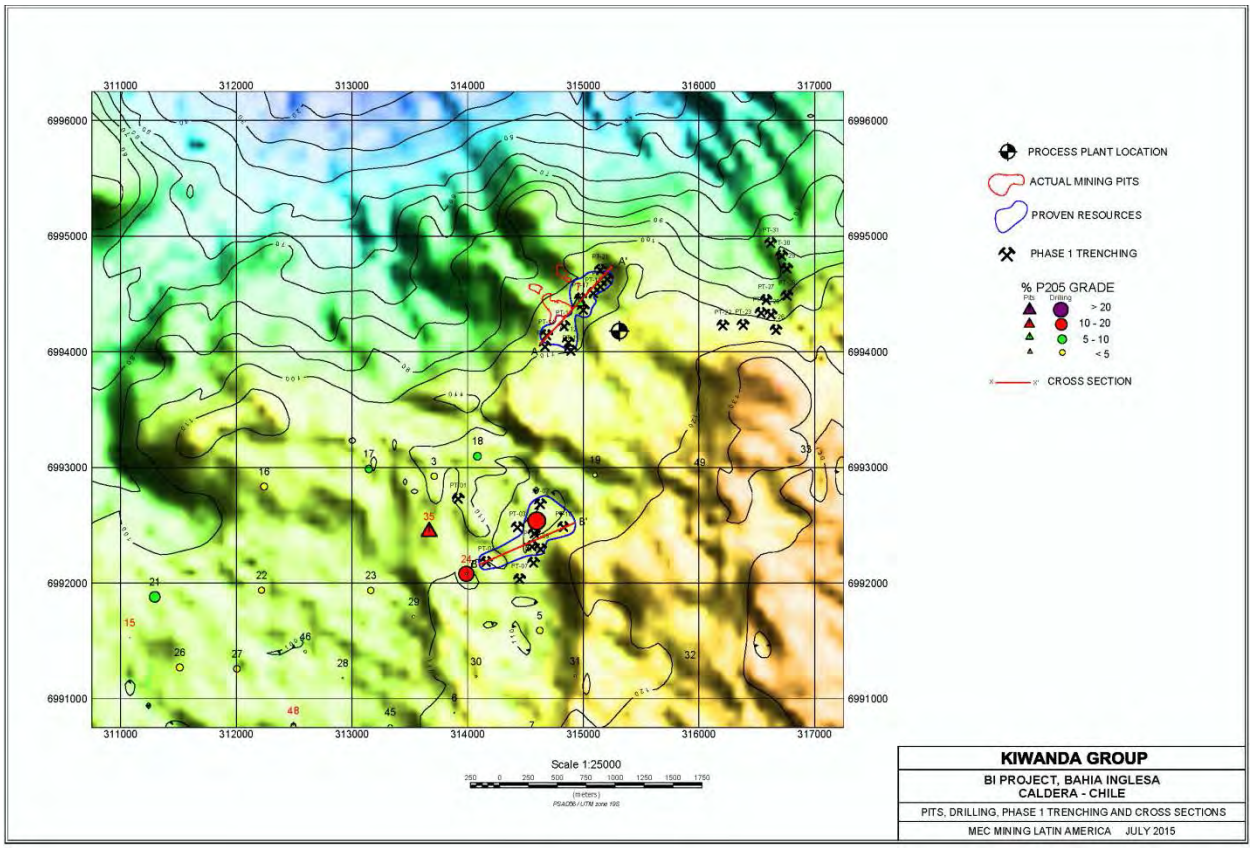


Figure 8 - Location of Trenches Relative to the Process Plant and Mining Area.

6.1 Central Target

The Central Target is located 1.6 km southwest of the current BiFox mining operation. At the Central Target, 6 of the 10 trenches intersected phosphorite at depths of between 1.8 and 4.5 meters. The widths of the phosporite intersections varied from 0.1 to 0.4 meters. One trench, PT-04, intersected 3 different phosphorite layers with a cumulative width of 0.7 metres. The location of the trenches is shown on Figure 9 below.

The trenches intersecting phosphorite mineralization define an area measuring 1000 meters long by 150 to 400 meters wide. The mineralization is open to the west and northeast and could potentially be significantly expanded with additional work. Of note is the occurrence of 3 different close spaced shallow horizons with a cumulative width of 0.7 meters in trench PT-04. The CORFO pit #35 which is located 500 meters northwest of PT-04 intersected 5 different close spaced phosphorite horizons also at shallow depth.

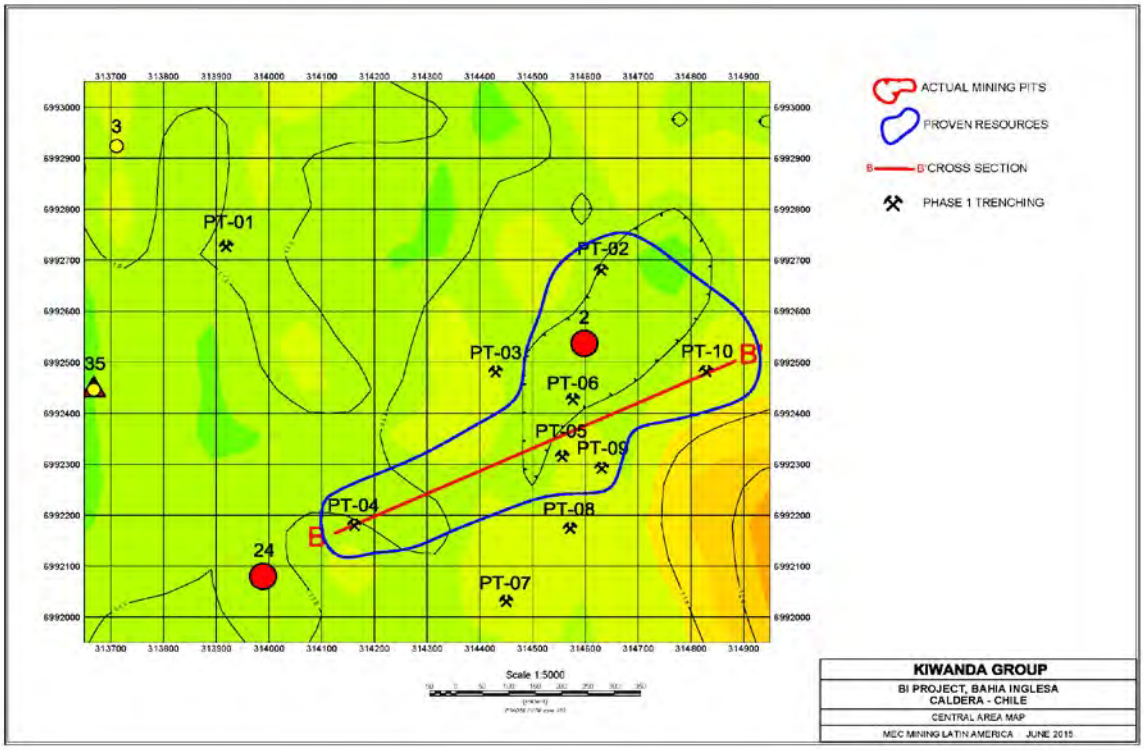


Figure 9 - Central Target Area Trench Locations and Historic Trenches and Drilling

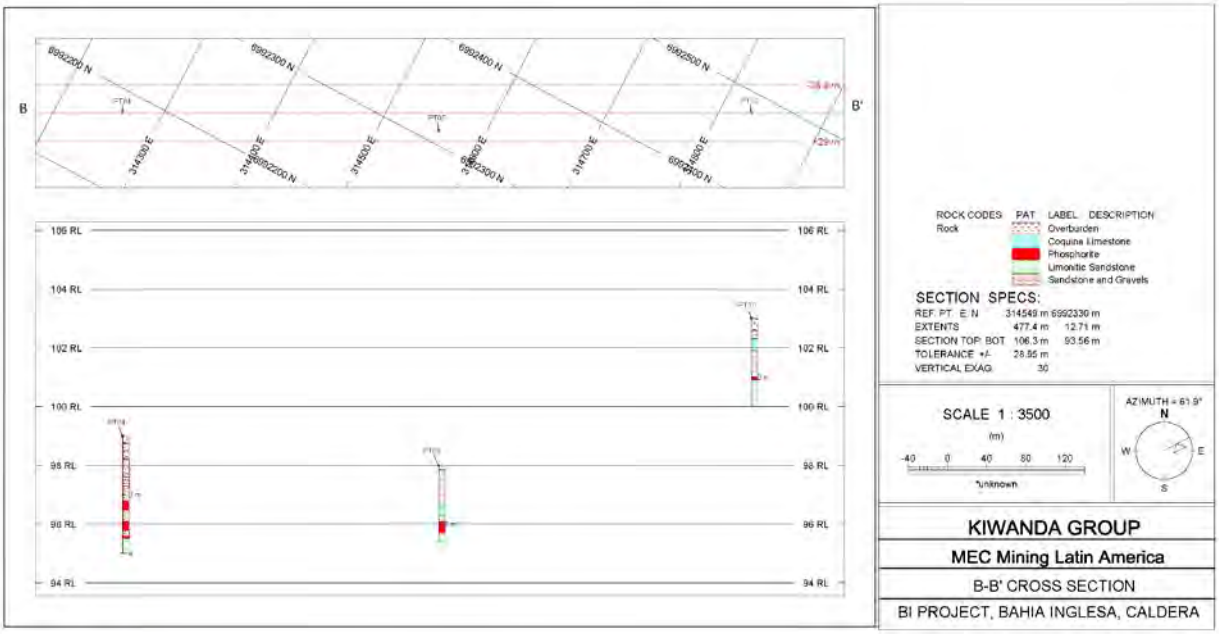


Figure 10 - B-B’ Cross section

6.2 Current Mining Area Target

The Current Mining Area Target is located immediately to the Southeast of the current BiFox Mining operation (highlighted by the red boundaries within Fig.11). At the Mining Area Target, 11 trenches were dug to depths of 1 to 4 meters. Eight of these trenches intersected phosphorite at depths varying from 0.3 to 3.0 meters. The mineralized trenches delineate an area 800m long and 100m to 300m wide. The overburden thickness increases toward the Southeast where economic extraction will be ultimately limited by depth of the overburden. To the North of PT-21, the phosphorite has been uplifted by the crystalline outcrop and then eroded by historical events.

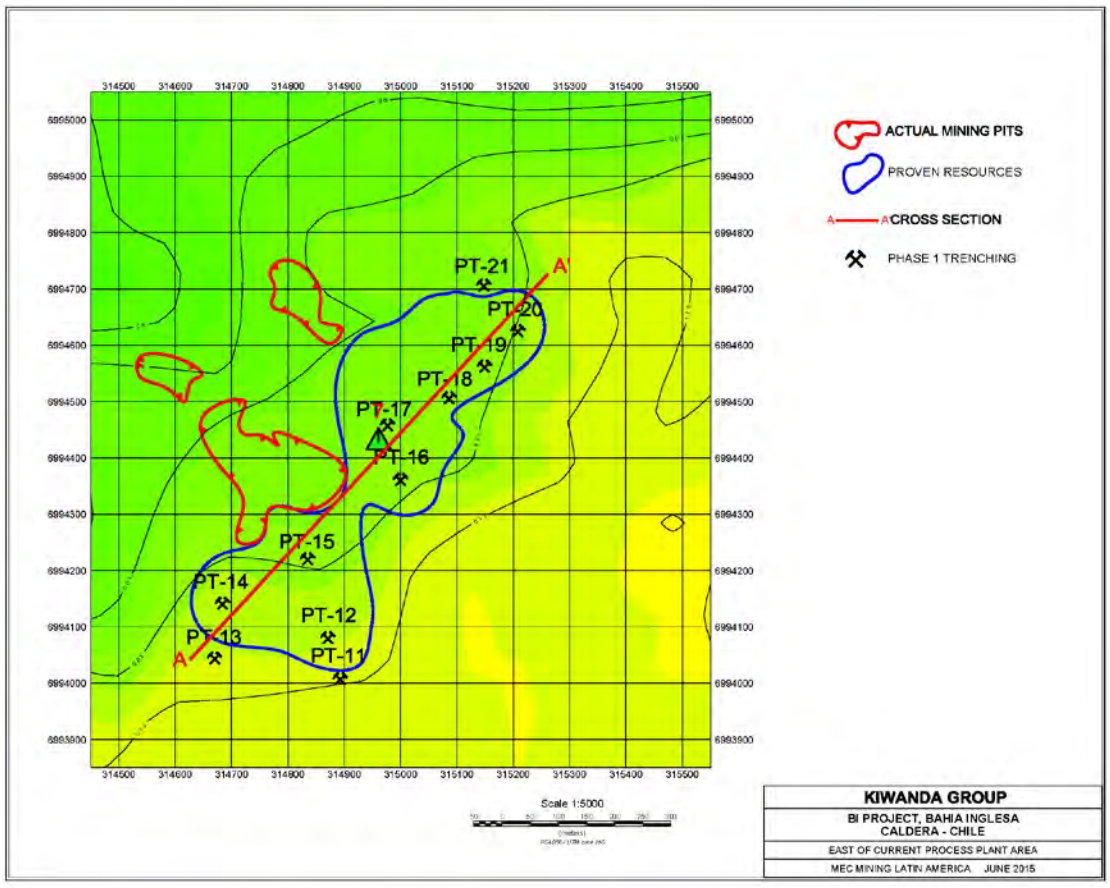


Figure 11 –Current mining Area New Trenches and Historic Trenches

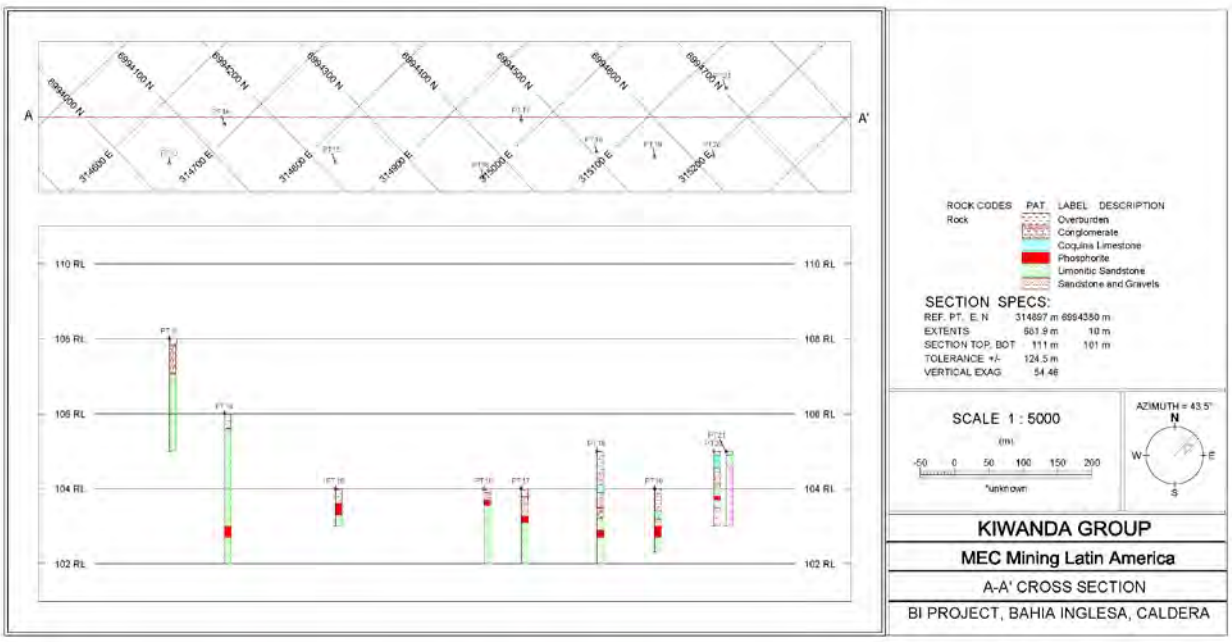


Figure 12 - A-A' Cross section

6.3 Eastern Target

The Eastern Target is located 1.5 km to the east of the BiFox mining area. Ten trenches were dug in this area to depths of 1 to 12 meters. Three of the trenches intersected phosphorite horizons ranging in thickness from 0.3 to 0.7 meters.

Some of the mineralization in the Eastern Target consists of nodular phosphorite within conglomeratic sediments. The mineralization probably represents concentrations of phosphate nodules by current action in tidal channels. This style of mineralization could potentially result in multi-metre phosphorite bodies which can be easily concentrated by screening.

6.4 Potential Resource Calculations

The Central Area phosphate intersection thicknesses are shown in Table 3.

Trench ID	Thickness of Seams
PT-02	0.20
PT-04	0.70
PT-05	0.40
PT-06	0.30
PT-09	0.20
PT-10	0.10
Average	0.3

Table 3 - Thickness of Seams for Central Area

The Mining Area phosphate intersection thicknesses are shown in Table 4.

Trench ID	Thickness of Seams
PT-12	0.20
PT-14	0.30
PT-15	0.30
PT-16	0.15
PT-17	0.25
PT-18	0.20
PT-19	0.30
PT-20	0.10
Average	0.225

Table 4 - Thickness of Seams for the Current Mining Area

An estimate of potential phosphate bearing volumes for the Central and Mining areas are shown in Table 5.

Mining Area	Area (m^2)	Average thickness	Volume (m^3)	Average Density	In situ Tonnes	Mining Rate (t/mth)	Months of Mining	Years of Mining
Central Area	217,274	0.25	54,138	2.4	130,364	5,000	26.07	2.17
Current Mining	155,258	0.225	34,933	2.4	83,839	5,000	16.77	1.40
Total	372,532	-	89,251	2.4	214,203	5,000	43	3.6

Table 5 - Estimated Production Potential from the Trenching Areas

No estimate of potential resources has been made for the Eastern area until follow-up investigations can be undertaken, however there is strong potential for a recoverable resource to exist in this area. The Northern area contains historical drilling indicating the presence of high grade phosphate, however this areas was not trenched as part of this campaign. There is strong potential that the Northern area will contain further phosphate.

7 CONCLUSIONS

The trenching campaign was successful in intersecting phosphate in all of the target areas. The extent of the phosphate seams delineated in the initial trenching campaign is sufficient to support a mining operation producing 5000 ROM tonnes per month for 3.6 years. During the 4 day trenching program, less than 1% of the total tenement area was tested, and it is likely that known extent of the phosphate ore can be significantly expanded with additional exploration.

Due to a focus on locating close to surface ore to underpin near term production, deep trenching was not undertaken. Trenching below the first group of phosphate seam intercepts in the shallow trenches was also not pursued, leaving open the possibility of further phosphate existing below the floor of the trenches.

Based on field observations, the phosphorite seams generally outcrop at the surface near the crystalline basement outcrops. Mapping of the basement outcrops and adjacent Bahia Inglesa formation could be undertaken to provide an indicator to efficiently delineate quality exploration targets for shallow phosphorite.

A 60 cm phosphorite seam, composed of nodules and layers, was found outcropping in the Eastern Target area. There is no historical mining or exploration data for this occurrence so the grade is unknown. However based on the new trenches (PT-27 and PT28) minable phosphate could be associated with this phosporite seam. Further work is needed to determine the extent of this seam and the amount of overburden overlying it.

The results from the initial trenching program have provided significant insight into the geology of the basin and location of future mining areas. The sampling methods used were designed to provide a fast indication of the potential of the area. Additional sampling, surveying and QA/QC will need to undertaken in order to use the data toward the calculation of a JORC compliant resource estimate.

8 APPENDIX

8.1 CORFO AND CCHEN DRILL HOLES AND PITS

- Drill Holes

Drill		UTM (PSAD56)		P thick.	P2O5
Nbr.		E [m]	N [m]	[m]	[%]
S	1	317,917	6,998,528	0.50	3.6
S	2	314,598	6,992,537	1.25	12.0
S	3	313,711	6,992,924	3.60	4.5
S	4	310,207	6,991,113	0.00	0.0
S	5	314,624	6,991,590	2.75	4.6
S	6	313,885	6,990,879	0.50	0.9
S	7	314,556	6,990,638	0.50	2.4
S	8	308,754	6,989,076	0.00	0.0
S	9	310,047	6,989,792	0.00	0.0
S	10	309,594	6,987,589	0.00	0.0
S	11	312,157	6,986,583	0.00	0.0
S	12A	312,395	6,989,070	0.00	0.0
S	12B	318,199	6,997,458	1.00	4.1
S	13	312,828	6,989,315	0.90	8.2
S	14	319,057	6,997,585	1.00	3.6
S	15	310,346	6,991,871	2.25	5.2
S	16	312,240	6,992,835	3.00	4.8
S	17	313,146	6,992,987	0.50	5.1
S	18	314,085	6,993,097	1.50	5.4
S	19	315,101	6,992,934	0.50	3.0
S	20	310,619	6,992,178	0.50	3.3
S	21	311,295	6,991,880	6.50	7.3
S	22	312,218	6,991,938	3.00	4.3
S	23	313,162	6,991,936	0.50	4.4
S	24	313,989	6,992,080	1.00	10.3
S	26	311,511	6,991,271	5.00	4.8
S	27	312,005	6,991,258	4.50	4.6
S	28	312,920	6,991,179	1.75	1.3
S	29	313,533	6,991,709	1.00	2.1
S	30	314,074	6,991,193	0.50	1.3
S	31	314,931	6,991,197	0.50	1.4

S	32	315,925	6,991,250	0.00	0.0
S	33	316,928	6,993,027	0.00	0.0
S	35	313,668	6,992,446	1.50	4.5
S	36	311,960	6,990,278	1.00	1.8
S	37	312,881	6,990,198	0.25	1.1
S	38	318,448	6,999,085	0.25	3.4
S	39	313,919	6,990,088	0.50	4.6
S	40	314,873	6,990,072	2.00	1.5
S	41	313,277	6,989,671	0.25	4.8
S	42	318,216	6,990,859	0.00	0.0
S	43	313,789	6,989,166	0.50	1.1
S	45	313,331	6,990,754	0.75	3.3
S	46	312,597	6,991,408	1.00	2.1
S	47	315,761	6,990,172	1.00	2.3
S	48	312,494	6,990,767	1.00	3.5
S	49	316,007	6,992,914	0.00	0.0
S	51	319,043	6,998,575	0.00	0.0
S	52	318,486	6,998,034	0.00	0.0
S	60	318,571	6,990,387	0.00	0.0

Pits

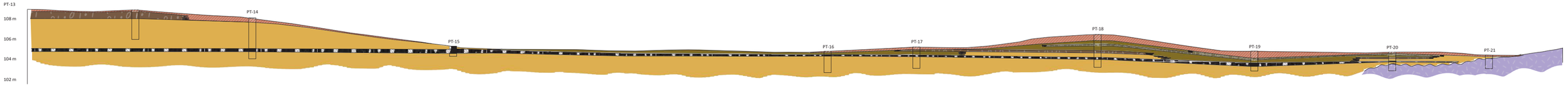
Pit		UTM (PSAD56)		P thick.	P2O5
Nbr.		E [m]	N [m]	[m]	[%]
P	1	312,643	6,489,430	2.80	10.1
P	2	317,871	6,997,599	0.10	4.6
P	3	311,746	6,986,538	0.70	0.5
P	4	316,392	6,996,376	0.25	0.9
P	5	318,021	6,997,732	1.50	12.0
P	6	312,385	6,998,907	1.20	5.7
P	7	314,961	6,994,428	2.00	9.4
P	8	318,065	6,997,807	0.70	11.0
P	9	317,780	6,997,430	0.20	14.2
P	10	312,842	6,989,533	0.90	9.3
P	11	317,198	6,998,304	1.00	0.6
P	12	317,955	6,997,675	0.90	7.6
P	13	318,268	6,997,856	0.01	8.9
P	14	312,828	6,989,315	0.70	15.1
P	15	311,078	6,991,529	0.50	0.5
P	16	319,071	6,996,917	0.50	1.1
P	17	316,892	6,999,423	0.15	1.8
P	20	317,280	6,996,986	0.80	0.5
P	21	316,480	6,997,707	0.65	1.3
PS	24	313,989	6,992,080	0.92	1.7
P	30B	322,530	7,005,110	0.80	0.7
PS	35	313,668	6,992,446	0.13	12.5
PS	37	312,881	6,990,198	0.19	6.9
PS	39	313,919	6,990,088	0.20	3.2
PS	41	313,277	6,989,670	0.19	1.7
PS	47	315,761	6,990,172	0.20	1.5
PS	48	312,494	6,990,767	0.34	4.7

8.3 GEOLOGICAL INTERPRETATION FOR CROSS SECTIONS

SW-NE

A

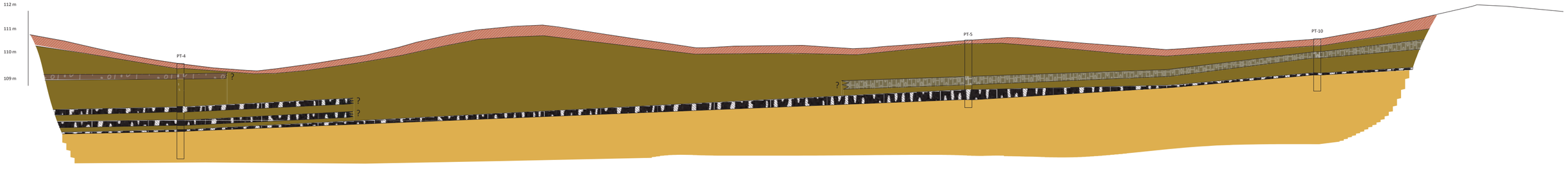
A’


PT-13
108 m
106 m
104 m
102 m
PT-14
PT-15
PT-16
PT-17
PT-18
PT-19
PT-20
PT-21


125 m
250 m
375 m
500 m
625 m
750 m
875 m
920 m
Granitoid Basement
Limonitic Sands
Phosphorite
Gravels
BI PROJECT, BAHIA INGLESA, CALDERA - CHILE
MEC MINING LATIN AMERICA
KIWANDA GROUP
A-A' CROSSSECTION
JULY 2015

SW-NE

B



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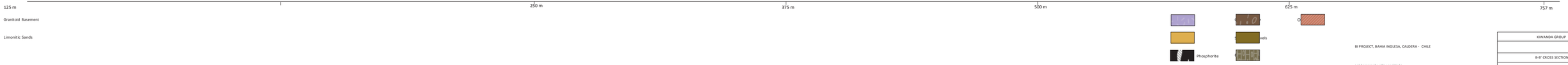

BI PROJECT, BAHIA INGLESA, CALDERA - CHILE

MEC MINING LATIN AMERICA

B-B' CROSS SECTION

JULY 2015

8.5 ACMELABS RESULTS

BUREAU VERITAS MINERAL LABORATORIES Canada

www.bureauveritas.com/um

Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver BC V6P 6E5 CANADA
PHONE (604) 253-3158

Client: **MEC Mining Latin America SpA**
Av. Vitacura 2771, Las Condes Santiago
METROPOLITANA CHILE

Submitted By: Roman Tejero Chile -
Receiving Lab: Copiapo July 03,
Received: 2015
Report Date: July 28, 2015
Page: 1 of 3

CERTIFICATE OF ANALYSIS COP15000717.1

CLIENT JOB INFORMATION

Project: Shipment ID:	Sin Referencia	
P.O. Number Number of Samples:	Sin Referencia 33	
		Procedure Code
		PRP70-250
		Ship
		ADDIT_TAX

SAMPLE DISPOSAL

RTRN-PLP	Return
RTRN-RJT	Return

Bureau Veritas does not accept responsibility for samples left at the laboratoryafter 90 days without prior written instructions for sample storage or return.

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
	33	Crush, split and pulverize 250 g rock to 200 mesh			COP
	33	Shipping charges for collect packages			VAN
	33	Additional custom tax			VAN
MISC	1	Miscellaneous			SAN
LF740	33	Li2B4O7/LiBO2 fusion, analysis of Phosphate by XRF		Completed	VAN

ADDITIONAL COMMENTS

Invoice To: Mining Latin America SpA Av. Vitacura 2771, Las Condes Santiago METROPOLITANA CHILE

Brant Peters

CC:
M
E
C

BRITISH COLUMBIA CERTIFIED ASSAYER
Marcus Lau
MARCUS LAU

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
"*" asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.

C

A\ CHILE

MEC Mining Latin America SpA

BUREAU VERITAS MINERAL LABORATORIES Canada

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Project: Report Sin ReferenciaJuly
Date: 28, 2015

Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver BC V6P 6E5 CANADA
PHONE (604) 253-3158

CERTIFICATE OF ANALYSIS COP15000717.1

Method Analyte		WGHT	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740
Unit MDL		Wgt	LOI	SiO2	Al2O3	Fe2O3	CaO	MgO	K2O	MnO	Na2O	TiO2	P2O5	Cr2O3	Ba	Cu	Ni	Pb	S	Sr	Zn
		kg	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
		0.01	-5.11	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.001	0.01	0.001	0.001	0.01	0.01	0.002	0.002
5430	Rock	3.96	6.40	27.73	6.20	2.51	30.96	1.06	1.00	0.03	2.43	0.33	18.65	0.010	0.02	0.003	0.002	<0.01	0.56	0.155	0.005
5431	Rock	1.90	1.62	67.32	14.60	5.83	2.37	0.94	2.69	0.05	4.09	0.43	0.21	0.007	0.05	0.002	0.008	0.01	<0.01	0.034	0.009
5432	Rock	3.86	3.65	59.62	15.22	8.36	2.62	2.27	2.95	0.06	3.88	0.74	0.46	0.007	0.05	0.008	0.003	<0.01	0.04	0.035	0.009
5433	Rock	6.98	18.65	39.25	7.88	1.94	25.36	0.87	1.53	0.04	2.24	0.30	1.28	0.004	0.03	0.003	<0.001	0.01	0.08	0.056	0.003
5434	Rock	4.22	5.12	35.62	7.69	2.70	25.61	1.05	1.29	0.03	2.71	0.39	15.56	0.008	0.04	0.002	0.001	<0.01	0.43	0.124	0.004
5435	Rock	6.08	6.39	35.47	7.61	2.64	25.37	1.11	1.19	0.03	2.66	0.39	13.14	0.008	0.03	0.002	<0.001	<0.01	1.10	0.118	0.004
5436	Rock	4.52	3.83	50.07	11.20	3.70	14.69	1.25	1.83	0.03	3.43	0.58	8.16	0.009	0.04	0.002	0.002	<0.01	0.15	0.085	0.004
5437	Rock	4.82	4.05	50.55	11.10	3.44	14.78	1.12	1.87	0.04	3.36	0.53	7.91	0.007	0.04	0.002	0.002	<0.01	0.14	0.083	0.004
5438	Rock	5.82	8.71	31.63	6.55	2.42	28.95	0.89	1.13	0.03	2.44	0.32	14.62	0.007	0.02	0.002	0.002	<0.01	0.45	0.130	0.004
5439	Rock	3.74	6.01	56.57	12.89	4.23	10.32	1.56	1.86	0.05	3.56	0.71	1.40	0.009	0.04	0.002	<0.001	<0.01	0.06	0.051	0.005
5440	Rock	4.58	13.77	29.38	6.46	2.74	28.10	2.86	1.07	0.05	2.17	0.31	10.88	0.008	0.03	0.002	0.001	<0.01	0.44	0.114	0.004
5441	Rock	3.78	3.53	63.70	14.22	4.21	4.24	1.71	2.84	0.03	3.93	0.58	0.44	0.007	0.06	0.003	<0.001	<0.01	0.04	0.036	0.004
5442	Rock	5.38	19.59	35.29	7.68	3.00	19.74	6.95	1.43	0.11	2.17	0.35	2.96	0.006	0.03	0.003	<0.001	<0.01	0.11	0.064	0.003
5443	Rock	2.64	5.61	59.98	13.20	4.42	7.01	1.66	2.54	0.04	3.52	0.70	0.33	0.007	0.04	0.002	0.001	<0.01	0.26	0.034	0.006
5444	Rock	4.64	8.76	28.74	6.13	2.50	30.29	0.95	0.95	0.03	2.30	0.31	15.89	0.006	0.02	0.003	0.001	0.02	0.55	0.134	0.004
5445	Rock	6.08	6.35	28.10	6.08	2.87	30.42	0.97	0.94	0.02	2.42	0.31	18.06	0.008	0.02	0.003	0.002	<0.01	0.91	0.152	0.004
5446	Rock	4.34	10.49	51.58	11.33	2.67	14.87	1.16	1.89	0.04	3.17	0.51	0.80	0.005	0.03	0.004	0.002	<0.01	0.42	0.048	0.004
5447	Rock	3.82	5.82	31.22	6.74	2.02	28.64	0.90	1.06	0.02	2.61	0.32	17.56	0.008	0.03	0.002	<0.001	<0.01	0.54	0.148	0.003
5448	Rock	4.28	5.20	37.66	8.37	2.91	23.80	1.03	1.22	0.03	3.07	0.40	14.23	0.007	0.05	0.004	0.002	<0.01	0.39	0.135	0.004
5449	Rock	4.16	6.21	31.40	6.72	2.20	28.65	0.99	1.10	0.02	2.57	0.28	17.10	0.009	0.03	0.003	0.001	<0.01	0.57	0.139	0.003
5450	Rock	4.12	6.35	28.30	6.13	2.01	31.03	0.95	0.93	0.02	2.42	0.27	18.87	0.010	0.02	0.002	0.001	<0.01	0.60	0.144	0.003
5451	Rock	4.48	8.18	21.02	4.72	1.33	36.36	0.95	0.67	0.02	1.98	0.18	21.59	0.012	0.03	0.004	0.003	<0.01	0.52	0.166	0.004
5452	Rock	3.76	6.92	19.19	4.18	1.62	36.96	0.89	0.61	0.02	2.13	0.16	22.40	0.013	0.03	0.004	0.001	<0.01	1.35	0.203	0.003
5453	Rock	3.84	7.95	17.07	3.90	1.74	38.54	0.94	0.58	0.02	1.91	0.15	23.55	0.011	0.03	0.004	0.003	<0.01	0.77	0.188	0.003
5454	Rock	4.36	7.29	28.29	6.37	2.43	30.41	1.19	0.96	0.02	2.26	0.28	17.63	0.008	0.03	0.003	0.004	<0.01	0.52	0.142	0.004
5455	Rock	2.90	6.95	27.01	5.89	2.26	31.59	0.96	0.91	0.02	2.28	0.24	18.58	0.007	0.02	0.002	0.001	<0.01	0.79	0.152	0.003
5456	Rock	3.08	20.94	36.12	7.67	2.35	27.25	0.98	1.17	0.03	2.11	0.36	0.37	0.006	0.03	0.004	<0.001	<0.01	0.13	0.087	0.003
5457	Rock	2.30	6.45	27.18	6.06	2.20	31.20	1.10	0.83	0.02	2.50	0.24	19.15	0.009	0.02	0.004	<0.001	<0.01	0.67	0.156	0.003
5458	Rock	3.42	34.81	16.26	4.26	1.79	25.79	14.48	0.23	0.06	0.80	0.21	1.08	0.005	0.02	0.003	0.002	<0.01	0.10	0.044	0.003
5459	Rock	3.36	22.74	28.87	4.47	9.76	23.04	8.39	0.15	0.18	1.21	0.32	0.25	0.182	<0.01	0.007	0.078	<0.01	0.09	0.016	0.011

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Method Analyte		LF740	LF740	LF740
Unit MDL		Zr	V2O5	SUM
		%	%	%
		0.002	0.1	0.01
5430	Rock	0.015	<0.1	97.33
5431	Rock	0.015	<0.1	100.22
5432	Rock	0.019	<0.1	99.88
5433	Rock	0.013	<0.1	99.36
5434	Rock	0.014	<0.1	97.81
5435	Rock	0.015	<0.1	96.04
5436	Rock	0.021	<0.1	98.81
5437	Rock	0.018	<0.1	98.78
5438	Rock	0.014	<0.1	97.71
5439	Rock	0.017	<0.1	99.20
5440	Rock	0.011	<0.1	97.83
5441	Rock	0.017	<0.1	99.50
5442	Rock	0.011	<0.1	99.30
5443	Rock	0.023	<0.1	99.07
5444	Rock	0.015	<0.1	96.87
5445	Rock	0.014	<0.1	96.55
5446	Rock	0.017	<0.1	98.55
5447	Rock	0.008	<0.1	96.94
5448	Rock	0.015	<0.1	97.99
5449	Rock	0.013	<0.1	97.27
5450	Rock	0.011	<0.1	97.29
5451	Rock	0.007	<0.1	97.02
5452	Rock	0.007	<0.1	95.10
5453	Rock	0.009	<0.1	96.39
5454	Rock	0.012	<0.1	97.16
5455	Rock	0.011	<0.1	96.72
5456	Rock	0.016	<0.1	99.40
5457	Rock	0.009	<0.1	96.96
5458	Rock	0.007	<0.1	99.79
5459	Rock	0.004	<0.1	99.39

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only.

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CERTIFICATE OF ANALYSIS COP15000717.1

Method Analyte		WGHT	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740
Unit MDL		Wgt	LOI	SiO2	Al2O3	Fe2O3	CaO	MgO	K2O	MnO	Na2O	TiO2	P2O5	Cr2O3	Ba	Cu	Ni	Pb	S	Sr	Zn
		kg	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
		0.01	-5.11	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.001	0.01	0.001	0.001	0.01	0.01	0.002	0.002
5460	Rock	2.82	6.74	31.85	6.89	2.24	27.57	1.21	0.91	0.04	2.80	0.32	16.59	0.008	0.06	0.002	0.001	<0.01	0.44	0.146	0.003
5461	Rock	3.38	26.76	26.04	5.98	2.47	22.05	10.93	0.63	0.11	1.56	0.27	2.65	0.004	0.02	0.004	0.001	<0.01	0.11	0.050	0.003
			7.04	27.10	6.00	2.07	30.57	1.21	0.86	0.04	2.59	0.26	17.46	0.007	0.04	0.003	0.001	<0.01	1.58	0.191	0.003

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Method Analyte		LF740	LF740	LF740
Unit MDL		Zr	V2O5	SUM
		%	%	%
		0.002	0.1	0.01
5460	Rock	0.012	<0.1	97.23
5461	Rock	0.009	<0.1	99.46
5462	Rock	0.010	<0.1	95.25

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METROPOLITANA CHILE

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Date: 28, 2015

QUALITY CONTROL REPORT COP15000717.1

		Method	WGHT	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740	LF740
		Analyte	Wgt	LOI	SiO2	Al2O3	Fe2O3	CaO	MgO	K2O	MnO	Na2O	TiO2	P2O5	Cr2O3	Ba	Cu	Ni	Pb	S	Sr	
		Unit	kg	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
		MDL	0.01	-5.11	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.001	0.01	0.001	0.001	0.01	0.01	0.002	0.002
Pulp Duplicates																						
5432	Rock		3.86	3.65	59.62	15.22	8.36	2.62	2.27	2.95	0.06	3.88	0.74	0.46	0.007	0.05	0.008	0.003	<0.01	0.04	0.035	0.009
REP 5432	QC			3.66	59.55	15.23	8.31	2.60	2.28	2.96	0.06	3.90	0.76	0.46	0.009	0.05	0.005	0.002	<0.01	0.04	0.037	0.009
Core Reject Duplicates																						
5442	Rock		5.38	19.59	35.29	7.68	3.00	19.74	6.95	1.43	0.11	2.17	0.35	2.96	0.006	0.03	0.003	<0.001	<0.01	0.11	0.064	0.003
DUP 5442	QC		19.67		35.29	7.73	3.02	19.84	6.97	1.43	0.11	2.16	0.35	2.99	0.004	0.03	0.003	<0.001	0.01	0.11	0.059	0.004
Reference Materials																						
STD GIOP-55	Standard			3.39	4.04	2.18	89.66	0.03	0.05	0.01	0.10	0.02	0.10	0.16	0.025	0.02	0.003	<0.001	0.01	<0.01	0.004	0.004
STD NIST120C(D)	Standard			5.20	6.28	1.30	1.08	48.10	0.32	0.15	0.03	0.55	0.11	32.91	0.009	0.01	0.026	0.003	0.01	0.42	0.110	0.010
STD GIOP-55 Expected			3.389		4.085	2.18	89.804	0.0393	0.047	0.0131	0.103	0.02089	0.0977	0.173	0.00771	0.0053	0.0042	0.0036	0.0074	0.0223	0.0029	0.0024
STD NIST120C(D) Expected					5.5	1.3	1.08	48.02	0.318	0.147	0.027	0.52	0.103	33.34								
BLK	Blank			0.00	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.001	<0.001	<0.01	<0.01	<0.002	<0.002
Prep Wash																						
QUARTZ_CP	Prep Blank		-0.38		97.55	0.40	1.39	0.02	<0.01	0.11	<0.01	0.13	0.02	<0.01	0.004	<0.01	0.002	<0.001	<0.01	<0.01	<0.002	<0.002
QUARTZ_CP	Prep Blank		-0.32		98.07	0.40	1.15	0.03	<0.01	0.10	<0.01	0.09	0.06	<0.01	0.003	<0.01	0.002	<0.001	<0.01	<0.01	<0.002	<0.002

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METROPOLITANA CHILE

Project: Report Sin ReferenciaJuly
Date: 28, 2015

Part:

JORC Code, 2012 Edition – Table 1 report Phosphate

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• **Phillips River has completed limited phosphate rock sampling on the Bifox projects (approx. 1% of tenement area) as per the 2015 trenching programme. The samples were sent to independent laboratories which confirmed the level of phosphate and other materials.** • **The trench sampling was selected based upon the historical drill data produced by CORFO and CCHEN the Chilean government authorities which carried out work on the tenements in the 1980s.** • **The work included geologic mapping, 929 meters of reverse circulation drilling in 50 drill holes, 154 vertical meters of pitting in 27 pits and surface sampling, various metallurgical testwork and resource studies.** • **The Trench sampling was carried out adjacent to selected original drill holes to compare the results from the original study and current sampling.** • **The laboratory work on the trench samples is consistent with the historical production levels at the mine.** • **The laboratory work on the trench samples is not consistent with the historical drill programme at the mine as it is thought that sample contamination occurred in the drill samples.** • **Trench samples ranged up to 24% P2O5 content.** • **Historical drill samples ranged up to 17% P2O5 conmtent.** • **Bifox Ltda has a 20+ year history of small-scale open-pit mining through producing and selling direct application phosphate rock fertilizer with a nominal 16-19% P2O5 content into the local Chilean markets.** • **An on-site laboratory at Bifox runs routine P2O5 analyses on the granular phosphate and fine powder phosphate products that are shipped to end users.**

Criteria	JORC Code explanation	Commentary
		• **The on-site laboratory co-tested the sampled product from the trenching programme and results were comparable to the independent laboratory tests.** • **The samples and laboratory results are consistent with the information relating to the P2O5 content, the contents of some selected oxides (K2O, CaO, MgO, CO3 and SO4) and the upper limits of contents of several elements (B, Zn, Mn, Ni, Cu, Cd, As Pb, Hg) that is branded on the 50-kg bags of granular phosphate and on the 1000 kg big-bags of powdered phosphate sold by Bifox.** • **Insufficient work has been completed to provide a JORC estimate of resource.**
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• **Phillips River has not drilled the Bifox or the Ki project areas. The original study by the Chilean Government carried out 929 metres of reverse circulation drilling.** • **There has also been some historic drilling and pitting on the Bifox project during phosphate exploration programs by the current owners. These results are unknown. The historical information would not be usable in a JORC compliant mineral resource but is relevant from an exploration perspective as it can be used to guide future exploration work.**
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• **Samples from the trench programme were sent to Acme Laboratories in Santiago Chile for assessment. P2O5 content was undertaken at the Vancouver lab of Acme.** • **The samples were duplicated and co-checked by the Bifox laboratory with similar results across the range of samples with minor variations.** • **Samples at each trench were bagged and labelled on site at each location. They were sent directly to the Acme Santiago office which then split the samples for the various on testing. This was a blind test regime.**
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support*	• **Not applicable.** • **No mineral resource was established**

Criteria	JORC Code explanation	Commentary
	appropriate Mineral Resource estimation, mining studies and metallurgical studies. • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• **31 trenches were dug at various distances around the core mining area – however representing less than 1% of the whole tenement area.** • **33 samples were taken** • **Trenches generally ranged from 1 metre to 5 metres and were typically less than 3 metres in depth** • **Trenching was stopped when significant intersection of Phosphorite was encountered.** • **One trench tested to 12 metres to establish deeper intersections of Phosphorite.**
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• **The primary test was for P2O5 content. Each sample had as its primary objective a measure of phosphate.** • **In addition as an industrial mineral other chemicals were tested (eg K2O, CaO, MgO, CO3 and SO4) and the upper limits of contents of several elements (B, Zn, Mn, Ni, Cu, Cd, As Pb, Hg)** • **The largest contents of all samples were Silicon Dioxide (in the form of sand – generally ranging up to 60% of each sample, and Calcium Oxide in the form of degraded seashells consistent with the sedimentary form of the samples and ranging up to 30%. The next largest component was P2O5.** • **Quality control was established against original CORFO samples and the test samples between the two laboratories.**
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.*	• **No verification was specifically undertaken due to the nature of the trench programme objective.**

Criteria	JORC Code explanation	Commentary
	• *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• **The location of historical co-ordinates was undertaken to compile comparative data. The co-ordinate system was calibrated by locating one of the historical drill holes and adjusting for WGS84 (Geodetic Reference System) and the co-ordinates were then calibrated for all other drill holes.** • **Adjustments were necessary.**
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• **Not sufficient to establish Exploration Results.**
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• **Not applicable – however it is noted in the trench profiles and the historical data set from CORFO that the mineralisation is laid down as sedimentary deposits and they are largely still in horizontal plane.** • **The geological profiles are linear in nature across the basin for the tested areas.**
Sample security	• *The measures taken to ensure sample security.*	• **No specific security for samples was undertaken.** • **Basic transport by road to the laboratory and then separated.** • **As it was test sampling to show compliance with original studies of fertiliser and no JORC estimate was planned no specific security was considered necessary.**
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• **Not applicable.** • **The test was authenticated by being tested in 2 different unrelated laboratories.**

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• **The Bifox project covering 6090 ha is collectively owned by SCM Bahia Inglesa Ltda and Compania Minera de Fosfatos Naturales Bifox Ltda. This area is located immediately south of the town of Caldeira on the Bahia Inglesa in northern Chile.** • **The Ki project, 53 licenses covering 19,900ha is adjacent south and east from the Bifox mining ground and is 100% owned by the Kiwanda Alliance BVI Ltd. (Lara-Kiwanda).** • **Phillips River has an option to acquire 100% interest in the Bifox mining rights and the right to acquire 100% of the Kiwanda Phosphate Alliance project. The documentation related to mining and exploration properties associated with the BiFox and Ki projects as presented in the reports, is accurate and the information is up to date.**
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• **The phosphate mineralization was initially located on follow up of airborne radiometric anomalies by the Chilean state agencies CORFO (Corporación de Fomento) and CCHEN (Comisión Chilena de Energía Nuclear). The focus of initial investigation was to locate a potential uranium resource. Phosphate was subsequently discovered at the site.** • **CORFO/CCHEN conducted an extensive exploration program in the project area from 1983 to 1985. Work included geologic mapping, 929 meters of reverse circulation drilling in 50 drill holes, 154 vertical meters of pitting in 27 pits and surface sampling, various metallurgical testwork and resource studies.**

Criteria	JORC Code explanation	Commentary
		CORFO/CCHEN calculated total resources in all categories [*deletion of original calculation of resource size as not JORC compliant***] at greater than 7.5% P2O5. This estimate was competed in the 1980's and is not compliant with the JORC mineral reporting code.**
Geology	• *Deposit type, geological setting and style of mineralisation.*	• **The Bahia Inglesa phosphate deposits are typical of sedimentary hosted phosphate deposits and are hosted in the Miocene to Pliocene formations of the Bahia Inglesa Formation. This is comprised of up to 42 m siltstones, fine sands, shelly coquinas pebble beds, and phosphate-rich rocks deposited on a crystalline basement, composed of Paleozoic metamorphic rocks and Cretaceous granitiods. These deposits represent a near shore shallow marine setting. It is partially covered in some localities by a thin cover of Pliestocene clastic and chemical sediments.** • **The principal target area lies in a 20 km by 12 km graben-like basin along the coast between Bahia Inglesa and the Copiapó River.** • **Within the broad target area outliers of basement occur and there are a number of sub-basins separated by basement highs.** • **Phosphate mineralization occurs in the upper part of the Bahia Inglesa Formation in 3 different stratigraphic locations. The Lower Phosphate Manto is an extensive unit 0.1 to 0.4 meters thick and is hosted within the lower part of a sandstone-siltstone unit. One to 2 meters above the Lower Phosphate Manto is the Main Manto which is up to 2 meters thick and consists of a phosphate pebble conglomerate. The third type of mineralization is described as fluvial deposits which are up to 7 meters thick and**

Criteria	JORC Code explanation	Commentary
		consist of conglomeratic units interbedded with phosphatic sandstones. Clasts in the conglomerates are described as consisting of 70% phosphorite and 30% basement lithologies.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• **No drill hole activity has been undertaken by the Company.** • **The trenching programme established that the historical drill programme results were consistent with the historical mining pattern.** • **The sampling programme was not designed to provide detailed knowledge of the mineralisation but rather to confirm the field observations, mapping of basement outcrops and to provide insight to the geology of the basin and location of future mining areas.** • **The sampling was primarily designed to provide confirmation to the Company of the potential of the area.** • **The Current Mining Area Target is located immediately to the Southeast of the current BiFox Mining operation.** • **At the Mining Area Target, 11 trenches were dug to depths of 1 to 4 meters. Eight of these trenches intersected phosphorite at depths varying from 0.3 to 3.0 meters.** • **The mineralized trenches delineate an area 800m long and 100m to 300m wide.** • **The overburden thickness increases toward the Southeast where economic extraction will be ultimately limited by depth of the overburden.** • **To the North of PT-21, the phosphorite has been uplifted by the crystalline outcrop and then eroded by historical events.** • **The Eastern Target is located 1.5 km to the east of the BiFox mining area.** • **Ten trenches were dug in this area to depths of 1 to 12**

Criteria	JORC Code explanation	Commentary

meters. Three of the trenches intersected phosphorite horizons ranging in thickness from 0.3 to 0.7 meters.

- **Some of the mineralization in the Eastern Target consists of nodular phosphorite within conglomeratic sediments. The mineralization probably represents concentrations of phosphate nodules by current action in tidal channels.**
- **This style of mineralization could potentially result in multi-metre phosphorite bodies which can be easily concentrated by screening.**
- **Results of the various targets are included below**

rL (m)	Depth (m)	Intercepts (m)
101	3.0	
103	10.5	4.50 – 4.70
93	4.0	
99	5.0	2.25 – 2.55
98	2.7	1.90 – 2.30
103	3.0	1.80 – 2.10
107	4.0	
104	4.0	
105	3.0	2.00 – 2.20
111	3.0	1.95 – 2.05
99	3.0	
102	3.0	1.95 – 2.15
108	3.0	
106	4.0	3.00 – 3.30
104	1.0	0.40 – 0.70
104	2.0	0.30 – 0.45
104	2.0	0.75 – 0.90
105	3.0	2.10 – 2.30
104	1.7	1.00 – 1.30
105	2.0	1.20 – 1.30
105	2.0	
108	1.0	

Criteria	JORC Code explanation	Commentary
		107 2.0 108 3.0 1.5 – 2.20* 107 2.0 110 3.20 98 1.5 0.00 – 0.60 95 12.0 10.00 – 10.30 90 3.0 93 4.0 89 4.0
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• **All results are included – no truncation or grade cut-offs were established**
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• **Not applicable.**
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• **No discovery is being reported.** • **No JORC resource is being reported**
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid*	• **The various samples were tested by 2 labs. Comparative results follow.**

Criteria	JORC Code explanation	Commentary
	misleading reporting of Exploration Results.	

Thickness of P seams	% P_2O_5 AcmeLabs	% P_2O_5 BiFox
0.20 m	18.65	19.4
-	0.21	1.6
-	0.46	0.3
-	1.28	1.4
0.30 m	15.56	16.4
0.30 m	13.14	13.6
0.10 m	8.16	8.5
-	7.91	8.2
0.40 m	14.62	14.9
-	1.40	1.5
0.30 m	10.88	11.1
-	0.44	1.6
-	2.96	3.8
-	0.33	3.7
0.20 m	15.89	17.6
0.20 m	18.06	18.3
-	0.80	0.9
0.20 m	17.56	18.0
0.30 m	14.23	14.5
0.30 m	17.10	17.7
0.15 m	18.87	18.5
0.15 m	21.59	20.2
0.20 m	22.40	22.5
0.30 m	23.55	24.0
0.10 m	17.63	17.2
-	18.58	18.7
-	0.37	0.7
0.60 m	19.15	19.0
-	1.08	1.0
-	0.25	0.4
0.30 m	16.59	17.1
-	2.65	2.7
-	17.46	17.7

Other substantive exploration	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical*	• **No other exploration data is reported.**

Criteria	JORC Code explanation	Commentary
data	*survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• **A programme to establish a JORC resource is planned for 2016/17.** • **No plan has yet been established for the drill programme.**

Independent Geolgists Report

Carbhid SAS, Escalones and Pelaya

February 2016

Phillips River Mining Limited

Independent Geologists Report – Andean Coal Assets

10 February 2016

Competent Person:

Andre Gauthier
Consultant
Gold Holdings Limited

Competent Person's Statement

The information in this Report is based on information compiled by Andre Gauthier who is qualified to provide such information under the 2012 edition of the JORC Code. Andre Gauthier is a consultant to Gold Holdings Limited and has been retained by Phillips River. Andre Gauthier is a Member of the Quebec Institute of Engineers which is a 'Recognised Professional Organisation' under the JORC Code.

Andre Gauthier has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity to which is being undertaken to qualify as a Competent Person as defined in the JORC Code.

Andre Gauthier has consented in writing to the inclusion of this Report in the Prospectus.

Also attached is the Table 1 Checklist of Assessment and Reporting Criteria in accordance with the JORC Code.

Part 1 - Carbhid SAS and Escalones
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1. SUMMARY

The Escalones Property is wholly held by Hector Vargas Cruz, a Colombian citizen. Carbhid SAS ("Carbhid"), a Colombian company, signed an operating contract for the property in 2013. In 2013, Andean Coal (BVI) Ltd., ("Andean Coal" and to be a wholly owned subsidiary of Phillips River Mining Limited) signed two separate agreements to acquire new shares in Carbhid, representing an aggregate 19.91% interest in the Company, in exchange for investments of approximately US$409,000 (approximately US$332,000 of which had been cash called and invested in the development of the Escalones Property. In January 2014, Andean Coal entered into an option agreement to earn a 51% direct interest in all of Carbhid's rights to the Escalones Property, by investing US$830,000 in exploration and development works.

Upon completion of the purchase of shares representing a 19.91% ownership interest in Carbhid and the purchase of a direct 51% interest in the Escalones Property, Andean Coal will have a net 60.75% beneficial interest in the Escalones Property.

The original property comprises Mining Concession Agreement FGL-111, covering 154.237 hectares in area, located in the Department of Boyacá, near the town of Tunja, in central Colombia. The Escalones Property covers a 98.58 hectare portion of Mining Concession Agreement FGL-111.

El Diamante and Carbhid-2 are operating mines that have in part been developed and put into production with the funds invested by Andean Coal. The mines both have inclined shafts accessing target coal seams, above ground production facilities, approved and valid Operating ("PTO") and Environmental Licenses. They are located inside the Escalones Property and are the property of Carbhid.

The Escalones Property can be easily accessed from the historic town of Tunja, which itself is reached from Bogota on an excellent paved road (National highway 55) in approximately 3 hours depending on traffic. The town of Tunja is located on the eastern range of the Colombian Andes, in the region known as the Altiplano Cundiboyacense, 130 km northeast of Bogotá. In 2012, it had an estimated population of 181,407 inhabitants. It is the capital of Boyacá department and the Central Boyacá Province. Tunja is an important educational center and university town, originally founded by the Spanish in 1539.

The host Guaduas Formation was deposited during the Cretaceous - Tertiary transition, in the central part of the Colombian Eastern Cordillera and it has been recognized as a mudstone succession, with some sandstone levels and coal seams.

The Guaduas Formation is divided into three mudstone members separated by sandstone units. The Upper Member is separated from the Middle Member by the La Lajosa sandstone, while the Middle Member is separated from the Lower Member by the La Guia sandstone. The Middle and Upper Members of the formation are the main hosts for the coal beds in the region, although local production is currently serived exclusively from the Middle Member. The Upper Member is not observed on the property. In the area, the Middle Member is known to host up to 11 different, gently ESE dipping, coal seams (known locally as “mantos”) for a cumulative average thickness of approximately 15 metres.

Carbhid has not done any drilling on the property. Given an active mining history in the district of over 50 years position and comportment of the coal seams is well understood and Carbhid’s approach has been to fast-track production following the known seams with underground workings, which it considers cheaper than diamond drilling. However, diamond drilling is recommended here as part of the investment by Andean Coal, to accelerate larger-scale development and assess the long-term resource potential of the Escalones Property.

Carbhid's personnel refer to the presence of both metallurgical and thermal quality coals in the area. Coal beds can extend for tens of kilometres although thicknesses, which range from centimeters to a few metres, may vary considerably laterally. The cumulative average thickness of coal beds in the region is approximately 15 metres. Individual beds rarely exceed 4-5 metres and are usually much thinner. Seams thicker than 0.8 m are considered potentially economically exploitable.

Since 2013, Carbhid operates a small scale mine at the El Diamante mine site located in the northern portion of the property. The El Diamante mine site includes, an office and dry, a hoist room, a 180 metre long inclined shaft (-35°) with tracks, a 120 tonnes ore bin, a waste pad and water treatment facilities. The current mining rate at El Diamante is 300 tonnes per month, though development is sufficient to produce 500 tonnes per month.

Mining at El Diamante is being carried out from various levels developed perpendicular to the inclined shaft (all less than 2 m in height). Coal is broken manually with picks and shovels while waste rock is often broken with an electrical jack hammer. Mining method is Room and Pillar along individual coal seams.

Since the beginning of the mining operations, all the coal being extracted at El Diamante has been sold to local thermal power stations. The goal for El Diamante is to reach a production rate of 1,500 tonne per month in the short term (within a year). Longer term the goal is to reach a monthly production rate of 15,000 tonnes per month from the Escalones Property. Mine life is estimated at 22 years (the current limit of the Mining Concession Agreement).

A second operating front has been developed at Carbhid 2, using the funds invested by Andean Coal, which began producing in 2014. An inclined shaft was developed at Carbhid 2 to access various coal beds and construction of remaining above-ground facilities, a new hoist room and ore bin, was completed in early 2014.

A third mine, denominated Carbhid 4, is being planned in the northern portion of the property. Carbhid 4 is targeting the La Cisquera coal seams (mantos 1 and 2) which are believed to have an average thickness of 4.5 metres according to information coming from outcrops and drilling intercepts outside, but proximal enough to be relevant to the property.

Andean Coal's short term objective is to explore and develop several coal beds from four locations on the Escalones property. A $1,000,000 budget is proposed, with the main priorities as follows:

- Complete one 140 meters long vertical diamond drill hole to study the stratigraphy and evaluate its coal potential;
- Increase underground development of Manto 7 at the El Diamante mine, to increase production capacity from 300 tonnes per month (t/m) to reach a production rate of 800 t/m
- Continue the development at the Carbhid 2 mine to build the production up to a rate of 800 t/m from various coal beds (Mantos 1 to 7)
- Initiate development of the Carbhid 4 and 5 mines in order to explore and develop undergound access to the La Cisquera seams (Mantos 1 and 2)
- Develop a coal gathering system

2. INTRODUCTION

The Escalones Property is wholly held by Hector Vargas Cruz, a Colombian citizen. Carbhid SAS ("Carbhid"), a Colombian company, signed an operating contract for the Escalones Property in 2013. In 2013, Andean Coal (BVI) Ltd., ("Andean Coal" to be a wholly owned subsidiary of Phillips River Mining Limited) signed two separate agreements to acquire new shares in Carbhid, representing an aggregate 19.91% interest in the Company, in exchange for investments of approximately US$409,000 (approximately US$332,000 of which had been cash called and invested as at January 30, 2014) in the development of the Escalones Property. In 2014, Andean Coal entered into another option agreement, to earn a 51% direct interest in all of Carbhid's rights to the Escalones Property.

Upon completion of the purchase of shares representing a 19.91% ownership interest in Carbhid and the purchase of a direct 51% interest in the Escalones Property, Andean Coal will have a net 60.75% beneficial interest in the Escalones Property. Andean Coal (BVI) Ltd., is equally owned by Lara Exploration Ltd. ("Lara") and Kiwanda Mining Partners LP ("Kiwanda") and is proposed to be sold in total to Phillips River Mining Limited.

SOURCES OF INFORMATION

A previous an independent geologist report was prepared in accordance with NI 43-101 and Form 43-101F1, in respect of the assets.

The Author has drawn on that report and other investigations to form this report. The conclusions, recommendations with exploration programs and budgets outlined in that reference report and in this report are valid, are consistent with those of other junior mineral exploration companies previously and currently

operating in the area, and that are required to determine the full potential of the Property.

LIST OF ABBREVIATIONS AND CONVERSION FACTORS (Tables 2.1 and 2.2)

Units of measurement used in this report conform to the SI (metric) system. All currency in this report is US dollars ($) unless otherwise noted. $1 is approximately 1,940 Colombian Pesos (COP) as of the date of this report.

FIGURE 2.1

MAP OF COLOMBIA SHOWING

THE LOCATION OF THE ESCALONES PROPERTY

TABLE 2.1

LIST OF ABBREVIATIONS

°C	Degrees Celsius	**BTU/lb**	British Thermal Unit per pound
g	Grams	**st**	Short tons
ha	Hectares	**t**	Metric tons
kg	Kilograms	**lbs/ton**	Pounds per short ton
km	Kilometres	**$**	Australian dollars
masl	Meters above sea level	**US$**	US dollars
m	Meters	**COP**	Colombian pesos
cm	Centimetres	**ASTM**	American Society for Testing and Materials
mm	Millimetres		
’	Foot		
‘’	Inch		

TABLE 2.2

LIST OF CONVERSION FACTORS

1 inch =	25.4	mm	**1 mm =**	0.3937	inch
1 foot =	0.305	m	**1 m =**	3.28083	foot
1 mile =	1.609	km	**1 km =**	0.6214	mile
1 acre =	0.405	ha	**1 ha =**	2.471	acre
1 acre =	4046.825	m^2	**1 ha =**	0.01	km^2
1 pound (avdp) (lb) =	0.454	kg	**kg =**	2.205	lb
1 pound (avdp) (lb) =	1.215	pound (troy)	**kg =**	2.679	pound (troy)
1 ton (short) =	0.907	t	**t =**	1.102	1 ton (short)

1 Btu/lb = 1.79957 kcal/kg (1.8)

3. RELIANCE ON OTHER EXPERTS

This report has been prepared for Phillips River Mining Limited. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available at the time of preparation of this report;
- Assumptions, conditions, and qualifications as set forth in this report;
- Data, reports, and other information supplied by Carbhid, Andean Coal and other third party sources; and
- Title legal opinion and summary of Colombia's mining law provided by lawyers Alexandria Abogados and Consultores, Bogota, Colombia

This report has relied on ownership information provided by Phillips River from its investigations.

4. PROPERTY DESCRIPTION AND LOCATION

CONCESSION FGL-111

The original property consists of one mineral concession (FGL-111) covering 154 hectares and located in the Department of Boyacá near the town of Tunja, central Colombia (**Figures 4.1 and 4.2**).

Mining Concession Agreement FGL-111 refers to a mining property devoted to the extraction of mineral coal, located in the rural settlements known as Lluviosos and Pijaos in the municipality of Cucaita, department of Boyacá, which comprises 154.2352 hectares, defined by the Mining Concession Agreement entered into on November 27, 2012 and filed before the National Mining Registry under the same number (FGL-111), with validity as of December 06, 2012 up to December 05, 2042, and subject to renewal. The titleholder (Hector Vargas Cruz) received an operating licence or PTO (Programa de Trabajo y Obras) from Ingeminas in 2012.

Escalones Property

The Escalones Property covers part of Mining Concession Agreement FGL-111, totally 98.58 hectares, as evidenced in the Mining Operation Sub-Agreement entered into between Hector Vargas Cruz and Carbhid signed on September 11, 2013. The Mining Operation Sub-Agreement is valid up to the termination of the Mining Concession Agreement FGL-111. As provided for in the Mining Operation Sub-Agreement, Carbhid shall be in charge of carrying out all the mining operations in the Escalones Property and shall pay all the costs and expenses related to the same in exchange for remuneration in kind, which shall be paid with the corresponding production derived from the Property.

Ownership of production and remuneration received by Carbhid in return for operating the Escalones Property, is defined in the Fifth Clause of the Mining Operation Sub-Agreement, which reads as follows:

“The parties herein agree that all the mineral which should be extracted by the Contractor or Operator of the area subject matter of the present agreement, shall be commercialized by the Contractor or Operator, directly or by means of agents, and the corresponding collection derived from the sale of the same shall be distributed as follows:

a. Ninety four point five percent (94.5%) of the commercial value of the coal production (placed on vehicle) shall be the property of the Contractor or Operator, and

b. The remaining five point five percent (5.5%) shall be the exclusive property of the Contracting Party.”

An Exclusion Area refers to a sector within the Escalones Property, as defined in the Mining Operation Sub-Agreement, in which Hector Vargas Cruz has retained the right to exploit, at his own expense or at the expense of a third party, the uppermost coal seam of the area identified in the Operating License (PTO, as per its Spanish acronym) as Manto 4 and which, both Hector Vargas Cruz and Carbhid refer to as Cerrjoncito Dos (**Picture 2**).

Carbhid may explore and exploit at any time, any or all the coal seams in the Exclusion Area referred to above, except the Manto 4 seam as defined in the Cerrejoncito PTO. Said layers make integral part of the purpose of the Mining Operation Sub-Agreement.

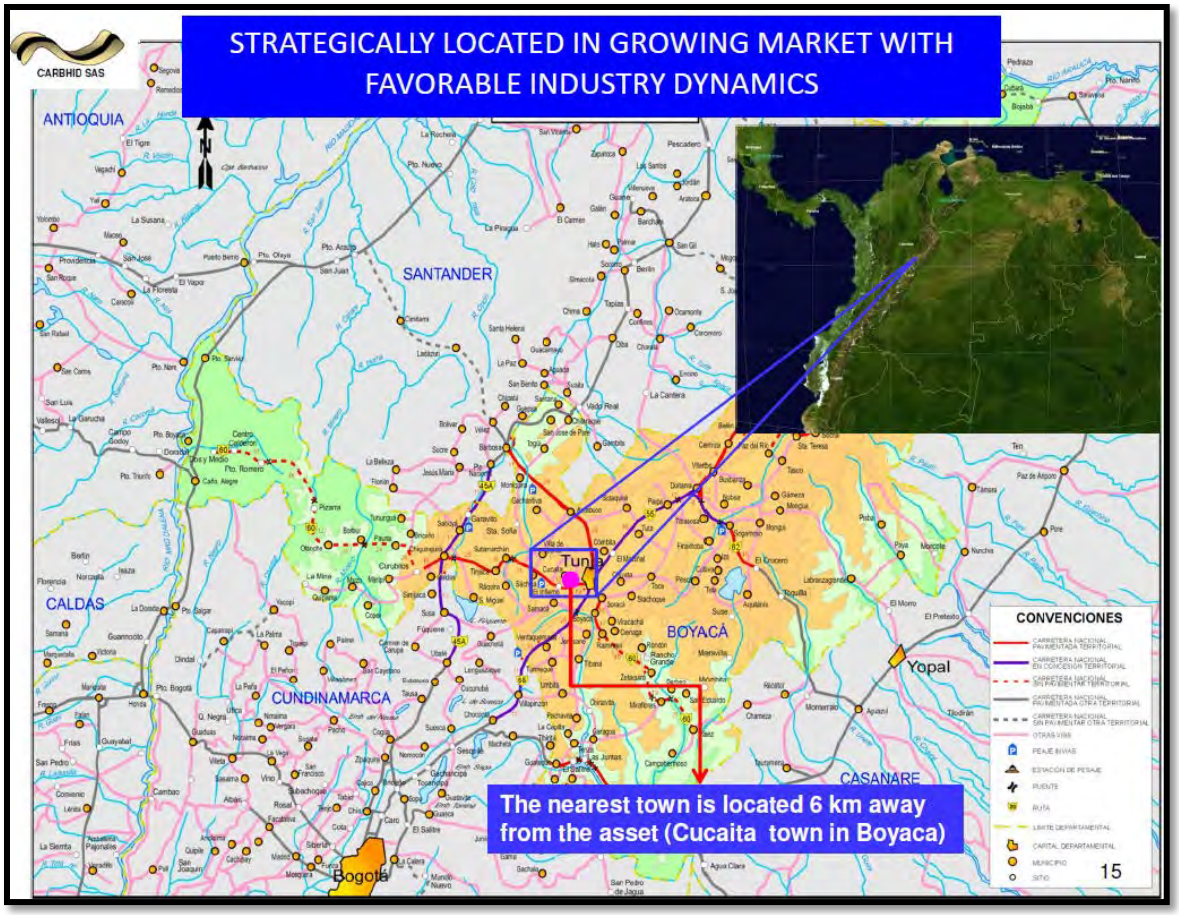
El Diamante and Carbhid-2 are two mines currently operating mine shafts with production facilities, as well as with approved and valid Operating (PTO) and

Environmental Licenses are located inside the Escalones Property and are the property of Carbhid, and the 94.5% attributable coal production derived from them comprises part of the agreement between Andean Coal and Carbhid.

The Area of Interest defined in the Option Agreement between Andean Coal and Carbhid refers to the area pertaining to the Escalones Property, the exploration and production projects that any of the Parties develop within it, as well as anything that falls anywhere within 5 kilometres from the limits of the Escalones Property.

Upon Phillips River closing this transaction, it will own 100% of Andean Coal, which in turn will own direct and indirect (through its ownership of Carbhid shares) interests in the Escalones Property, representing a net 60.75% beneficial ownership interest.

FIGURE 4.1
LOCATION MAP



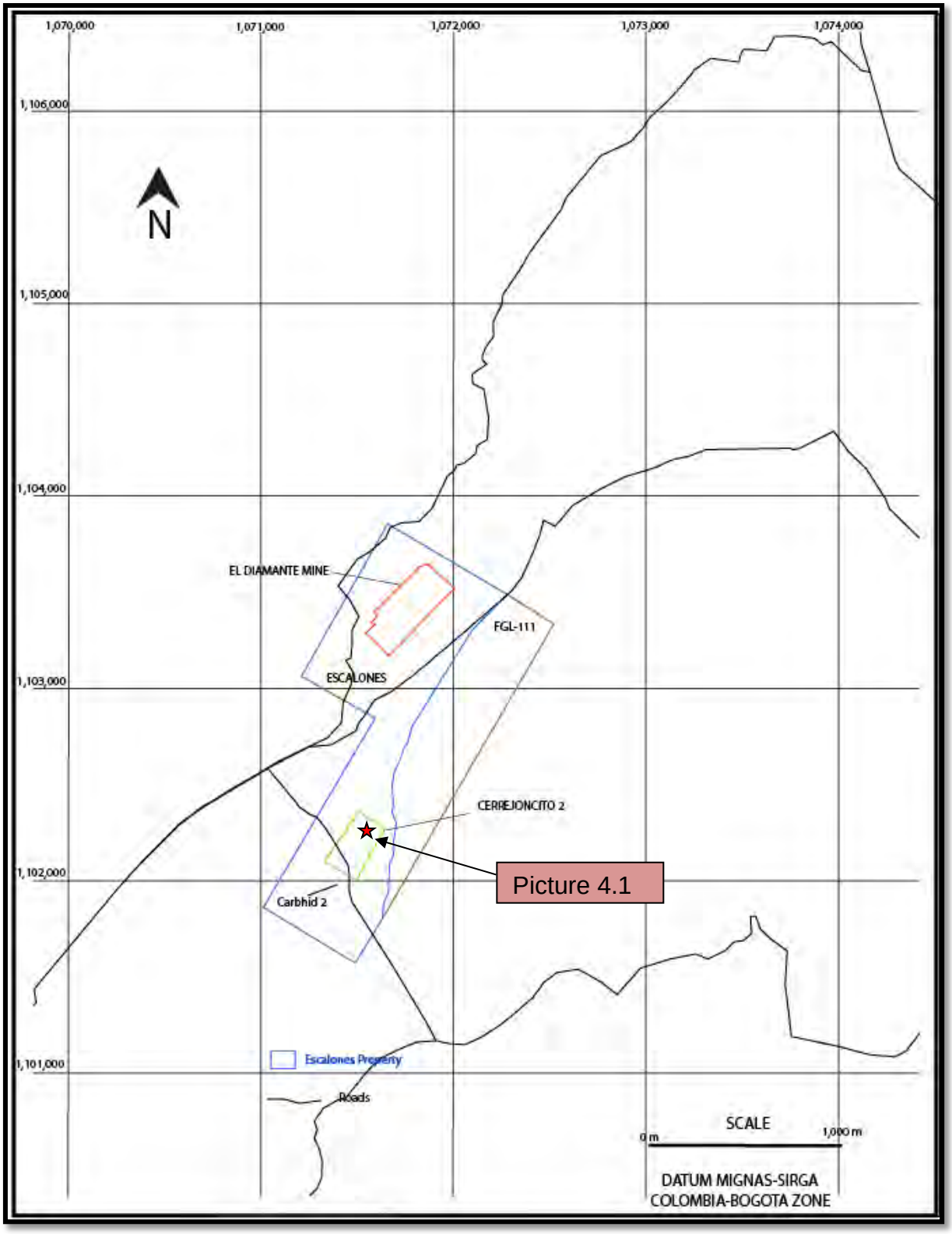
Various

The projection system most commonly used by Colombian authorities is called Magna Sirgas/Colombia-Bogotá Zone. Locations of the mines using that system are:

- El Diamante Mine: 1,103,524N, 1,071,640E
- Carbhid 2 : 1,101,888N, 1,071,442E

FIGURE 4.2

CONCESSION MAP



PICTURE 4.1

CERREJONCITE 2 MINE

To the author's knowledge there is no environmental liability related to the property.

MINING REGIME IN COLOMBIA

(latinlawyer.com)

Mining regulations in Colombia follow the principle that (with limited exceptions) all mineral deposits are property of the state and therefore may only be exploited with the permission of the relevant mining authority, the National Mining Agency.

According to Colombian regulations, any person and public or private entity which expressly includes in its object mining exploration and exploitation may apply for a mining title. Notwithstanding the foregoing, territorial entities (i.e.

municipal or regional governments), companies or contractors which intend to construct, repair, maintain or improve a national, departmental or municipal public roads or to develop a major infrastructure project declared of national interest by the government, will be able to, subject to the environmental regulation, request before the mining authorities a temporary authorisation to extract from neighbouring rural properties to the working site, the necessary construction materials to perform the mentioned activities.

There are two main bodies of law that regulate mining titles that are in force in Colombia: Decree 2655 of 1988, which is the former mining code, which still governs mining titles issued before 9 February 2001; and Law 685 of 2001, which is the current mining code. Law 685 was amended in 2010 by Law 1382 of 2010, which was declared unconstitutional and which is no longer in force. Therefore, Law 685 as issued in 2001 is the primary source of mining law in Colombia.

Under Decree 2655 of 1988, mining activities were divided into (i) small-scale activities; (ii) medium-scale activities and (iii) large-scale activities. For (ii) and (iii), concession agreements were granted; otherwise, exploitation licences were granted for production.

Exploration licences

This authorisation grants the holder the right to explore a determined area for a limited term, which is determined by the size of the requested area. Once the term of the exploration licence is complete and if the title holder has complied with all of its obligations, it has the right to request the corresponding exploitation licence (if the exploitation project is considered small-scale) or concession agreement (for medium or large-scale mining projects).

Exploitation licences

Once the area had been explored in accordance with the exploration licence and if as a result the mining project was classified as a small mining project, the title holder is entitled to request an exploitation licence. This title permits the exploitation of the area for an initial term of 10 years. Two months before the initial term lapses the title holder is entitled to request the extension of the exploitation licence for 10 years or to apply for a concession agreement.

Concession agreement

This title grants the holder the exclusive right to extract the corresponding minerals and to conduct the necessary work to explore, exploit, process, transport and ship the relevant minerals. These titles have a 30-year term.

Aporte Minero

The Ministry of Mines and Energy grants entities having as part of their purpose the development of mining activities, the exclusive and temporary right to explore and exploit the deposits located in a determined area. The entities that are granted this right were entitled by law to subcontract the mining activities with any third party.

In 2001, Congress issued Law 685 (the Mining Code). This law established that, from that date, the rights to explore and exploit mining reserves would only be granted solely through mining concession agreements, regardless of the expected production. This new form of contracting did not affect the pre-existing mining titles (licences, aportes and concessions) which continue to be in force until their term lapses and are governed by Decree 2655 of 1988.

The 2001 Concession Agreement includes the exploration, construction, exploitation and mine closure phases and are granted for periods of up to 30

years. This term is extendable for thirty years, subject to compliance with certain economic and technical requirements as set forth by Decree 943 of 14 2013. According to the Mining Code, the initial term was divided into three different phases:

- Exploration: During the first three years of the concession agreement, the title holder will have to perform the exploration of the concession area, this term may be extended for two additional years upon request from the title holder. Pursuant to Law 1450 of 2011 (National Development Plan), the titleholder may request subsequent two-year extensions for up to a total of 11 years of exploration.

- Construction: Once the exploration term expires the title holder, subject to the necessary permitting, may begin the construction of the infrastructure to perform exploitation and related activities. This phase has an initial three-year term which may be extended for one additional year.

- Exploitation: During the remainder of the initial term minus the two previous phases, the title holder will be entitled to perform exploitation activities.

As per Law 1450 of 2011, the government established the possibility to determine areas of ‘strategic interest’ which would be granted in concession by an objective selection or tender process. The government announced the first tender would take place by the end of 2012, but new announcements have now delayed the first bidding process until the first quarter of 2014.

With respect to the minerals included in a mining title, it is important to note that mining rights are usually granted for specific minerals within the concession area; however if the title holder finds other minerals within the granted area, it may request the mining authorities to extend the object of the agreement to include

them. It is also possible for the applicant for a mining concession agreement to request the concession of ‘other minerals’, which would entitle the titleholder to extract other minerals found in the relevant mining area.

Environment

In relation to the environmental requirements, Colombian laws have distinguished between the environmental requirements for exploration activities and those that have to be fulfilled for construction and exploitation works. During the exploration phase, the title holder does not require a specific environmental permit or licence (unless it plans to use natural resources during this phase, case in which the respective permit will have to be obtained with the relevant environmental authority); however, it will have to comply with the mining and environmental guides issued by the Mines and Energy Ministry and the Environmental Ministry.

In order to begin and perform construction and exploitation operations, the title holder must obtain an environmental licence. Environmental licences may include all the necessary permits, authorisations and concessions for the use of natural renewable resources in the development or operation of the mining project, construction or activity.

In order to obtain an environmental licence, the applicant must file an environmental impact assessment which includes among others; a description of the project, the natural renewable resources to be used and a report of the possible environmental impacts and the measures that are going to be taken to prevent, mitigate, correct or compensate them. Depending on the size of the mining project, the relevant authority to issue the environmental licence may be the Environmental Ministry or the Regional Environmental Authority (CAR). Starting in 2011, the Environmental Licences Agency was created as part of the central government, and will now be in charge of issuing environmental licences.

Fees

There are different government fees and royalties payable by mining titleholders. During the exploration and construction phases, the holder of a concession agreement must pay a surface fee. For concession agreements granted before 9 February 2010 and after 12 May 2013 (the date on which Law 1382 of 2010 became ineffective by decision of the Constitutional Court) the surface fee is equivalent to one Colombian minimum daily wage (approximately US$10.80 in 2012) per hectare per year for areas up to 2,000 hectares, two minimum daily wages per hectare per year for areas of 2,000 to 5,000 hectares, and three minimum daily wages per hectare per year for areas between 5,000 and 10,000 hectares.

Concession agreements granted after the enactment of Law 1382 of 2010 and up until 12 May 2013 will have to pay a surface fee equivalent to one Colombian minimum daily wage per hectare per year for the first five years of exploration. Thereafter, the surface fee for exploration shall increase every two years of exploration in 0.25 minimum daily wages per hectare per year. For the construction phase, the title holder will have to pay a surface fee at the same rate that it paid during the last year of exploration

Royalties

During exploitation, the title holder will have to pay a royalty equivalent to a determined percentage of the value of the production at the mine pit depending on the extracted mineral as follows:

- coal (exploitation of more than 3 million tons/year): 10 per cent;
- coal (exploitation of less than 3 million tons/year): 5 per cent;

Surface Rights

Mining titles do not grant their holder any surface rights. However, provided that mining has been declared a public interest activity, if the title holder does not reach an agreement with the surface right owner, it may request the Mayor of the municipality where the property is located to impose a mining easement over the affected property. Mining easements may be established for the efficient exercise of the mining industry in all its phases and stages including transport and transformation and may extend to areas outside of the mining title. Mining easements are, unless otherwise determined by the parties, established for the same term as the concession it benefits.

Expropriation may also be requested by the title holder over the properties that may be indispensable for the development of the mining project. The mining expropriations may be requested before the mining authorities who will perform an evaluation to verify that the property to be expropriated is necessary to establish and operate the mining project and to determine the value of the compensation that must be paid to the surface rights owners.

As concerns transportation, operators must make all efforts to accommodate third parties in need of such transportation provided the relevant feasibility studies confirm the need to expand the relevant transportation method.

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Property can be easily accessed from the historic town of Tunja, which itself is reached from Bogota on an excellent paved road (National highway 55) in approximately 3 hours depending on traffic. Tunja is located on the eastern range of the Colombian Andes, in the region known as the Altiplano Cundiboyacense, 130 km northeast of Bogotá. In 2012, it had an estimated population of 181,407 inhabitants. It is the capital of Boyacá department and the Central Boyacá Province. Tunja is an important educational center of known universities, originally founded by the Spanish in 1539 (**Picture 5.1**).

PICTURE 5.1

VIEW OF THE TOWN OF TUNJA FROM SURROUNDING HILLS

From Tunja, the property can be reached in 15 minutes on dirt roads leading to the rural community of Cucaita. The property is located approximately 6 km from Cucaita (**Picture 5.2**). The elevation on the property ranges from 3,000 and 3,200 masl. Topography is moderate and access to all portions of the property is easy.

The area appears to be mostly dedicated to potato crops and small scale coal mining. Some remnants of acacia and pine forests can be observed. The fauna consists of birds and few small reptiles. Native species are long gone because of intensive deforestation.

Climate in the Escalones Property area is described as High Altitude Cold Climate. It consists of dry periods in January and February and again from June to September and wet periods from March to May and from October to December. Maximum monthly rainfall in the wet months reaches 95 mm while January, the driest month of the year, only gets 20 mm on average. Average annual rainfall is 681 mm (from the PTO). Temperature is quite stable all year round with an average of approximately 19-20 °C during the day and 6-9 °C at night. Average yearly temperature is 12.8° C.

The property is large enough to sustain small scale mining operations. Waste material is either stored near the mine shaft or trucked to a nearby location.

PICTURE 5.2

VIEW OF CUCAITA FROM THE EL DIAMANTE MINE, LOOKING NW

6. HISTORY

Coal has been known to occur in the area for centuries and small scale artisanal operations dedicated to the local market have been active for a very long time. On the Escalones Property, it is believed that informal artisanal miners have been actively producing on a small scale since the early 60's. Carbhid estimates that prior to 2003, the property was host to least 6 small and mostly informal operations. These operations were limited by lack of capital, technology, power, knowledgeable operators, etc.

The concession (FGL-111: 154.2 ha) was temporally granted to the actual title holder Hector Vargas Cruz in 2004 in order to re-organize and legalize the mining activity on the property. Mr. Vargas finally validated the title in November of 2012 and obtained an Operating Contract (Contrato de Concesion) valid until December 5th 2042.

Mr Vargas developed (himself or under sub-contracts) three small scale mining operations including Cerrejoncito 1, Cerrejoncito Dos that is lies within the Exclusion Zone within the Escalones Property and a third one near to Carbhids El Diamante mine. The Escalones Property and the El Diamante mine (located in the northern portion of the property), were originally optioned to a third party. Carbhid acquired the El Diamante mine from that third party in 2010. Subsequently, that third party lost its option on the Escalones Property which reverted to Mr. Vargas.

An Operating Contract for the Escalones Property was then signed over to Carbhid in September 2013 (under the same conditions obtained by Mr. Vargas in 2012) for a 98.58 ha portion of the concession held by Hector Vargas (out of the 154.2 ha). The upper coal level of the Cerrejoncito Dos PTO (within the 98.58 ha Escalones Property) was contracted to a third party by Mr. Vargas and is currently in operation (working coal seam or Manto 4). The lower coal beds within

the Exclusion Zone and all of the coal beds elsewhere in the Escalones Property are included in Carbhid's Operating Contract.

At the El Diamante and Carbhid 2 mine areas, rental contracts have been negotiated with surface right owners for the duration of the Operating Contract. An agreement has been finalized for Carbhid 2 and El Diamante.

The El Diamante mine has an actual rate of production of 300 tonnes per month. Recently, Carbhid has been developing a second producing area called Carbhid 2 (in the southern portion of the property near Cerrejoncito Dos), which has began production.

Carbhid has not done any drilling on the property. The approach is to follow the known coal beds with underground workings. Carbhid considers this cheaper than diamond drilling and is comfortable based on the 50 years of mining history in the area that the location and comportment of the coal seams are understood. However a government agency in partnership with a local university drilled a diamond drill hole on the property just east of the El Diamante mine in early 2011. The goal was to explore for oil and gas within the Guaduas Formation.

The vertical hole (Cucaita-1) hit a fault and was abandoned at around 290 metres. However, Carbhid was able to obtain the geological description of the core and was able to confirm that various coal beds were intersected (**Picture 6.1**). The author and Carbhid personnel were not able to see the core and no casing was left in place in the potato field where it was apparently drilled. The author had to rely on the word of Carbhid personnel. No analyses were made available to Carbhid.

PICTURE 6.1

LOCATION OF DRILL HOLE CUCAITA-1

7. GEOLOGICAL SETTING AND MINERALIZATION

Geological descriptions are taken from the PTO (Programa de Trabajo y Obras) elaborated by Ingeominas (Instituto Colombiano de Geologia y Mineria, a government mining agency) and Universidad Pedagogica y Tecnologica de Colombia for the development of concession FGL-111 in 2010. Another excellent reference for the geology of the area is Ingeominas report on Guateque (Plancha 210).

The main structural feature observed in the region is the NE-SW striking asymmetrical Albarracin-Tunja syncline centered on the property (**Figure 7.1**). The syncline affects various sedimentary units of Cretaceous to Eocene age. Over most of the property, the sedimentary units dip gently to the ESE being almost flat lying in the core of the syncline.

The oldest units, outcropping to the NW of the project, consist of the Plaeners and Arenisca Tierna Formations of the Upper Cretaceous Guadalupe Group. They create a topographic high directly to the west of the property. The Planears Formation is approximately 180 m thick in the area and mainly consists of yellow to grey “lutites” (mudstones-siltstones) with lesser, sandstones and porcelanites.

The Arenisca Tierna Formation overlays the Plaeners Formation. It mostly consists of sandstones with minor yellow to grey mudstones. Its average thickness is also of 180 metres. These units do not contain significant coal seams.

These units are overlain by the Guaduas Formation which averages 500 m in thickness (**Figures 7.2 and 7.3**). The Guaduas Formation was deposited during the Cretaceous - Tertiary transition, in the central part of the Colombian Eastern Cordillera, and it has been recognized as a mudstone succession, with some sandstone levels, and carboniferous layers.

The Guaduas Formation is divided into three mudstone members separated by sandstone units. The Upper member is separated from the Middle Member by the La Lajosa sandstone while the Middle Member is separated from the Lower Member by the La Guia sandstone.

The Middle and Upper Members of the formation are the main hosts for the coal seams in the region, although local production is currently derived exclusively from the Middle Member. The Upper Member is not observed on the property.

In the area, the Middle Member is known to host up to 11 different gently ESE dipping coal seams (known locally as “Mantos”) for a average cumulative thickness of approximately 15 metres. The upper most coal beds (8 and 11) are not present on the property. **Figures 7.2 and 7.3** only show the productive portion of the Guaduas Fm.

A number of NE-SW striking and E-W striking faults have been interpreted or mapped regionally or from inside the mines (in red on **Figure 7.1**). Although displacements rarely exceed 5-10 metres, they create major problems for small scale miners who develop their operation without prior surface exploration.

The area of the Escalones Property hosts several small producers which extract both thermal and metallurgical quality coals.

FIGURE 7.1

GEOLOGICAL MAP OF THE AREA

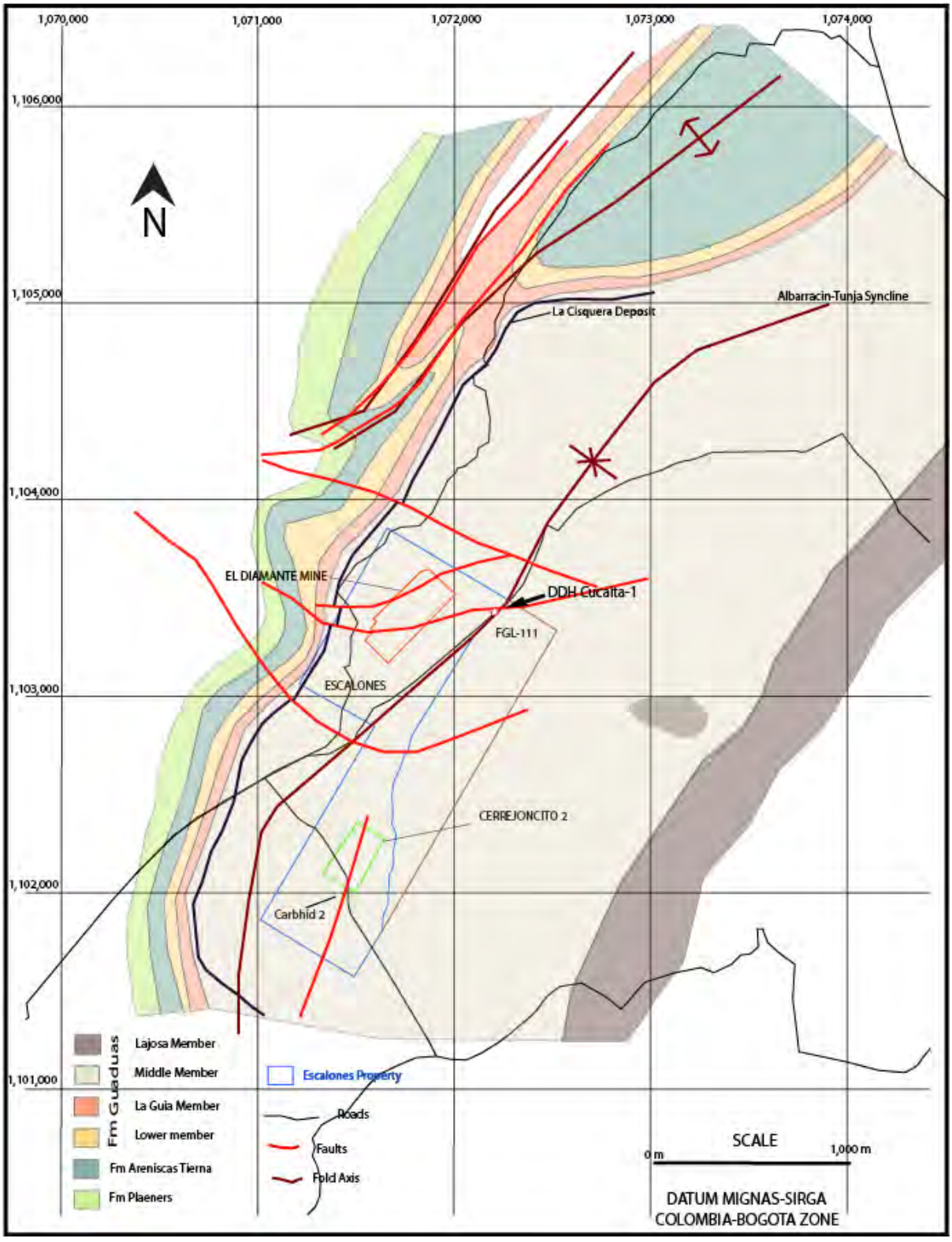


FIGURE 7.2

SCHEMATIC SECTION, PRODUCING EL DIAMANTE AND PLANNED CARBHID 4 MINE AREAS

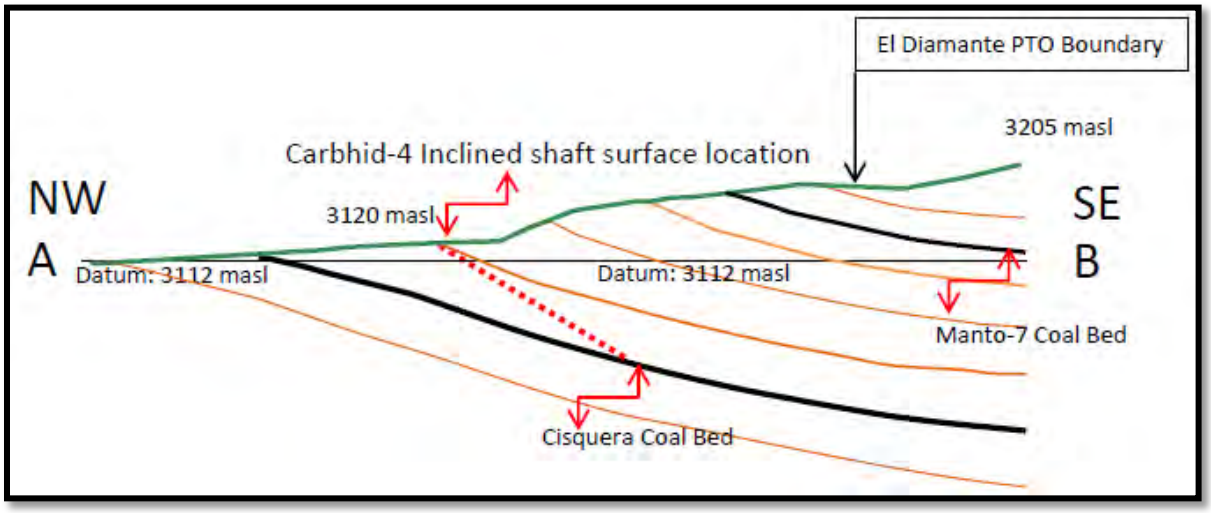
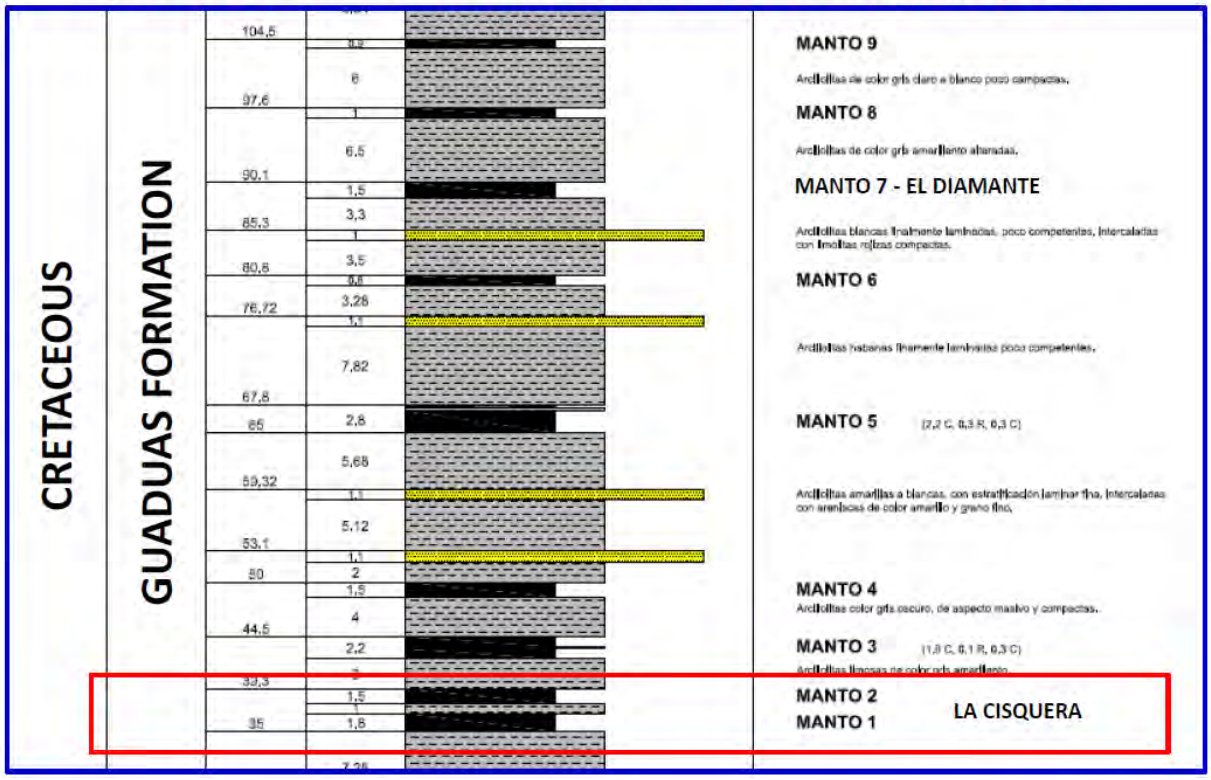


FIGURE 7.3

REGIONAL STRATIGRAPHIC COLUMN IN THE CARBHID-2 MINE AREA



8. DEPOSIT TYPE

At various times in the geologic past, the Earth had dense forests in low-lying wetland areas. Due to natural processes such as flooding, these forests were buried under the soil. As more and more soil deposited over them, they were compressed. The temperature also rose as they sank deeper and deeper. As the process continued, the plant matter was protected from biodegradation and oxidation, usually by mud or acidic water. This trapped the carbon in immense peat bogs that were eventually covered and deeply buried by sediments. Under high pressure and high temperature, dead vegetation was slowly converted to coal. As coal contains mainly carbon, the conversion of dead vegetation into coal is called carbonization.

The wide, shallow seas of the Carboniferous Period provided ideal conditions for coal formation, although coal is known from most geological periods. The exception is the coal gap in the Permian–Triassic extinction event, where coal is rare. Coal is known from Precambrian strata, which predate land plants — this coal is presumed to have originated from residues of algae.

Types of Coal (Figures 8.1 and 8.2)

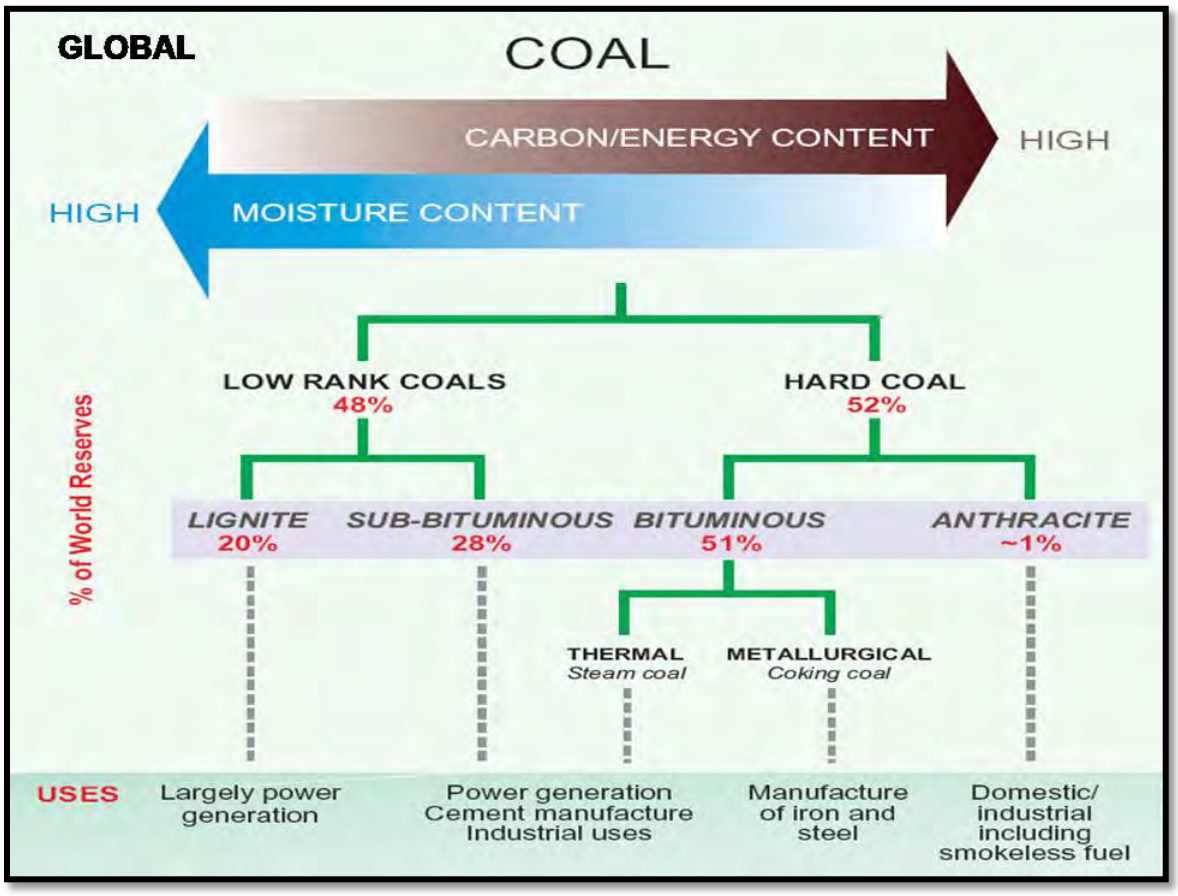
As geological processes apply pressure to dead biotic material over time, under suitable conditions it is transformed successively into:

- Peat, considered to be a precursor of coal, has industrial importance as a fuel in some regions, for example, Ireland and Finland. In its dehydrated form, peat is a highly effective absorbent for fuel and oil spills on land and water. It is also used as a conditioner for soil to make it more able to retain and slowly release water.
- Lignite, or brown coal, is the lowest rank of coal and used almost exclusively as fuel for electric power generation. Jet, a compact form of

lignite, is sometimes polished and has been used as an ornamental stone since the Upper Palaeolithic.

- Sub-bituminous coal, whose properties range from those of lignite to those of bituminous coal, is used primarily as fuel for steam-electric power generation and is an important source of light aromatic hydrocarbons for the chemical synthesis industry.
- Bituminous coal is a dense sedimentary rock, usually black, but sometimes dark brown, often with well-defined bands of bright and dull material; it is used primarily as fuel in steam-electric power generation, with substantial quantities used for heat and power applications in manufacturing and to make coke. Bituminous coal is the most common coal. Bituminous and sub-bituminous coals together represent more than 90 percent of all the coal consumed in the U.S. When burned, bituminous coal produces a high, white flame. Bituminous coal includes two subtypes: thermal and metallurgical.
    - Thermal coal is sometimes called steam coal because it is used to fire power plants that produce steam for electricity and industrial uses.
    - Metallurgical coal is sometimes referred to as coking coal, because it is used in the process of creating coke necessary for iron and steel-making. Coke is a porous, hard black rock of concentrated carbon that is created by heating bituminous coal without air to extremely high temperatures. This process of melting the coal in the absence of oxygen to remove impurities is called pyrolysis.
- Anthracite, the highest rank of coal, is a harder, glossy black coal used primarily for residential and commercial space heating. It may be divided further into metamorphically altered bituminous coal and "petrified oil", as from the deposits in Pennsylvania.
- Graphite, technically the highest rank, is difficult to ignite and is not commonly used as fuel — it is mostly used in pencils and, when powdered, as a lubricant.

FIGURE 8.1
TYPES OF COAL

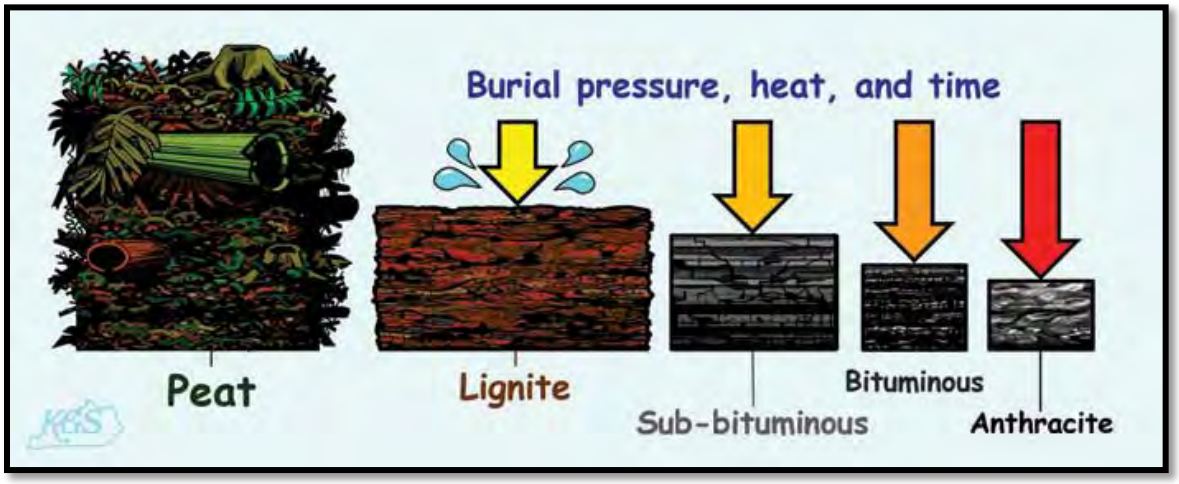


Source: worldcoal.org

Carbhid's personnel refer to the coal seams present in the Escalones Property as hosting both Thermal and Metallurgical Coals. The coal in the Tunja region is of Late Cretaceous age. Coal seams can extend for tens of kilometres although thicknesses, which range from centimeters to a few metres, may vary considerably laterally. The average cumulative thickness of coal beds in the region is approximately 15 metres. Individual beds rarely exceed 4-5 metres and are usually much thinner, with 0.8 m the usual cut off thickness for mining. Geology Type can be qualified as Moderately Complex while Deposit Type is Underground Mining (GSC Paper 88-21).

FIGURE 8.2

FORMATION OF THE COAL



Source: Kentucky Geological Survey

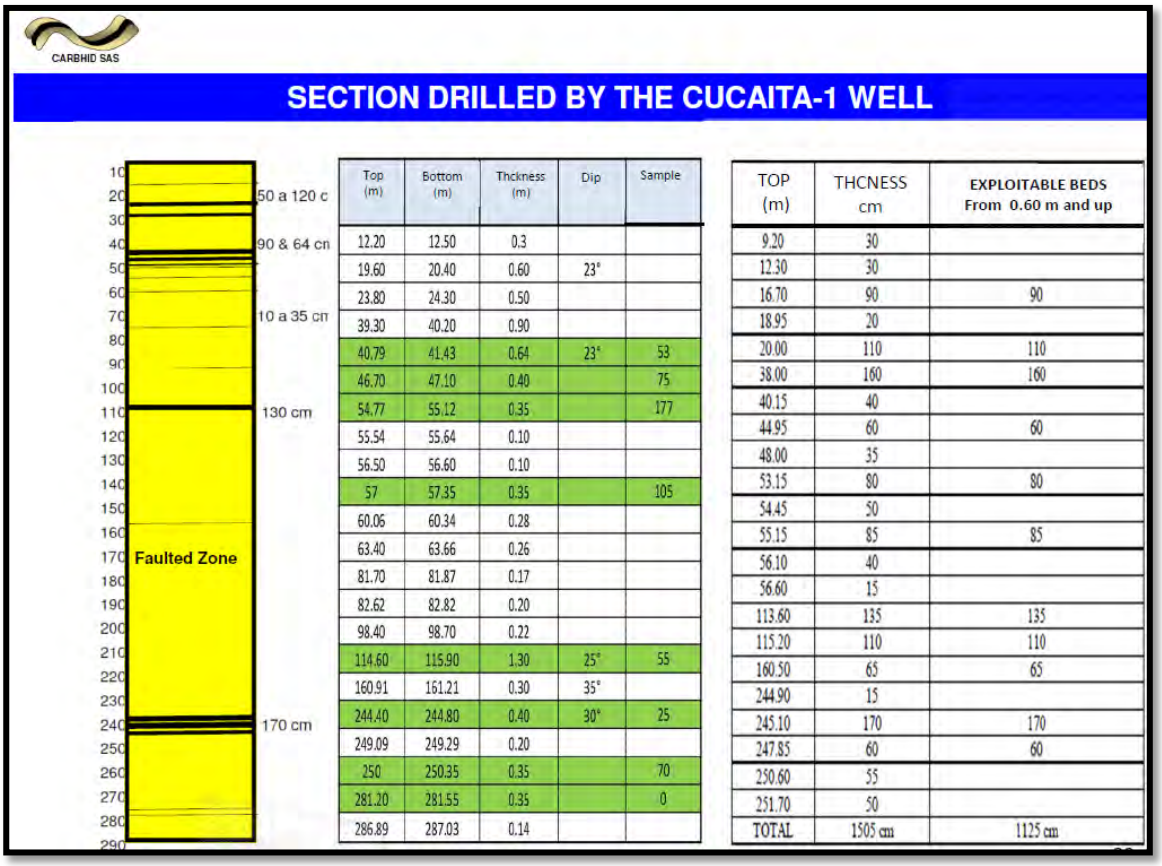
9. EXPLORATION

Carbhid has not done any significant surface exploration or drilling on the property. The approach for all operators in the region is to follow known coal beds with underground workings. Any displacement of the coal horizon by faulting can result in the loss of the coal bed and pinching can also adversely affect the economics of the operation since development is done without any precise geological control.

10. DRILLING

Carbhid has not done any drilling on the property. In early 2011, a government agency in partnership with a local university drilled a diamond drill hole on the property east of the El Diamante mine (**Figures 10.1 and 10.2**). The goal was to explore for oil and gas. The vertical hole (Cucaita-1) hit a fault and was abandoned at around 290 metres. However, Carbhid was able to obtain the geological description of the core and confirm that various coal beds were intersected. The author and Carbhid personnel were not able to see the core and no casing was left in place in the potato field where it was apparently drilled. The author had to rely on the word of Carbhid personnel. No analysis was made available to Carbhid and it is not known if samples from the coal seams were actually analysed.

FIGURE 10.1



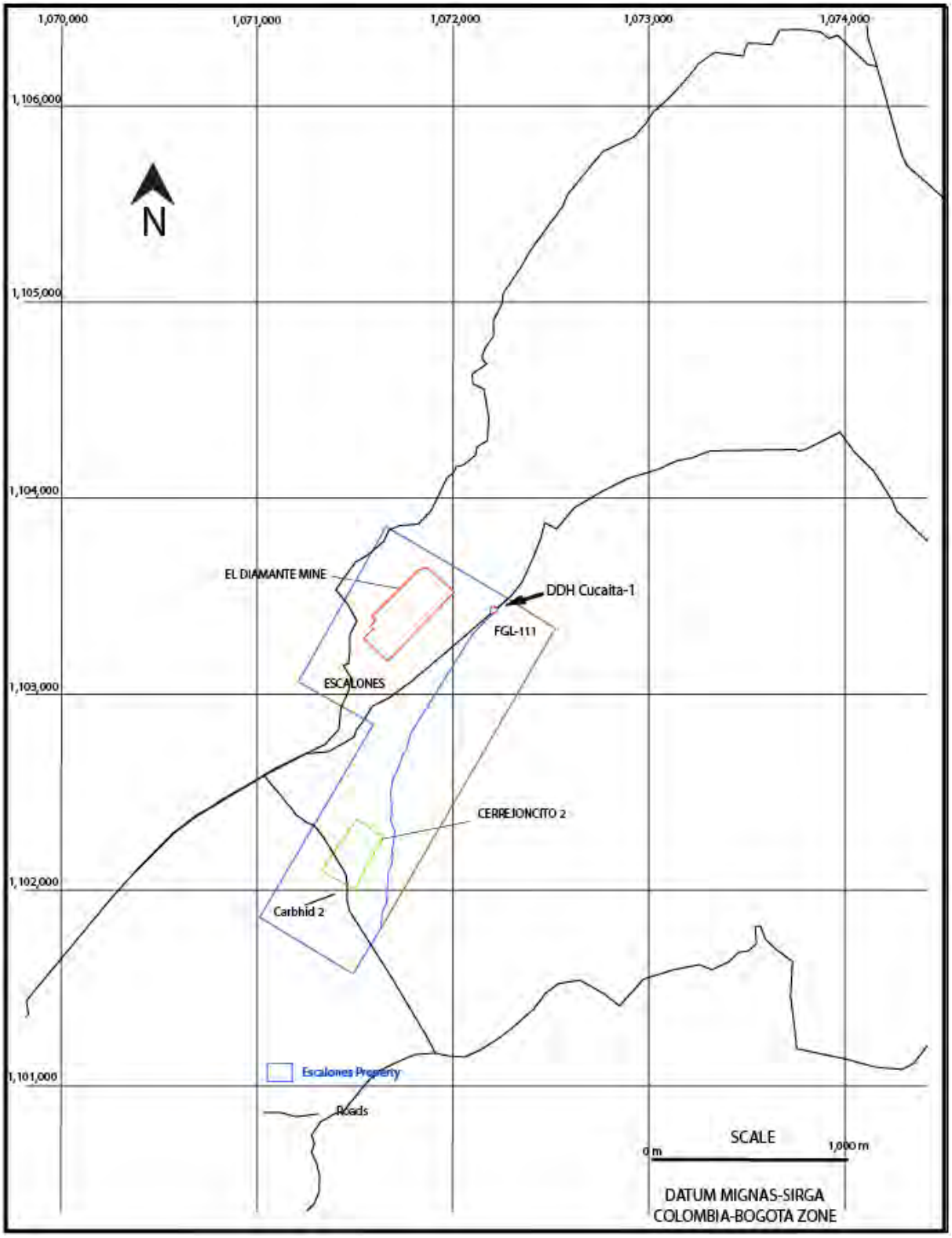
Top (m)	Bottom (m)	Thickness (m)	Dip	Sample
12.20	12.50	0.3		
19.60	20.40	0.60	23°	
23.80	24.30	0.50		
39.30	40.20	0.90		
40.79	41.43	0.64	23°	53
46.70	47.10	0.40		75
54.77	55.12	0.35		177
55.54	55.64	0.10		
56.50	56.60	0.10		
57	57.35	0.35		105
60.06	60.34	0.28		
63.40	63.66	0.26		
81.70	81.87	0.17		
82.62	82.82	0.20		
98.40	98.70	0.22		
114.60	115.90	1.30	25°	55
160.91	161.21	0.30	35°	
244.40	244.80	0.40	30°	25
249.09	249.29	0.20		
250	250.35	0.35		70
281.20	281.55	0.35		0
286.89	287.03	0.14		

TOP (m)	THCNESS cm	EXPLOITABLE BEDS From 0.60 m and up
9.20	30	
12.30	30	
16.70	90	90
18.95	20	
20.00	110	110
38.00	160	160
40.15	40	
44.95	60	60
48.00	35	
53.15	80	80
54.45	50	
55.15	85	85
56.10	40	
56.60	15	
113.60	135	135
115.20	110	110
160.50	65	65
244.90	15	
245.10	170	170
247.85	60	60
250.60	55	
251.70	50	
TOTAL	1505 cm	1125 cm

Coal beds in black

FIGURE 10.2

LOCATION OF DDH CUCAITA-1



11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

The quality of the coal beds in the region has been well known for decades by mine operators and local buyers. Coal beds are usually fairly homogeneous in composition and very limited sampling is done in the mines. According to Carbhid's personnel, quality control sampling is carried out on a routine basis by the buyers and end-users, but typically not by the miners. The Carbhid's client is a local power generating plant that samples all deliveries to ensure the coal meets its specifications and adjusting the amount paid depending on the quality.

Carbhid has carried out very limited sampling on its property since its acquisition. In fact, two samples were taken from producing areas at the El Diamante mine and two more were taken from development areas at the Carbhid 2 mine in 2012 and 2013 (**Figures 11.1 to 11.4, Table 11.1**). Samples consisted of a minimum of 4 kilograms of representative material collected from the ore bin at El Diamante and from a stock pile at Carbhid 2.

Samples were sealed and sent to Interlabco S.A.S. Laboratorio Quimico Internacional, Ubaté, Cundinamarca, Colombia, a laboratory specialized in coal analysis. This laboratory conforms to the following industry standards: ASTM, ISO 9001:2008 and ICONTEC. Samples were submitted for Proximate Analysis and determination of the FSI and results are presented as follows for the 'As Received' and 'Dry Basis":

- % Moisture total (Humedad Total)
- % Ash (Cenizas)
- % Volatile matters (Materia volatil)
- % Fixed carbon (Carbono fijo)
- Gross Calorific Value Kcal/kg (Poder Calorifico Bruto)
- % Sulfur (Azufre total)
- Free Swelling index, FSI (Indice De Hinchamiento) also called Crucible Swelling Number (CSN)

It shall be noted that Carbhid does not have a QAQC program and that no data verification was done to validate assay results.

Results obtained by Carbhid are summarized in **Table 11.1**. Analysis methods are indicated on assays certificates (ASTM Standards). We note that the Gross Calorific Value of the samples corresponds to High Volatile A Bituminous (El Diamante -1 and Carbhid 2-1) and High Volatile B Bituminous (El diamante-2 and Carbhid 2-2) according to international standard ASTM D-388 (**Table 11.2**).

TABLE 11.1

CARBHID'S ASSAY RESULTS

SAMPLE	MOISTURE	ASH	VOLATILE	FIXED CARBON	S	GCV (BTU/Lb)	FSI ASTM D-720
	%	% dry	% dry	% dry	% dry	Kcal/Kg dry	dry
El Diamante -1	3.73	6.22	33.09	60.69	0.69	7981 (14,366)	4
Carbhid 2- 1	2.62	7.40	40.23	52.37	0.94	7868 (14,162)	5
El Diamante -2	2.6	10.28	36.51	53.21	0.85	7592 (13,666)	2.5
Carbhid 2- 2	2.02	10.54	39.89	49.58	0.89	7567 (13,620)	3.5

Dry: dry mineral matter free basis

TABLE 11.2

CLASSIFICATION OF COALS BY RANK (ASTM D-388)

Coal Rank	Volatile Content	Gross Calorific Value Limits		Agglomerating Characteristics
	%	Btu/ lb	MJ/kg	
	dmmf	moisture mmf	moisture mmf	
I. Anthracites Class				Non-agglomerating
Meta-Anthracit	< 2%			
Anthracite	2 to 8%			
Semi-Anthracite (Lean Coal)	8 to 14%			
II Bituminous				Commonly agglomerating
Low Volatile Bituminous	14 to 22%			
Medium Volatile Bituminous	22 to 31%			
High Volatile A Bituminous	> 31%	≥ 14,000	≥ 32.6	
High Volatile B Bituminous	>31%	13,000 to 14,000	30.2 to 32.6	
High Volatile C Bituminous	>31%	10,500 to 13,000	24.4 to 30.2	
III Subbituminous	>31%			Non-agglomerating
Subbituminous A Coal		10,500 to 11,500	24.4 to 26.7	
Subbituminous B Coal		9,500 to 10,500	22.1 to 24.4	
Subbituminous C Coal		8,300 to 9,500	19.3 to 22.1	
IV Lignite				Non-agglomerating
Lignite A		6,300 to 8,300	14.7 to 19.3	
Lignite B		< 6,300	< 14.7	

FIGURE 11.1

ANALYSIS FROM EL DIAMANTE, APRIL 2012

Interlabco S.A.S.
LABORATORIO QUÍMICO INTERNACIONAL

15 Años

Código: FT035/004
Página: 1 de 1
Vigente desde: 20- Feb-12

Villa de San Diego de Ubaté, Abril 23 de 2012

Ref. 36527
O.T.11526

Señores
CARBHID S.A.S.
ATN. SR. Gildardo Perez
Ciudad

CERTIFICADO DE CALIDAD

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Nosotros INTERLABCO S.A.S., certificamos que hemos ANALIZADO una (1) muestra (s) de de CARBON, recibidas los días 20 de Abril de 2012 a las 02:30 horas y los resultados obtenidos son los siguientes según normas ASTM

IDENTIFICACIÓN: MUESTRA COLECTADA INSITU MANTO 7, MINA EL DIAMANTE CUCAITA - BOYACA

FECHA DE ANALISIS: Abril 23 de 2012

RESULTADOS

DETERMINACION	COMO SE RECIBE	BASE SECA	METODO ASTM
HUMEDAD TOTAL, %	3,73		D 3302-02a
CENIZAS, %	5,99	6,22	D 3174- 04
MATERIA VOLATIL, %	31,86	33,09	D 3175-02
CARBONO FIJO, %	58,42	60,69	D 3172
AZUFRE, %	0,66	0,69	D 4239 04a
PODER CALORIFICO, Kcal/kg	7683	7981	D 5865-10 a
FSI		4	D 720-091 (2004)
FOSFORO COMO P EN CENIZAS,%	0,24		D 3682
FOSFORO COMO P EN MUESTRA , %	0,015		

APROBADO POR:

EDGAR J. GONZALEZ M.
Jefe de Laboratorio

Ing. Q. EDELMIRA PEÑA DE ARCO
Gerente General
M.P. 1354

FLOR EMILCE CARRILLO
Directora Gestión Calidad
FIRMA AUTORIZADA

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NOTA 2: Los resultados expresados en el certificado corresponden a las concentraciones y las condiciones particulares del momento en que se efectuo la muestra.
NOTA 3: INTERLABCO S.A.S no se hace responsable por los perjuicios derivados de un mal manejo del presente certificado por parte del cliente.
NOTA 4: La muestra de reserva se conserva en INTERLABCO S.A.S durante 30 días calendario después de los ocales será desechada igualmente.
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ASESORÍAS, CONSULTORÍAS Y CAPACITACIÓN
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Calle 5 No. 8 - 37 Ubaté (Cundinamarca, Colombia)
Telefax: (571) 889 0389 - 855 3644 - 889 1349
Celulares: 300 219 0875 - 321 453 1296
E-mail: gerencia@interlabco.com - gestioncalidad@interlabco.com
servicioalcliente@interlabco.com / Chat: gerenciainterlabco@yahoo.es
PAGINA WEB: www.interlabco.com

LINEA DE ATENCIÓN AL CLIENTE: SUGERENCIAS, QUEJAS Y RECLAMOS. CEL.: 321 453 1296 GERENCIA GENERAL

FIGURE 11.2

ANALYSIS FORM CARBHID 2, JUNE 2013

Interlabco S.A.S.
LABORATORIO QUÍMICO INTERNACIONAL

Codigo: FT034/V04
Página: 1 de 1
Vigente desde :26- Feb-12

Villa de San Diego de Ubaté, Junio 19 de 2013

Ref 39605
O.T 12783

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Ciudad

CERTIFICADO DE CALIDAD

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Nosotros INTERLABCO S.A.S. certificamos que hemos Preparado y Analizado Una(s) MUESTRA(S) de CARBON, recibida(s) el dia 17 de Junio de 2013 a las 14:30 horas y los resultados obtenidos son los siguientes según normas ASTM

IDENTIFICACION: MUESTRA 1, MINA CARBHID 2, VEREDA PIJAOS, MUNICIPIO DE CUCAITA BOYACA.
FECHA DE ANALISIS: Junio 19 de 2013

RESULTADOS

DETERMINACION	COMO SE RECIBE	BASE SECA	METODO ASTM
HUMEDAD TOTAL, %	2,62		D 3302/D3302M-12
CENIZAS, %	7,20	7,40	D 3174- 11
MATERIA VOLATIL, %	39,18	40,23	D 3175-11
CARBONO FIJO, %	51,00	52,37	D 3172-07a
AZUFRE, %	0,92	0,94	D 4239-12
P. CALORIFICO, Kcal/Kg	7662	7868	D 5865-11a
FSI		5	D 720-91(2010)

APROBADO POR:

EDGAR J. GONZALEZ MELO
Jefe de Laboratorio

Ing. Q. EDELMIRA PEÑA DE ARCO
Gerente General y Operativo
M.P. 1354

FLOR EMILCE CARRILLO
Directora Gestion Calidad
Firma Autorizada

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NOTA 3: INTERLABCO S.A.S no se hace responsable por los perjuicios derivados de uso indebido del presente certificado por parte del cliente.
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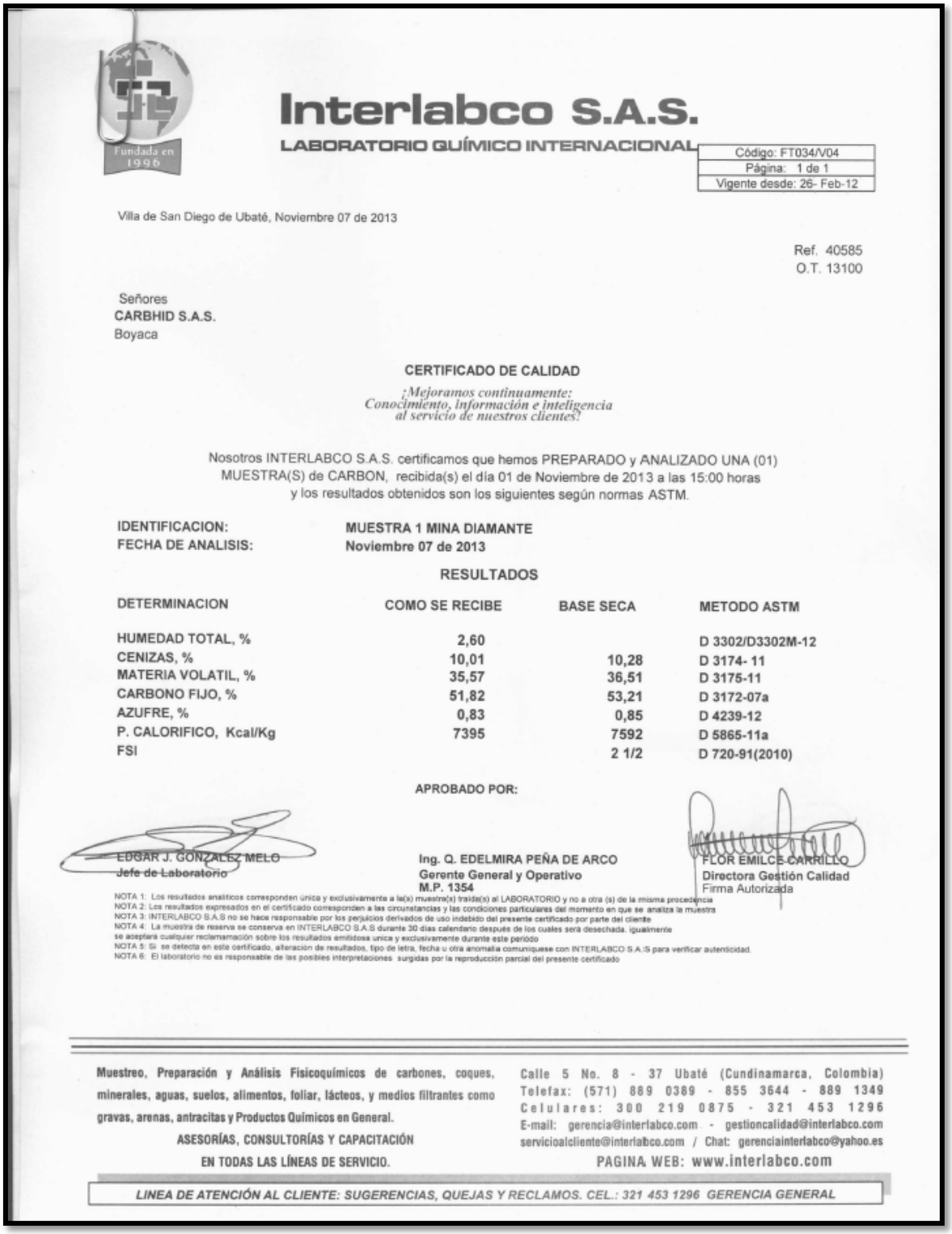
E-mail: gerencia@interlabco.com - gestioncalidad@interlabco.com
servicioalcliente@interlabco.com / Chat: gerenciainterlabco@yahoo.es
PAGINA WEB: www.interlabco.com

LINEA DE ATENCIÓN AL CLIENTE: SUGERENCIAS, QUEJAS Y RECLAMOS. CEL.: 321 453 1296 GERENCIA GENERAL

FIGURE 11.3

ANALYSIS FROM EL DIAMANTE, NOVEMBER 2013



Interlabco S.A.S.

LABORATORIO QUÍMICO INTERNACIONAL

Fundada en 1996

Código: FT034/V04
Página: 1 de 1
Vigente desde: 26- Feb-12

Villa de San Diego de Ubaté, Noviembre 07 de 2013

Ref. 40585
O.T. 13100

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CARBHID S.A.S.
Boyaca

CERTIFICADO DE CALIDAD

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IDENTIFICACION: **MUESTRA 1 MINA DIAMANTE**
FECHA DE ANALISIS: **Noviembre 07 de 2013**

RESULTADOS

DETERMINACION	COMO SE RECIBE	BASE SECA	METODO ASTM
HUMEDAD TOTAL, %	2,60		D 3302/D3302M-12
CENIZAS, %	10,01	10,28	D 3174- 11
MATERIA VOLATIL, %	35,57	36,51	D 3175-11
CARBONO FIJO, %	51,82	53,21	D 3172-07a
AZUFRE, %	0,83	0,85	D 4239-12
P. CALORIFICO, Kcal/Kg	7395	7592	D 5865-11a
FSI		2 1/2	D 720-91(2010)

APROBADO POR:

EDGAR J. GONZALEZ MELO
Jefe de Laboratorio

Ing. Q. EDELMIRA PEÑA DE ARCO
Gerente General y Operativo
M.P. 1354

FLOR EMILCE CARRILLO
Directora Gestión Calidad
Firma Autorizada

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ASESORÍAS, CONSULTORÍAS Y CAPACITACIÓN

EN TODAS LAS LÍNEAS DE SERVICIO.

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LINEA DE ATENCIÓN AL CLIENTE: SUGERENCIAS, QUEJAS Y RECLAMOS. CEL.: 321 453 1296 GERENCIA GENERAL

FIGURE 11.4

ANALYSIS FROM CARBHID 2, NOVEMBER 2013

Interlabco S.A.S.

LABORATORIO QUÍMICO INTERNACIONAL

Código: FT034/V04
Página: 1 de 1
Vigente desde: 26- Feb-12

Villa de San Diego de Ubaté, Noviembre 07 de 2013

Ref. 40584
O.T. 13100

Señores
CARBHID S.A.S.
Boyacá

CERTIFICADO DE CALIDAD

¡Mejoramos continuamente:
Conocimiento, información e inteligencia
al servicio de nuestros clientes!

Nosotros INTERLABCO S.A.S. certificamos que hemos PREPARADO y ANALIZADO UNA (01) MUESTRA(S) de CARBON, recibida(s) el día 01 de Noviembre de 2013 a las 15:00 horas y los resultados obtenidos son los siguientes según normas ASTM.

IDENTIFICACION: **MUESTRA 2 MINA CARBHID 2**
FECHA DE ANALISIS: **Noviembre 07 de 2013**

RESULTADOS

DETERMINACION	COMO SE RECIBE	BASE SECA	METODO ASTM
HUMEDAD TOTAL, %	2,02		D 3302/D3302M-12
CENIZAS, %	10,32	10,54	D 3174- 11
MATERIA VOLATIL, %	39,08	39,89	D 3175-11
CARBONO FIJO, %	48,57	49,58	D 3172-07a
AZUFRE, %	0,87	0,89	D 4239-12
P. CALORIFICO, Kcal/Kg	7414	7567	D 5865-11a
FSI		3 1/2	D 720-91(2010)

APROBADO POR:

EDGAR J. GONZALEZ MELO
Jefe de Laboratorio

Ing. Q. EDELMIRA PEÑA DE ARCO
Gerente General y Operativo
M.P. 1354

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Firma Autorizada

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12. DATA VERIFICATION

The following data verification on the Escalones coal project has been undertaken:

- Compile and evaluate all technical documents provided by Carbhid.
- Meeting with Carbhid's legal counsel to confirm the status of mining titles, various agreements related to the property and mining laws in Colombia. Obtain a letter of comfort.
- Review the various contracts and agreements related to the project
- Meeting with coal industry experts (consultants) to validate technical data and national industry statistics.
- Visit the property and the surrounding area; including underground workings where production is currently being carried out (El Diamante mine, level 1) and the Carbhid 2 development project and a coal outcrop uncovered along the access road.
- Discuss with professional personnel working at the mine site (mine engineers and supervisor)
- Measure thicknesses of two coal plys and one parting [CW3][CW4]observed underground at El Diamante
- Collect one sample (±2 kg) from a producing area at El Diamante (El Diamante-1, **Picture 12.1**)
- Collect one sample (±2 kg) from a stock pile at Carbhid 2 (Carbhid-2, **Picture12.2**)
- Send the samples to the Interlabco S.A.S. laboratory for Proximate Analysis and FSI
- Compare Carbhid's results to those obtained (**Table 12.1**)
- Verify the certifications of the laboratory used by Carbhid

The upper portion of **Table 12.1** gives an average of results obtained by Carbhid over the #7 coal seam at El Diamante mine and material coming from the Carbhid-2

mine (seam # 4). The lower portion shows results from the two samples collected at El Diamante and Carbhid-2. Results obtained by the author are clearly consistent with Carbhid's.

TABLE 12.1

SAMPLING RESULTS - CARBHID VS AUTHOR

CARBHID'S SAMPLES	MOISTURE %	ASH % dry	VOLATILE % dry	FIXED CARBON % dry	S % dry	GCV (BTU/Lb) Kcal/Kg dry	FSI dry
El Diamante	3,17	8,25	34,8	56,95	0,77	7787 (14,017)	3,3
Carbhid-2	2,32	8,97	40,06	50,98	0,92	7718 (13,892)	4,3
AUTHOR'S SAMPLES	**MOISTURE %**	**ASH % dry**	**VOLATILE % dry**	**FIXED CARBON % dry**	**S % dry**	**GCV (BTU/Lb) Kcal/Kg dry**	**FSI dry**
El Diamante	2,03	8,98	39,57	51,45	0,82	7717 (13,890)	4
Carbhid-2	3,08	11,1	36,27	52,62	0,75	7515 (13,527)	4,5

TABLE 12.2

COKING COAL CLASSIFICATION

Coal Type	Ash % air dried	Volatile Matter % air dried	Crucible Swelling Number	Gieseler Maximum Fluidity ddpm	Coke Strength after Reaction %	Mean Maximum Reflectance %
Premium hard coking	<8.5	19 - 38	8 - 9	500 - 30,000	55 - 74	0.80 - 1.60
Standard hard coking	<9.7	19 - 38	6 - 9	200 - 25,000	>55	0.80 - 1.60
Semi-hard coking	8.0 - 10.5	17 - 26	4 - 6	200 - 5,000	50 - 60	0.80 - 1.70
Semi-soft coking	8.0 - 11.0	25 - 41	3 - 8	50 - 30,000	45 - 55	0.70 - 0.95
Low-volatile PCI	6.0 - 10.5	10 - 19	1 - 2	n/a	n/a	1.20 - 3.00
High-volatile PCI	4.0 - 10.0	26 - 42	1 - 5	n/a	n/a	0.70 - 0.95

Source: AME

Source: smgc.co.id/presentations/KDW%20Coaltrans%20Singapore%202011.SMGC.webs.pdf

As mentioned in chapter 8 of this report, Carbhid's personnel refer to the coal produced in the region as both thermal and metallurgical quality (depending on the seam). It is the understanding of the author that a moderate quality metallurgical (or coking) coal needs a FSI of 5 and higher and Fixed Carbon above 60%. Analysis of the coal currently being produced at Escalones appears to indicate that it would qualify as Semi-Soft Coking Coal (**Table 12.2**), hence a low ranking coking coal.

The author is satisfied with its data verification and believes that the technical report contains all legitimate information pertaining to the Escalones Property.

PICTURE 12.1

SAMPLE EL DIAMANTE-1

PICTURE 12.2

SAMPLE CARBHID-2

13. MINERAL PROCESSING AND METALLURGICAL TESTING

Carbhid does limited sampling of its coal seams. When it does, it runs Proximate Analysis and FSI from a certified laboratory with expertise in coal analysis.

The Proximate Analysis of coal was developed as a simple means of determining the distribution of products obtained when the coal sample is heated under specified conditions. As defined by ASTM D 121, proximate analysis separates the products into four groups: (1) moisture, (2) volatile matter, consisting of gases and vapors driven off during pyrolysis, (3) fixed carbon, the non-volatile fraction of coal, and (4) ash, the inorganic residue remaining after combustion. Proximate analysis is the most often used analysis for characterizing coals in connection with their utilization. Differences in the type of information required by coal producers and consumers have led to variations in the kind and number of tests included under the rubric proximate analysis. Other terms used in the coal industry are short prox and prox. Common usage in the field tends to favor short prox, which is the determination of moisture, ash, Btu, and sulfur, while prox means the determination of moisture, ash, volatile matter, fixed carbon, Btu, and sulfur.

Proximate Analysis + FSI:

- % Moisture total
- % Ash
- % Volatile matters
- % Fixed carbon
- Gross Calorific Value Kcal/kg or Btu/Lb
- % Sulfur
- Free Swelling index, FSI also called Crucible Swelling Number (CSN)

In the coal industry, consumers routinely carry out their own analysis. Carbhid's client, a local power generation plant, runs its own analyses to ensure the coal delivered is within agreed specifications and pays out on a sliding scale based on the Gross Calorific Value and other factors.

14. MINERAL RESOURCE ESTIMATES

There were no JORC compliant mineral resource estimates done on the Property.

Estimates were performed and provided by Carbhid but they are not mentioned in this report as they do not conform to JORC Code.

15. ADJACENT PROPERTIES

The area surrounding the Escalones property is known for its small scale coal mining activity for centuries. There are several small mines, mostly directly to the north, east and one within the property boundary (within a small block, where the uppermost seam is excluded from the Escalones property) (**Pictures 15.1 to 15.4**).

All these mines are currently operated by local artisanal miners and rate of production do not exceed 1,000 tonnes per month. In most of the area, between 7 and 11 coal seams are known to occur. Some mines were developed to exploit only one coal seam, while others produce from several seams at the time.

Figure 15.1 provides a stratigraphic column from exploration work carried out to the south of the property (unknown source). It can be noted that all seven seams present of the property (locally 9 in the Carbhid 2 area) and in the mines to the north of the property extend further south and that more coal seams can be found higher in the stratigraphy (to the east of Escalones, levels 8 to 11). Coal seams are usually extensive and homogenous in composition over tens of kilometres laterally and each coal seam exhibits a specific composition, which is slightly different from the others. Thickness is the one parameter that can be quite variable laterally.

The presence of all those small scale operations is witness to the extensive nature of the coal beds and the quality of the coal in the vicinity of the property. It also provides with a relatively good regional stratigraphic control within the productive geological unit. Systematic diamond drilling, in such an environment, is not as critical as in other deposit types or less well understood coal producing regions.

PICTURE 15.1

COAL MINING OPERATION NORTH OF ESCALONES

PICTURE 15.2

COAL MINING OPERATION NORTH OF ESCALONES

PICTURE 15.3

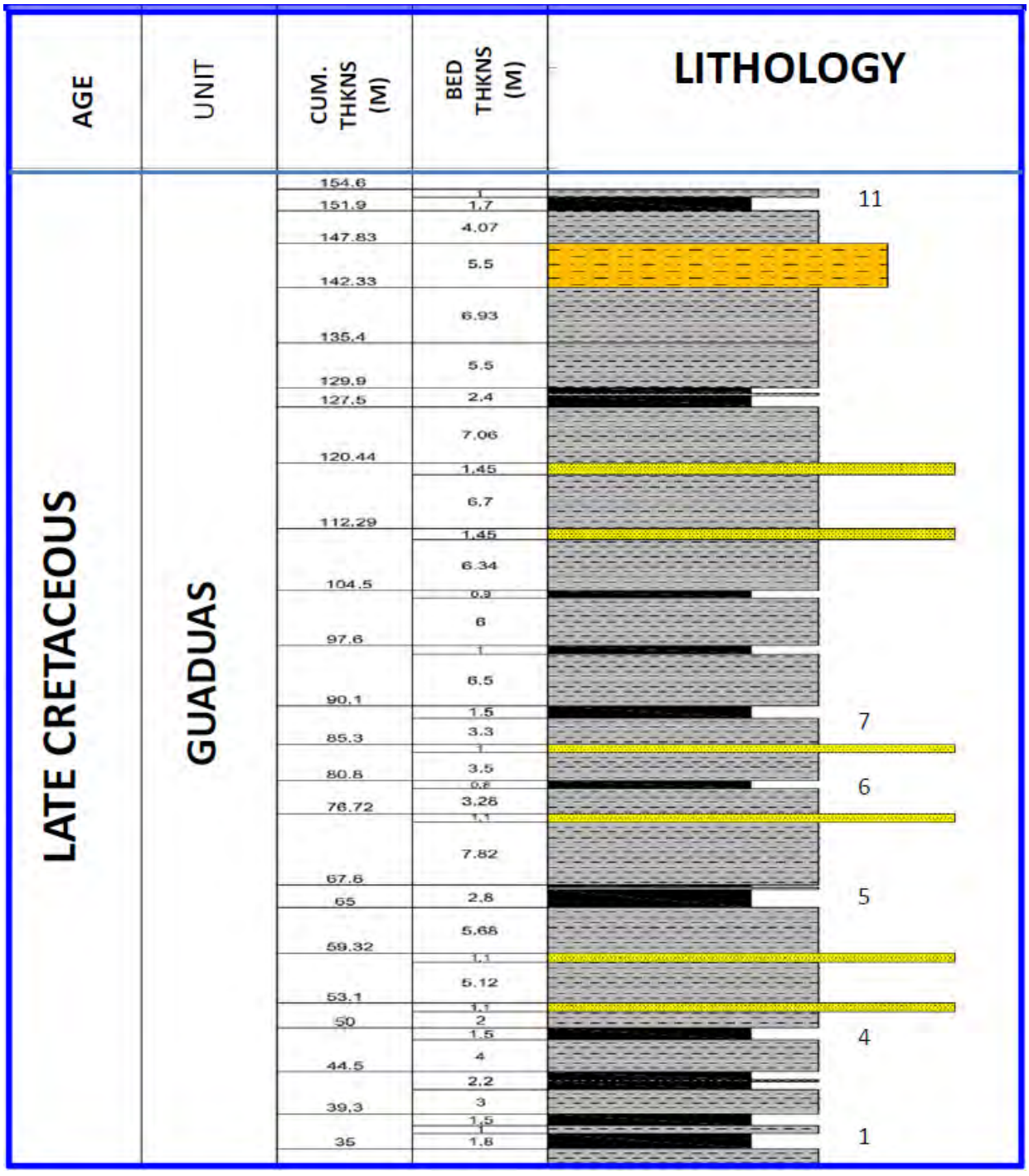
OPERATION ON CERREJONCITO 2

PICTURE 15.4

VARIOUS OPERATIONS NORTH OF ESCALONES

FIGURE 15.1

STRATIGRAPHIC COLUMN SOUTH OF ESCALONES



Coal seams in black

16. OTHER RELEVANT DATA AND INFORMATION

According to Worldcoal.org, coal provides around 30% of global primary energy needs, generates 41% of the world's electricity and is used in the production of 70% of the world's steel. The same source indicates that Colombia is the ninth thermal coal producer with a total output for 2011 of 85 Mt (**Figure 16.1**), 1.41% of the world total. Simco (Sistema de Informacion Minero Colombiano) estimates that Colombia produced 63.7 Mt of thermal coal, 3.8 Mt of metallurgical coal and 1.7 Mt of coke in 2012.

FIGURE 16.1

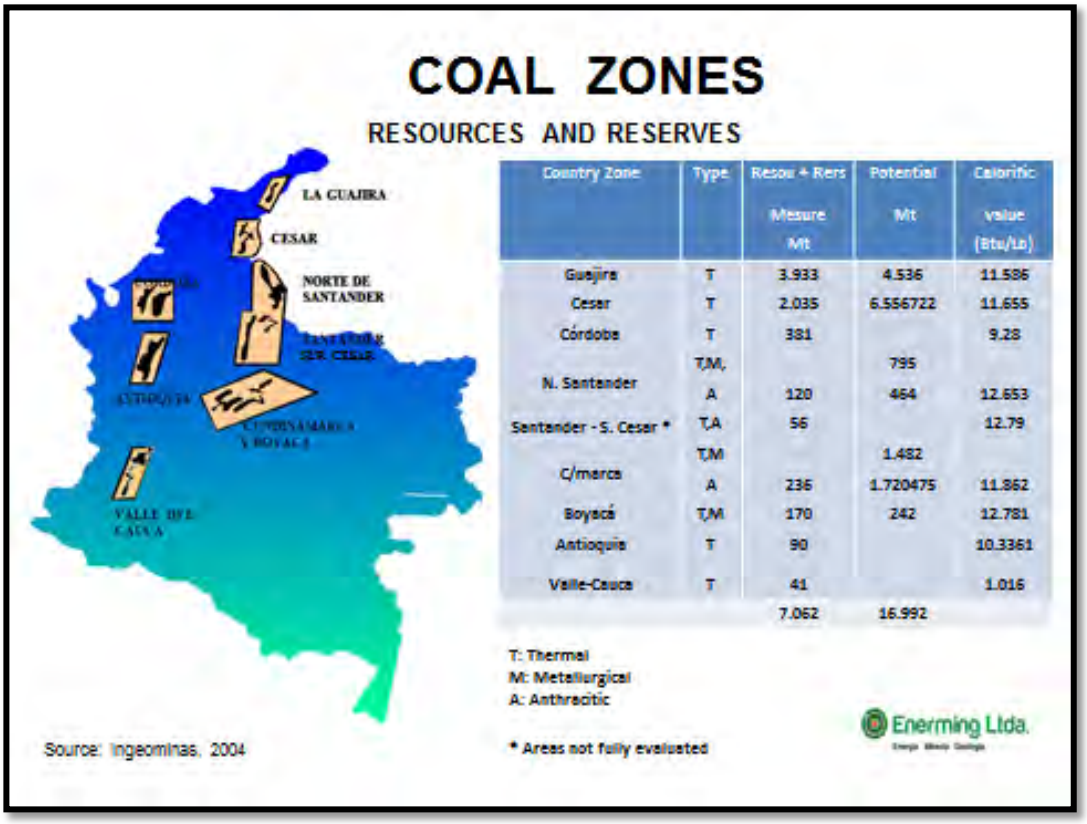
TOP TEN THERMAL PRODUCERS BY COUNTRIES

PR China	3039Mt	**Russia**	201Mt
USA	782Mt	**Australia**	200Mt
India	504Mt	**Kazakhstan**	108Mt
Indonesia	440Mt	**Colombia**	85Mt
South Africa	258Mt	**Poland**	68Mt

Colombia has the largest coal reserves in Latin America. According to the 2012 BP Statistical Energy Survey, in 2011 Colombia had coal reserves of 6,746 million tonnes, equivalent to 78 years of current production and 0.78% of the world total. This coal consists of high-quality bituminous coal and a smaller quantity of metallurgical coal. Most of those reserves are concentrated in the Guajira peninsula in the north and the Andean foothills (**Figures 16.2 and 16.3**)

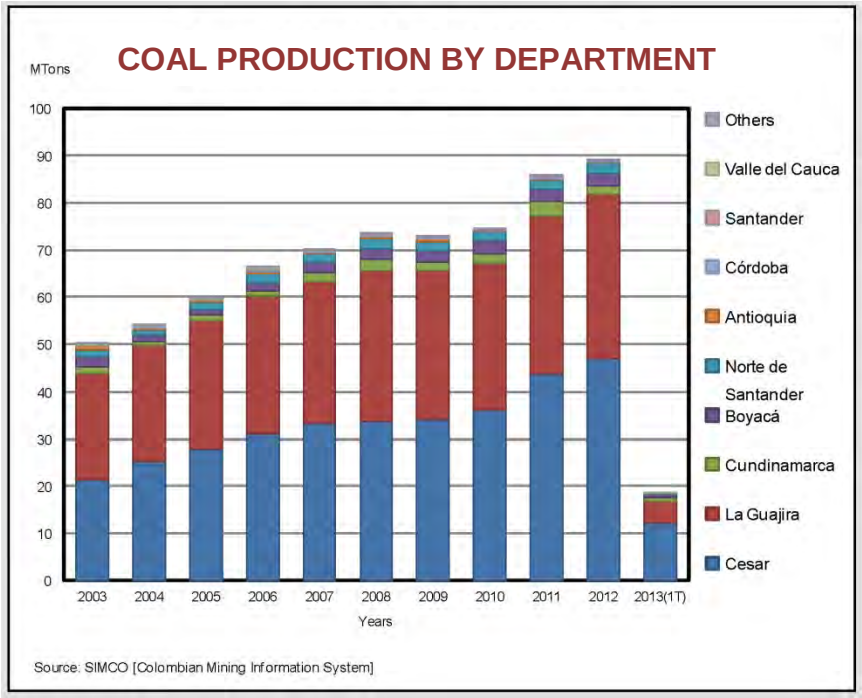
FIGURE 16.2

LOCATION OF COAL FIELDS IN COLOMBIA



Country Zone	Type	Resou + Rers Mesure Mt	Potential Mt	Calorific value (Btu/Lb)
Guajira	T	3.933	4.536	11.586
Cesar	T	2.035	6.556722	11.655
Córdoba	T	381		9.28
N. Santander	T,M,		795	
	A	120	464	12.653
Santander - S. Cesar *	T,A	56		12.79
C/marca	T,M		1.482	
	A	236	1.720475	11.862
Boyacá	T,M	170	242	12.781
Antioquia	T	90		10.3361
Valle-Cauca	T	41		1.016
		7.062	16.992	

FIGURE 16.3



17. ADDITIONAL REQUIREMENTS FOR TECHNICAL REPORTS ON DEVELOPMENT PROPERTIES AND PRODUCTION PROPERTIES

Since 2013, Carbhid operates a small scale mine at the El Diamante mine site located in the northern portion of the property (**Figure 17.1 and Picture 17.1**). The mine site includes, an office and dry, a hoist room, a 180 metre long inclined shaft (-35°) with tracks (**Picture 17.2**), a 120 tonnes ore bin (**Picture 17.5**), and a waste pad and a water treatment plant. A second waste pad is located away from the mine site. Actual mining rate is 300 t/m.

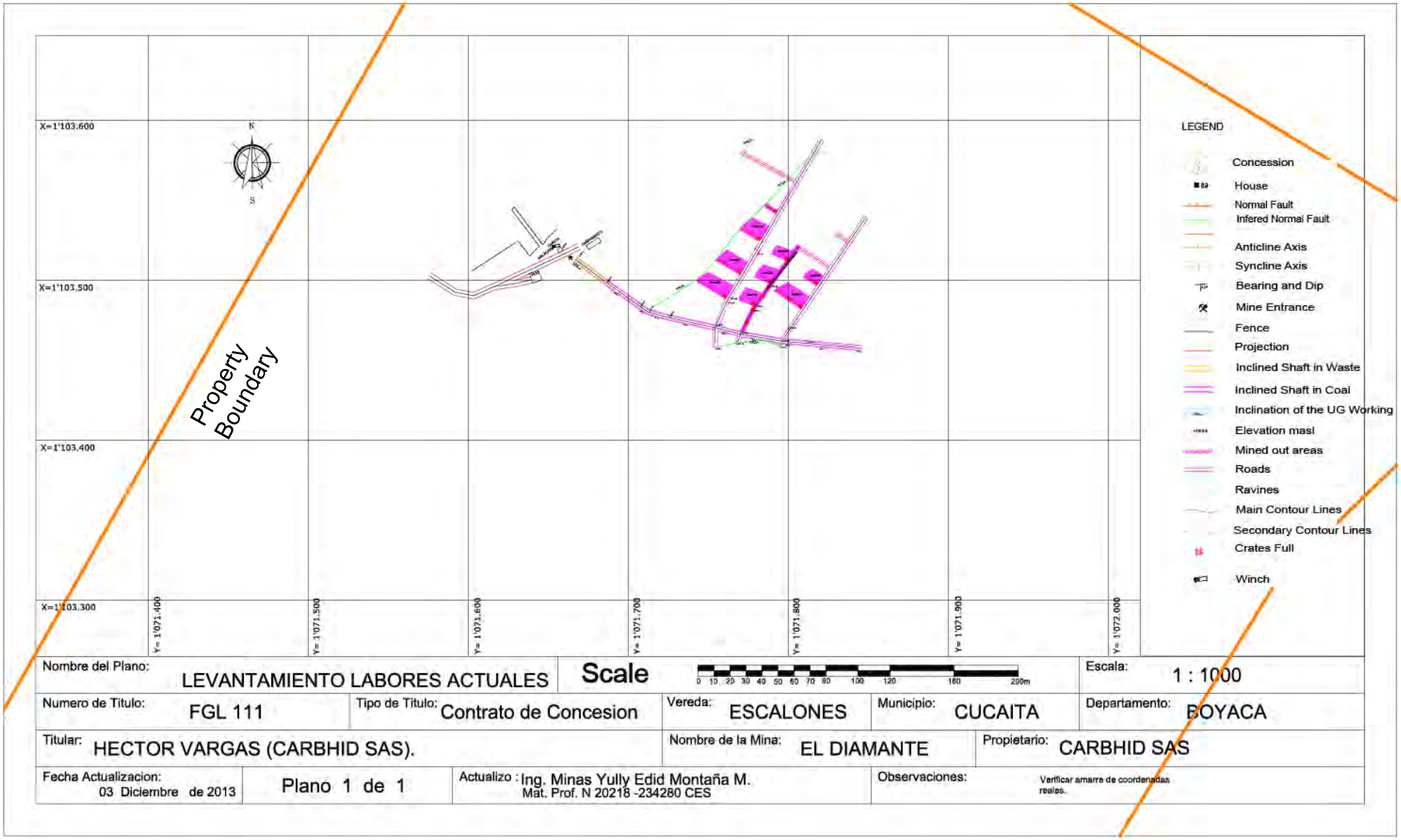
Mining is being carried out from various levels developed perpendicular to the inclined shaft (all less than 2 m in height). Coal is being extracted manually with picks and shovels while waste rock is often broken with an electrical jack hammer (**Picture 17.3**). The mining method is Room and Pillar along individual coal seams (**Picture 17.4**). In room-and-pillar mining, coal deposits are mined by cutting a network of 'rooms' into the coal seam and leaving behind 'pillars' of coal to support the roof of the mine. These pillars can be up to 40% of the total coal in the seam, although this coal can sometimes be recovered at a later stage.

At El Diamante, each room is about 7 m by 7 m. Pillars are approximately the same which results in a recovery of approximately 40-65% of coal in the seams. Coal is hoisted to surface in a small rail car (700 kg) and dumped on a conveyor belt that take the material to a screening table (to separate the fines if necessary) then to the ore bin and loading facility.

The roof of the various underground openings is not highly stable and a large amount of wood beams is required to stabilize it. Maintenance of the roof supports is a demanding and continuous process. Flooding of the mine has occurred recently causing delays in the mining operation.

FIGURE 17.1

EL DIAMANTE MINE – U/G WORKINGS



Since the beginning of the operation, all material being extracted at El Diamante was sold to local power generation plants. New markets are being evaluated. According to Carbhid, the operation can be profitable at a production rate of 800 tonnes per month. The goal for El Diamante is to reach a production of 1,500 tonne per month in the short term (within a year). The long term goal is to reach a monthly production rate of 15,000 tonnes per month. Mine life is estimated at 22 years (the extent of the mining lease).

Current staff consists of a general manager and two assistants in Bogotá, two engineers at El Diamante and approximately 10 laborers on the property.

The mining operation at El Diamante is a very small scale mine. Even with the planned production increase to 1,500 tonnes per month, it will remain a small operation and its impacts on the environment are very limited. Sedimentation basins have been installed at El Diamante and Carbhid 2 mines to clean water coming from the mine but the size of the operations will probably never lead to any major problem. Landscaping work has been carried out around the mine in order to limit the visual impact of the mining operation at El Diamante.

The Carbhid 2 operation began producing in January 2014. An inclined shaft has been developed to access various coal beds and construction of the hoist room and ore bin are complete (**Pictures 17.6 to 17.9**).

A third mine is being planned in the northern portion of the property. Carbhid 4 will access the La Cisquera coal seams (Mantos 1 and 2), which are believed to have an average thickness of 4.5 metres, based to information coming from outside the property. Preliminary access work is also planned at Carbhid 5 (SW of El Diamante).

PICTURE 17.1

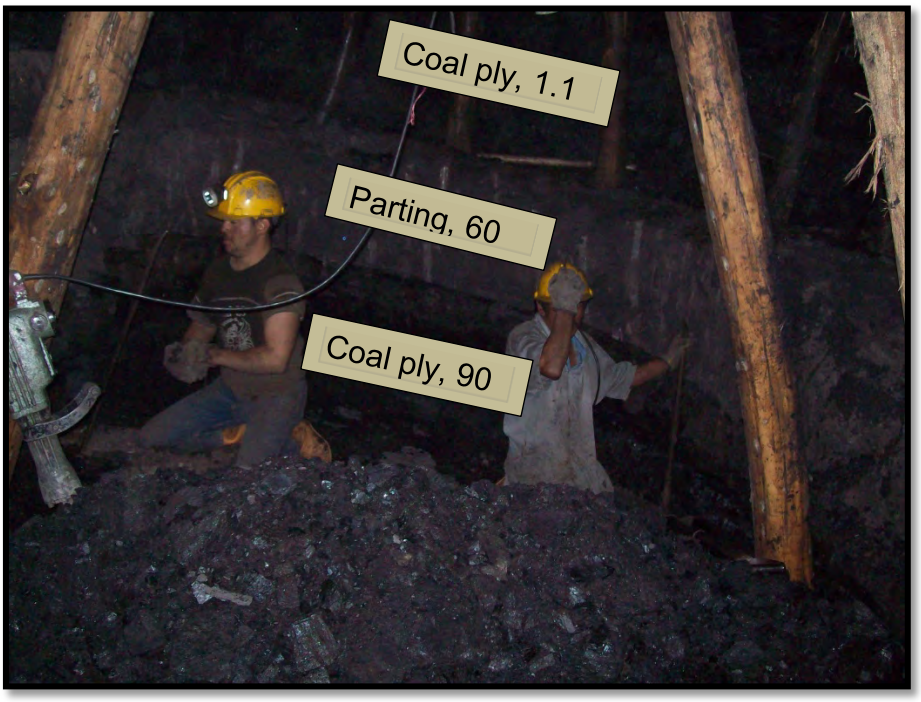
VIEW OF THE EL DIAMANTE MINE SITE

PICTURE 17.2

EL DIAMANTE INCLINED SHAFT

PICTURE 17.3

MINERS, 1ST LEVEL, EL DIAMANTE

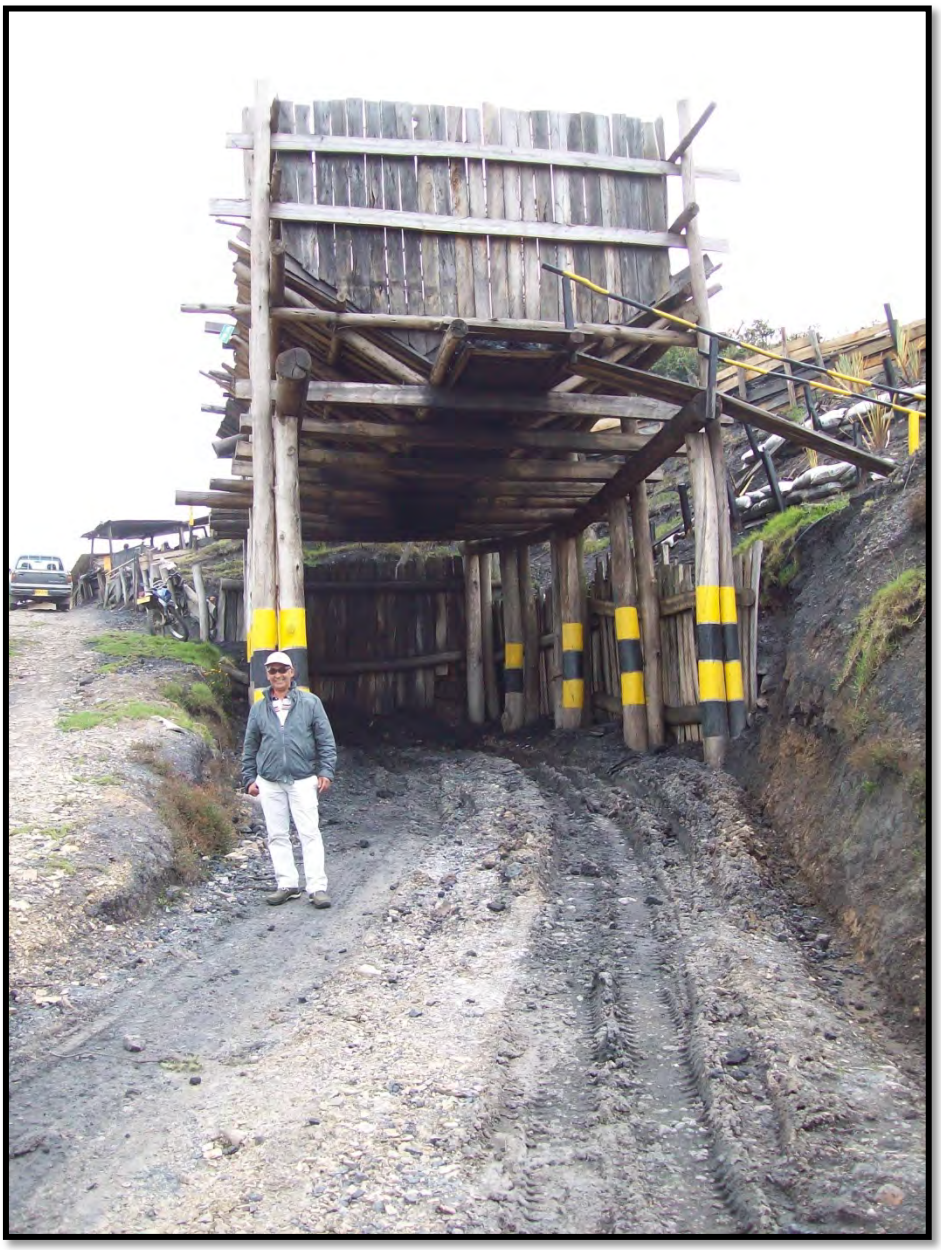


PICTURE 17.4

TYPICAL ROOM AND PILLAR STOPE, PLY 1.1 M HIGH

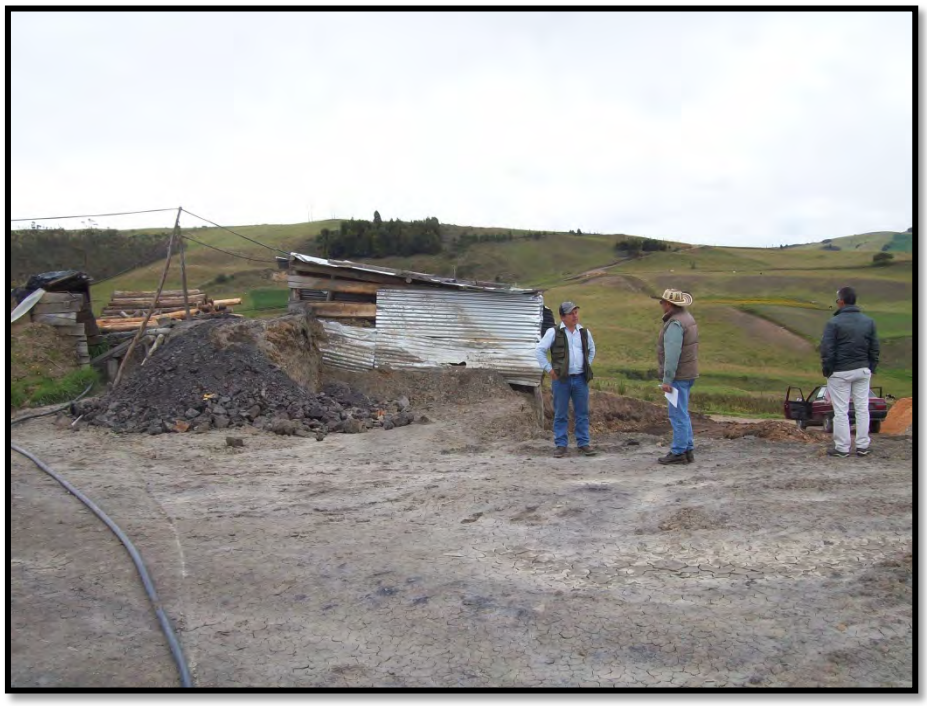
PICTURE 17.5

ORE BIN, 120 TONNES – LOADING FACILITY



PICTURE 17.6

CARBHID 2 MINE SITE



PICTURE 17.7

CARBHID 2 INCLINED SHAFT

PICTURE 17.8

CARBHID 2 TEMPORARY HOIST FACILITY

PICTURE 17.9

CARBHID 2, CONSTRUCTION OF NEW HOIST ROOM

18. INTERPRETATION AND CONCLUSIONS

The Boyacá Department of Colombia is a proven thermal-metallurgical coal producing area. The Escalones Property is located in the centre of this coal field and small scale former and active mines are observed all around the property. Through underground workings, diamond drilling, outcrops or historical information, it has been demonstrated that the property hosts between 7 and 9 shallow to flat dipping coal seams, some exhibiting multi metric thicknesses.

Coal seams in the area are extensive (several kilometres) but often displaced by small faults. One of the main challenges of the operators is to locate these faults and determine the displacement along the coal seams. Individual mines (an inclined shaft with related underground development) appear to be bounded by these faults. For that reason, underground workings rarely exceed a few hundreds of metres in length laterally or at depth. Pinching or thinning of coal seams can also limit underground development along a particular horizon. Even on a property as small as Escalones (98.58 ha), numerous mines have to be developed to access all the productive levels (coal seams) and areas.

The author is of the opinion that the Escalones property has the potential to host viable coal producing operations. However, the rate of production has to be increased significantly. The company has to ensure that proposed accelerated development work and production will be carried out under the safest possible conditions for the workers.

The author is of the opinion that the work program recommended and the proposed budget included in this report are justified and sufficient to properly assess the potential of the property and reach a viable rate of production.

19. RECOMMENDATIONS

Andean Coal's short term objective is to explore and develop several coal beds from four locations on the Escalones property (**Figure 19.1**). A $1,000,000 budget is proposed (**Table 19.1**). The main priorities are as follows:

- Complete one 140 metre long vertical diamond drill hole to study the stratigraphy and evaluate its coal potential
- Increase underground development of Manto 7 at the El Diamante mine from 300 tonnes per month (t/m) to a production rate of 800 t/m
- Continue the development of the Carbhid 2 mine and ramp up productio to a rate of 800 t/m from various coal beds (Mantos 1 to 7)
- Initiate development of Carbhid 4 and 5 mines in order to explore and develop underground La Cisquera seams (Mantos 1 and 2)
- Develop a coal gathering system

TABLE 19.1

ESCALONES PROPERTY- EXPLORATION AND DEVELOPMENT BUDGET						
EXPLORATION DRILLING						
				TRM	$ 1 930	
Item	**Number of Units**	**Cost per unit COP$**	**Cost per unit USD$**	**Total COP$**	**Total USD$**	
Land rental and damages payment	1	$ 23 000 000	$ 11 917	$ 23 000 000	$ 11 917	
Access & location building	1	$ 16 000 000	$ 8 290	$ 16 000 000	$ 8 290	
Rig Mob. & Demob.	1	$ 45 000 000	$ 23 316	$ 45 000 000	$ 23 316	
Drilling (meters)	30	$ 190 000	$ 98	$ 5 700 000	$ 2 953	
Coring (meters)	140	$ 950 000	$ 492	$ 133 000 000	$ 68 912	
Sample analysis (samples)	15	$ 470 000	$ 244	$ 7 050 000	$ 3 653	
Administration	1	$ 39 000 000	$ 20 207	$ 39 000 000	$ 20 207	
TOTAL DRILLING					$ 139 249	**$ 139 249**
CONSULTANT FEES						
PMA update	1	$ 30 000 000	$ 15 544	$ 30 000 000	$ 15 544	

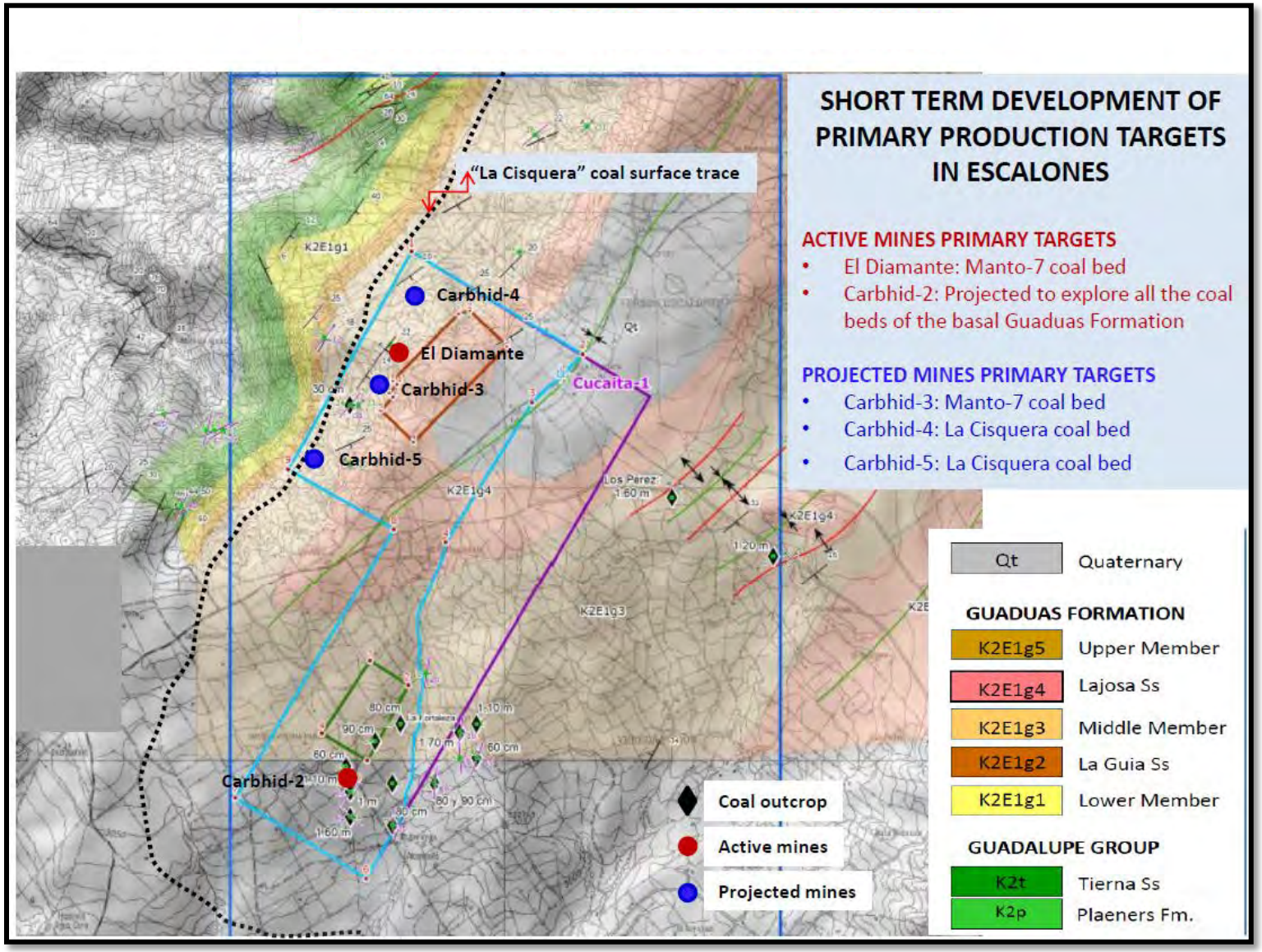
PTO update	1	$ 52 000 000	$ 26 943	$ 52 000 000	$ 26 943	
Professional consulting (Mining Engineer)	1	$ 22 000 000	$ 11 399	$ 22 000 000	$ 11 399	
TOTAL CONSULTANT FEES					$ 53 886	**$ 53 886**
TRANSPORTATION						
Pick-up truck	1	$ 55 000 000	$ 28 497	$ 55 000 000	$ 28 497	
TOTAL TRANSPORTATION					$ 28 497	**$ 28 497**
DEVELOPMENT OF NEW MINING FRONTS						
CARBHID-4						
Labor (per meter)	50	$ 542 000	$ 281	$ 27 100 000	$ 14 041	
Equipment Supplies	1	$ 29 000 000	$ 15 026	$ 29 000 000	$ 15 026	
Land & Facilities	1	$ 20 000 000	$ 10 363	$ 20 000 000	$ 10 363	
Utilities	1	$ 3 500 000	$ 1 813	$ 3 500 000	$ 1 813	
Administration	50	$ 525 000	$ 272	$ 26 250 000	$ 13 601	
TOTAL CARBHID-4				$ 105 850 000	$ 54 845	**$ 54 845**
CARBHID-5						
Access road	1	$ 35 000 000	$ 18 135	$ 35 000 000	$ 18 135	
Labor (per meter)	85	$ 542 000	$ 281	$ 46 070 000	$ 23 870	
Equipment Supplies	1	$ 47 000 000	$ 24 352	$ 47 000 000	$ 24 352	
Land & Facilities	1	$ 47 000 000	$ 24 352	$ 47 000 000	$ 24 352	
Utilities	1	$ 3 500 000	$ 1 813	$ 3 500 000	$ 1 813	
Administration	85	$ 525 000	$ 272	$ 44 625 000	$ 23 122	
TOTAL CARBHID-5				$ 223 195 000	$ 115 645	**$ 115 645**
UNDERGROUND MINE DEVELOPMENT						
EL DIAMANTE						
Compressor 850 CFM, 12 BAR	1	$ 25 000 000	$ 12 953	$ 25 000 000	$ 12 953	
Hydraulic Hammers	12	$ 1 700 000	$ 881	$ 20 400 000	$ 10 570	
Stainless steel Braided hydraulic Hose	500	$ 44 390	$ 23	$ 22 195 000	$ 11 500	
Air storage unit	1	$ 15 000 000	$ 7 772	$ 15 000 000	$ 7 772	
Steel hose hooks and clamps (set)	1	$ 7 600 000	$ 3 938	$ 7 600 000	$ 3 938	
Rails & clamps (meters)	230	$ 25 000	$ 13	$ 5 750 000	$ 2 979	
Steel arch supports	20	$ 3 250 000	$ 1 684	$ 65 000 000	$ 33 679	
Steel cable (meters)	550	$ 14 000	$ 7	$ 7 700 000	$ 3 990	
Internal wichs	2	$ 5 300 000	$ 2 746	$ 10 600 000	$ 5 492	
Facilities updating	1	$ 18 000 000	$ 9 326	$ 18 000 000	$ 9 326	
Reforestation	1	$ 3 000 000	$ 1 554	$ 3 000 000	$ 1 554	
Mine development	75	$ 542 000	$ 281	$ 40 650 000	$ 21 062	
Administration	75	$ 525 000	$ 272	$ 39 375 000	$ 20 402	
Water treatment improvement	1	$ 4 500 000	$ 2 332	$ 4 500 000	$ 2 332	

Fuel supply (gallons)	5400	$ 9 900	$ 5	$ 53 460 000	$ 27 699	
Utilities	1	$ 3 500 000	$ 1 813	$ 3 500 000	$ 1 813	
Administration	1	$ 15 000 000	$ 7 772	$ 15 000 000	$ 7 772	
TOTAL EL DIAMANTE				$ 356 730 000	$ 184 834	**$ 184 834**
CARBHID-2						
Compressor 850 CFM, 20 BAR	1	$ 48 000 000	$ 24 870	$ 48 000 000	$ 24 870	
Hydraulic Hammers	8	$ 1 700 000	$ 881	$ 13 600 000	$ 7 047	
Stainless steel Braided hydraulic Hose	300	$ 44 390	$ 23	$ 13 317 000	$ 6 900	
Air storage unit	1	$ 15 000 000	$ 7 772	$ 15 000 000	$ 7 772	
Steel hose hooks and clamps (set)	1	$ 5 200 000	$ 2 694	$ 5 200 000	$ 2 694	
Rails & clamps (meters)	190	$ 25 000	$ 13	$ 4 750 000	$ 2 461	
Steel arch supports	12	$ 3 250 000	$ 1 684	$ 39 000 000	$ 20 207	
Steel cable (meters)	350	$ 14 000	$ 7	$ 4 900 000	$ 2 539	
Internal wichs	1	$ 5 300 000	$ 2 746	$ 5 300 000	$ 2 746	
Reforestation	1	$ 2 000 000	$ 1 036	$ 2 000 000	$ 1 036	
Exploratory digging	45	$ 615 000	$ 319	$ 27 675 000	$ 14 339	
Mine development	70	$ 542 000	$ 281	$ 37 940 000	$ 19 658	
Administration	70	$ 525 000	$ 272	$ 36 750 000	$ 19 041	
Water treatment improvement	1	$ 4 500 000	$ 2 332	$ 4 500 000	$ 2 332	
Fuel supply (gallons)	5400	$ 9 900	$ 5	$ 53 460 000	$ 27 699	
Utilities	1	$ 3 500 000	$ 1 813	$ 3 500 000	$ 1 813	
Administration	1	$ 15 000 000	$ 7 772	$ 15 000 000	$ 7 772	
TOTAL CARBHID-2				$ 329 892 000	$ 170 928	**$ 170 928**
COAL GATHERING SYSTEM						
Land (hectare)	1,8	$ 18 000 000	$ 9 326	$ 32 400 000	$ 16 788	
Fence (Sq. Meter)	650	$ 98 000	$ 51	$ 63 700 000	$ 33 005	
Environmental license	1	$ 40 000 000	$ 20 725	$ 40 000 000	$ 20 725	
Gate	1	$ 8 500 000	$ 4 404	$ 8 500 000	$ 4 404	
Electric conection	1	$ 17 000 000	$ 8 808	$ 17 000 000	$ 8 808	
Electric wiring	1	$ 7 500 000	$ 3 886	$ 7 500 000	$ 3 886	
Illumination	1	$ 3 500 000	$ 1 813	$ 3 500 000	$ 1 813	
Video security	7	$ 400 000	$ 207	$ 2 800 000	$ 1 451	
Office equipment	1	$ 15 000 000	$ 7 772	$ 15 000 000	$ 7 772	
Access road	1	$ 15 000 000	$ 7 772	$ 15 000 000	$ 7 772	
Office (Sq. Meter)	20	$ 2 100 000	$ 1 088	$ 42 000 000	$ 21 762	
Platform scale (60 tons)	1	$ 75 000 000	$ 38 860	$ 75 000 000	$ 38 860	
Land conditioning	1	$ 12 500 000	$ 6 477	$ 12 500 000	$ 6 477	
Loading equipment	1	$ 65 000 000	$ 33 679	$ 65 000 000	$ 33 679	
Ash Probe	1	$ 45 000 000	$ 23 316	$ 45 000 000	$ 23 316	
Labor (man/day)	350	$ 54 000	$ 28	$ 18 900 000	$ 9 793	

Administration	1	$ 15 000 000	$ 7 772	$ 15 000 000	$ 7 772	
TOTAL COAL GATHERING SYSTEM				$ 478 800 000	$ 248 083	**$ 248 083**
				GRAND TOTAL		**$ 995 967**

FIGURE 19.1

LOCATION OF PROPOSED DEVELOPMENT WORK



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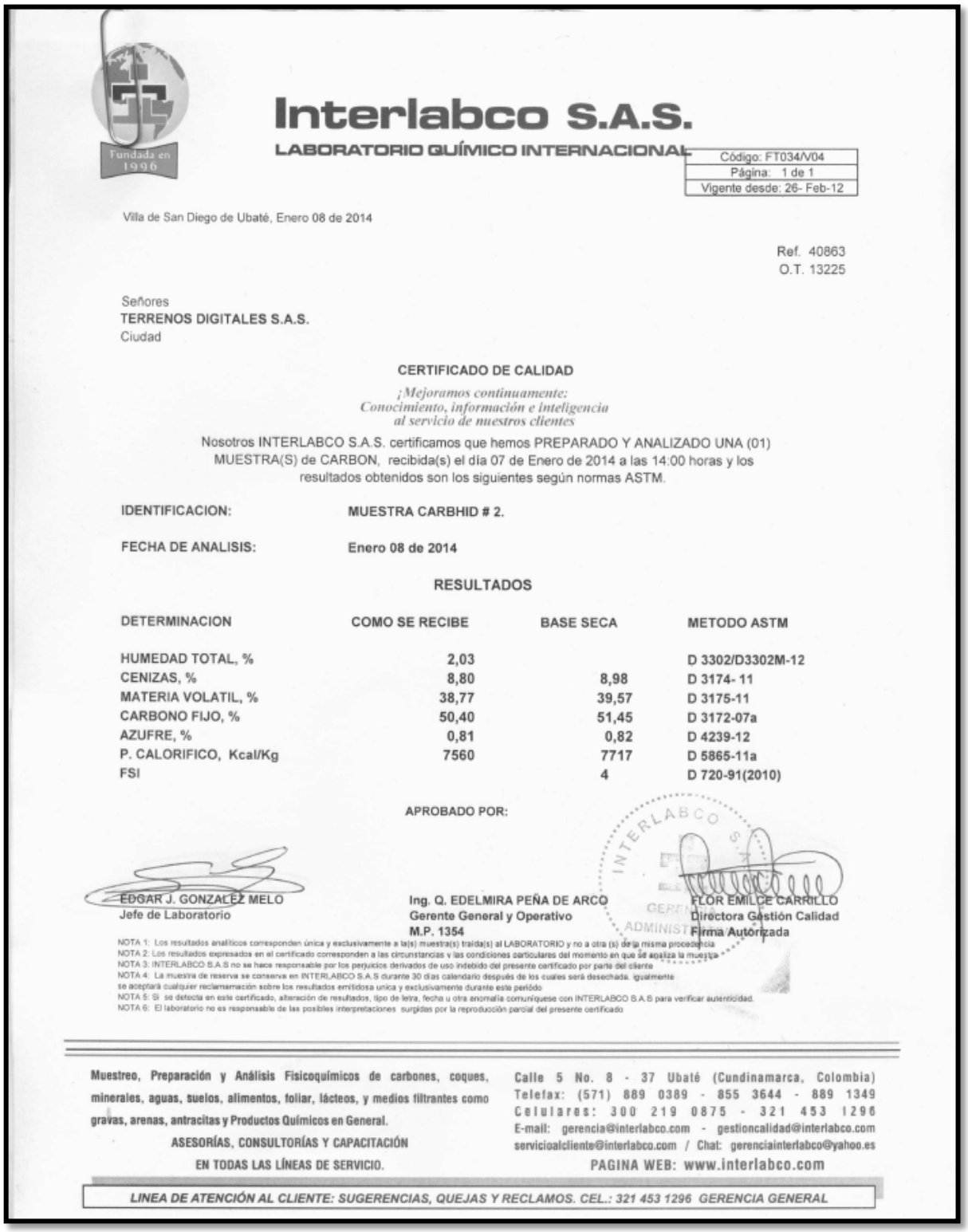
ANNEX 1

CERTIFICATES OF ANALYSIS



Interlabco S.A.S.
LABORATORIO QUÍMICO INTERNACIONAL

Fundada en 1996

Código: FT034/V04
Página: 1 de 1
Vigente desde: 26- Feb-12

Villa de San Diego de Ubaté, Enero 08 de 2014

Ref. 40863
O.T. 13225

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Ciudad

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IDENTIFICACION: **MUESTRA CARBHID # 2.**

FECHA DE ANALISIS: **Enero 08 de 2014**

RESULTADOS

DETERMINACION	COMO SE RECIBE	BASE SECA	METODO ASTM
HUMEDAD TOTAL, %	2,03		D 3302/D3302M-12
CENIZAS, %	8,80	8,98	D 3174- 11
MATERIA VOLATIL, %	38,77	39,57	D 3175-11
CARBONO FIJO, %	50,40	51,45	D 3172-07a
AZUFRE, %	0,81	0,82	D 4239-12
P. CALORIFICO, Kcal/Kg	7560	7717	D 5865-11a
FSI		4	D 720-91(2010)

APROBADO POR:

EDGAR J. GONZALEZ MELO
Jefe de Laboratorio

Ing. Q. EDELMIRA PEÑA DE ARCO
Gerente General y Operativo
M.P. 1354

FLOR EMILCE CARRILLO
Directora Gestión Calidad
Firma Autorizada

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Código: FT034/V04
Página: 1 de 1
Vigente desde: 26- Feb-12

Villa de San Diego de Ubaté, Enero 08 de 2014

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O.T. 13225

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IDENTIFICACION: **MUESTRA DIAMANTE # 1.**

FECHA DE ANALISIS: **Enero 08 de 2014**

RESULTADOS

DETERMINACION	COMO SE RECIBE	BASE SECA	METODO ASTM
HUMEDAD TOTAL, %	3,08		D 3302/D3302M-12
CENIZAS, %	10,78	11,12	D 3174- 11
MATERIA VOLATIL, %	35,15	36,27	D 3175-11
CARBONO FIJO, %	50,99	52,62	D 3172-07a
AZUFRE, %	0,73	0,75	D 4239-12
P. CALORIFICO, Kcal/Kg	7280	7512	D 5865-11a
FSI		4 1/2	D 720-91(2010)

APROBADO POR:

INTERLABCO

EDGAR J. GONZALEZ MELO
Jefe de Laboratorio

Ing. Q. EDELMIRA PEÑA DE ARCO
Gerente General y Operativo
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Part 2 - "PELAYA" PROJECT

COAL EXPLORATION

SCALE 1:10.000

Location: La Gloria and Pelaya – Municipalities, Cesar

Bogotá D.C.

1. INTRODUCTION

The **PELAYA PROJECT** is currently developed in the claims identified with license plates as follows: KDT-14341 (1,632 ha.), KCA-09491 (1,656 ha., with cutting) and KES-14311 (1,632) with an area of 3,288 ha. (Figure No. 1). In order to determinate the coal potential within the "Umir formation", an updated corresponding to the cartographic database has been performed, as well as a geological map scale to 1:10.000, the interpretation of the seismic lines and the geoelectric prospection.

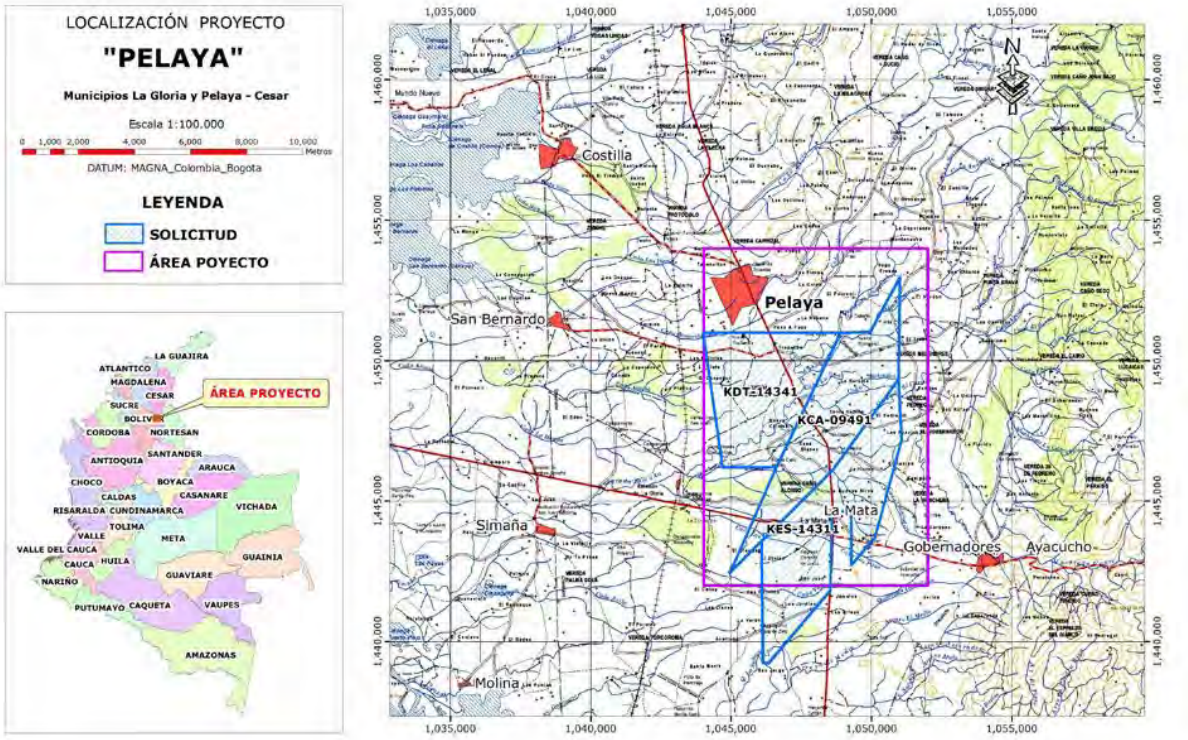


Figure No. 1 –Localization MAP- "**PELAYA**" **PROJECT**

The application area corresponds to an alluvial plain mainly in its eastern edge outcrops cretaceous rocks; the performed geological mapping led to the separation of the quaternaries and also to the late cretaceous formations.

According to the geological structure recognized by the outcrops of the formation (K1s), La Luna (k2l) and also from the lower part of the Umir formation (k2ui) and with an interpretation of two seismic lines, several geological sections were assembled under the quaternary deposits, which did not have more of 20 m thick.

Based on known regional information related to the Umir formation, which is subdivided in three lithological segments, being the medium segment (k2um), the element that represents the mayor economical interest, due to it holds 20 coal seams with a thickness of 40cm and more, a subdivision in the geological sections was performed, in order to determinate the areas and depth where coal seams may be found.

The performed geoelectric prospection, allowed to determinate that the clastic unconsolidated deposits covering the cretaceous units, have less 20m thick. The present report clearly represents a perforation program of 2000m, divided into five (5) drill holes, which have been carefully preselected based on the geological features of the area, the regional geology factors, and the interpretation of the two seismic lines.

2. GEOLOGY

The lithostratigraphic units presented in this area are sedimentaries of the cretaceous age, quaternary and volcanoclastic from the Jurassic age. The sedimentaries cretaceous have a genetic relation with the formations that have been established at the Middle Magdalena Valley area but not at the Cesar basin, Rancheria and Maracaibo

In this regard, the cretaceous sedimentary sequence in this area corresponds to the formations, El Tablazo, , La Luna, Umir and Lisama, and the Umir formation has have been considered the one that holds the coal seams; In the figure No 2, the regional sequence is shown, which is considered in the San Luis area, in the municipality of Santander, but it is at the same time considered as valid for the whole Middle Magdalena Valley. To these units the Norean volcanoclastic unit of Jurassic age should be added, that outcrops at the western area; besides, there are quaternaries clastics that cover the mayor part of the area, creating large alluvial plains and terraces that fossilize the rocks corresponding to the Jurassic and cretaceous units.

2.1. Volcanoclastics Units

These units correspond to the named Norean Volcanoclastic that outcrops in the north-west area, and are made up by rhyolitic and riodacitic lavas with medium and thick stratification, and for pyroclastic rocks such as tuffs, dacites, breccias and agglomerates. This unit and the Singarare fault caused a limit to W, the continuity of the Umir formation and its coal; the fault that made contact between the volcanoclastics and Umir formation, has not been observed due to it is covered by the quaternary deposits.

2.2. Cretaceous sedimentary Units

The formations, Tablazo, Simití, La Luna and Umir will be mentioned in this segment, due to the importance that they clearly represent to the exploration activities.

2.2.1. The Tablazo formation outcrops (k1t) at the south east part of this area, covered by clastic deposits, which gives the corresponding morphology of the area; The Tablazo formation does not present an outstanding morphology, but lower elongated ridges, depending on the layers directions.

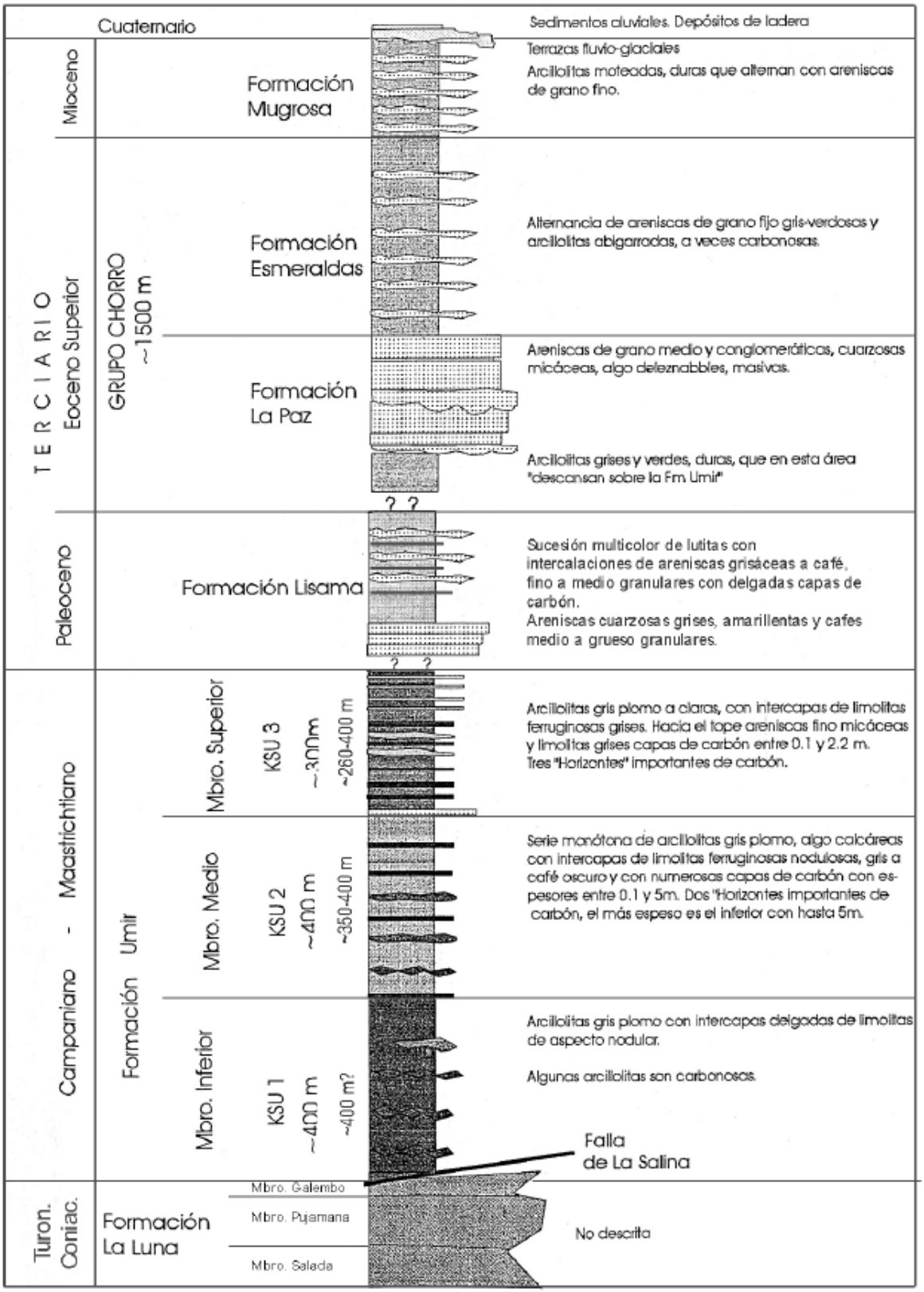


Figure No. 2. Generalized Column of the San Luis Area. (Santander).

Only the higher section has been exposed, formed by micritics solid black limestones in thick layers and calcareous siltstone laminated in medium and thin layers. It is very common to find loose blocks that looked like an outcrop. The age corresponding to the Tablazo formation is Aptian-Albian.

2.2.2. The Simití formation (K1s) outcrops at the southeast part over the Tablazo formation. Morphologically, it looks a bit softer than the El Tablazo formation, but because such formation is partially covered by clastics deposits, it is actually these ones that give them the morphology. There are not much outcrops, very few has been observed of the lower part as well as on the top, that clearly indicate the Simiti formation are formed by grey and black mudstones, in medium and thin plane layers, that interlays in thin layers and laminated medium silstones with a soft yellow color. (Figure No. 3).

Figure No.3. Grey mudstones laminated by its superior part of the Simiti formation.

There is no evidence of the top and base relationship, apparently looks concordant or conformable, estimated thickness by structural section is 300m. The age of the Simiti formation is Albian-Cenomanian.

2.2.3. La Luna formation (k2l)

Clearly shows an outcrop at the eastern part of the area. Due to the hardness of the limestones that are part of, it is more evident that the previous units; furthermore, are partially cover by the clastics deposits.

Formed by the dark calcareous grey mudstones, clayey limestones, micritic bio-micritic, dark grey and with nodules and calcareous concretions. In the medium segment there are packages of lydites, chert and interbedded siliceous siltstones, with calcareous siltstones.

At the upper layer, there are interbedded micritic limestones, calcareous siltstones, levels of calcareous concretions, and ending with several layers of calcarenitas that because of the weathering they looks so porous by washing carbonate. The stratification in general is thin and the nodules present major diameters greater than 1m, they present a flat structure, driven according the stratification. (figure No.4).

The thickness measured in the structural section is approximately 150m. The age of this unit is Santonian and/or Turonian.

Figure No. 4 - At the left side the calcareous siltstones from the base of the La Luna. At the right side- calcareous levels presenting concretions.

2.2.4. Umir formation (K2u).

In previous works, at the Pelaya area, the Umir formation no outcrops have been reported. Due to the afore mentioned, an stratigraphic column measured at the San Luis area, will be taken as reference for the Umir formation exploration. (Figure No. 5), where the Umir formation subdivides, in three segments with the characteristics as follows:

- Lower segment section (k2ui). Constituted by 270m approximately, is a sequence of black laminated mudstone with siltstone interlays. Also presents, medium layers closer to the base of fine grained sandstones as well as conglomerate.

- Middle segment (K2Um): Approximately, 390m of black carbonaceous mudstones with 20 coal seams with major thickness of 40cm. One of them considered as outstanding due to it can reach 5m.

- Upper segment (K2US): It is formed by thick layers of sandstones of fine grained quartz, with siltstone intercalations and black carbonaceous mudstones, in this segment are reported around six coal seams with a thickness higher than 40cm. The segment thickness is 420m approximately.

In the field work performed at the Pelaya, four outcrops have been observed, small but weathered, corresponding to the lower part of low segment of the Umir formation. The lowest outcrop is formed by grey laminated mudstones, in fine and medium layers, under clastics quaternary deposits. (Figure No 6).

Stratigraphically, far above of the aforementioned, three outcrops formed by fine grained sandstones, quartzose in medium and thin layers, with grey laminated mudstone intercalations, in the upper part of these two outcrops have been found and over the sandstones a thick layer of conglomerate sand-supported was observed. The age of the Umir formation is considered as Campanian-maastrichtian.

2.3. Quaternary Units

The quaternary deposits are related with the elevation of the eastern mountain range, and are defined by deposits in an alluvial fan, alluvial terraces, and colluvials; that due to its morphological and lithological characteristics can easily be distinguished in two. The acquired results, in the geoelectric prospection, with 20 survey conducted, shows that the thickness of the quaternary units vary between 1.34m and 19.3 m.

2.3.1. Alluvial fan deposits. (Qa).

They outcrop in the north and south part of such area, and correspond to fluvial alluvial and colluviums deposits from the eastern mountain range, as a result of its elevation. Also, are formed by clasts with a diameter of 40cm of porphyritic volcanic rocks of andesitic, granodiorities, quartzite and sandstones composition. (figure No.7). Morphologically, correspond to the units of alluvial fans as well as colluvium. They are also covering the

Cretaceous and Jurassic units and at the same time are eroded and covered by recent deposits.

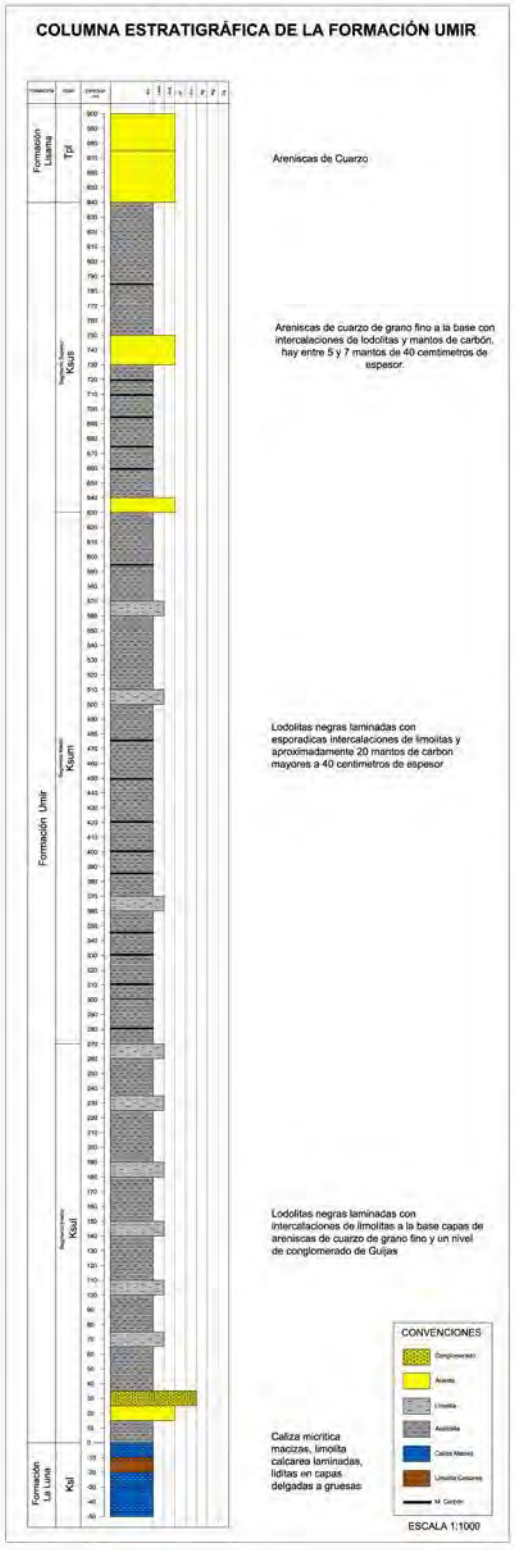


FIGURE No 5. Umir fomation colum, at the Santander, section.

Figure No. 6 -. Outcrop of laminated grey and yellow mudstones corresponding to the lower part of the Umir formation.

Figure No. 7 - To the left. Morphology of small hills-To the right. Semi-consolidated gravels corresponding to the quaternary deposit Qa.

2.3.2. Alluvial terrace deposits-(Qta)

Concentrated in the central and south part of the area, been related to large

alluvial plains formed by unconsolidated sands and gravels. The gravels are made of volcanic, sandstones and intrusive rocks. (Figure No. 8).

Figure No. 8 -. To the left and at the background morphology of alluvial plains- To the right- sands and unconsolidated gravels corresponding to the quaternary deposit Qal.

2.3.3. Recent alluvial deposits (Qal)

These deposits have a relation with the current rivers flow and are located at the edge of its channels. Formed by thick layers of sand with plane and inclined laminations. They also present gravels levels with clasts up to 10cm mainly formed by volcanic and sandstones rock fragments.

3. STRUCTURAL GEOLOGY

The disposition of the outcrop cretaceous units corresponds to dipping layers between 15º and 28º to the northwest side. The dips and strikes of the layers are stable and they seem not to be affected by the surface faults. Therefore, it shall be said that the layers from the Umir formation, present a small dip under the alluvial plain (Qta).

To the Northeast side, the Singarare fault is cover by the quaternaries, is normal, dipping the west, and at the same time made contact with the volcanoclastic units of the Jurassic, with the upper part of the Umir formation (?).

The interpretation of the seismic lines taken perpendicular to the formations and structures, La Luna, continue at the subsurface to the west with a dip less than 20^{o} and consequently, having in mind this tendency, it has been considered the Umir formation is in a normal position over the la Luna formation and covered by thin alluvial deposits.

In the structural sections that are clearly showed along with the geological map, two structures, one synclinal and the other one anticline, are observed in the seismic lines AY-1990-04 y AY-1990-06, under the quaternary deposits.

In the attachment No 1 a geological map as well as the structural sections, scale 1:10.000, has been shown, from the field information and complemented with the seismic lines information.

4. ECONOMIC GEOLOGY

The economic purpose of this Project is basically based on the coal content within the Umir formation; nevertheless, the mining history in this part of the country does not exist whatsoever, due to the lack of coal unit outcrop. The geological analysis in this region allows to determinate that the Umir formation is located under a thin layer (less than 20m) of alluvial deposits.

Having in mind the interpretation performed regarding electrical database survey at the Reses-1 well or drill hole, about 60km from the south side of the area, it has been considered that within the Umir formation there are around 30 coal layers between 0.4 y 5m thickness.

According to the geological statements, based on the local and regional geology, the interpretation related to the seismic lines, it is a fact that the main part corresponding to the sequence of the Umir formation is located under the quaternary deposits. In the structural section, A-A´(attachment No 1), located at the north side of the area, at the sub-surface the lower segments (K2Ui) and the middle (K2Um), all complete, and a section of the upper segment (K2Us); and in the section B-B (attachment No 1), , the lower segment (K2Ui) and the lower part of the intermediate segment of the Umir formation (K2Um), are located at the sub-surface.

According to the previous statement, we will have the medium segment with its coal seams in approximately 900ha, within the field area.

5. GEOPHYSICS

In order to achieve an accurate geologic interpretation of the sub-surface several seismic lines corresponding to the Ayacucho program developed in 1.990, which allows making an interpretation continuity of the cretaceous sedimentary sequence at the sub-surface. Besides, a survey for a vertical electric drilling was performed, in order to determinate the thickness of the unconsolidated clastic deposit that cover the rocks corresponding to the Umir formation.

5.1. Seismic

In order to give a geology interpretation for the sub-surface, seismic lines were acquired, from a project which was held in 1990 named "Ayacucho". The quality of such information is not good enough, consequently it is almost impossible to determinate the continuity of the reflectors and others several multiples which seriously detract the real information.

The seismic lines AY-1990-04 and AY-1990-06 were selected, to perform the interpretation, since, such lines cross the work area in the NW-SE direction, and have geological mooring on surface and the reflectors definition is considered as acceptable.

Only in two lines, the reflector was fine defined and corresponds to the layer formation (La Luna (K2l), which was verified with its projection on surface, and calcareous and siliceous rocks that are part of this geologic unit.

This reflector was taken as reference to make an interpretation of the presence corresponding to the Umir formation, (K2u),with its 3 lithological segments, having in mind the known regional vein thickness and furthermore, the determination of a new reflector that match with the base of the superior segment of the Umir formation (K2us), formed by sandstone quartz packages.

In the figures No 9^{th} and 10^{th} , the interpretation carried out and that it was useful along with the surface database projection in order to perform the structural sections A-A´ y B-B. With the mentioned two sections a third one was performed C-C in northwest direction, transversally that will allow a proper mooring.

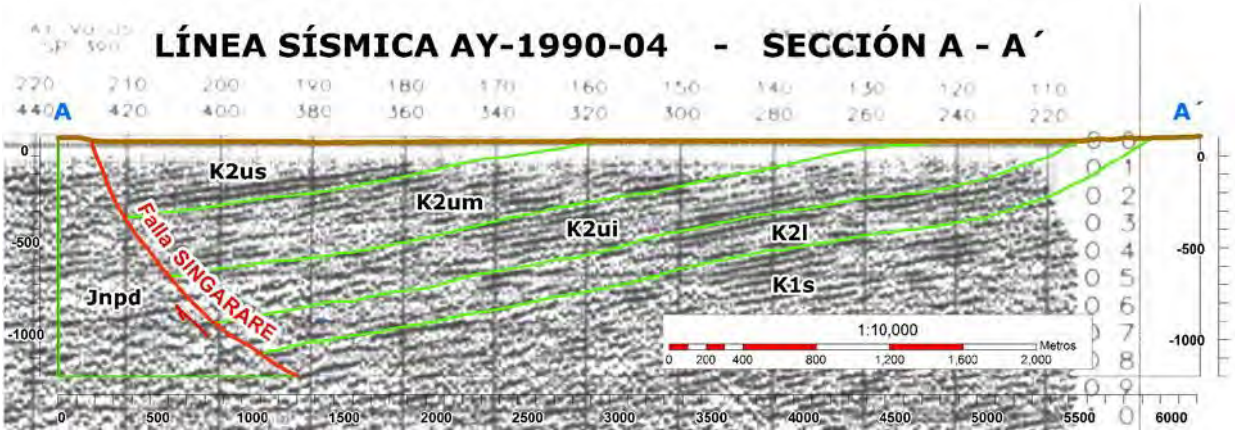


Figure No. 9 - Seismic line AY-1990-04, with geological interpretation.

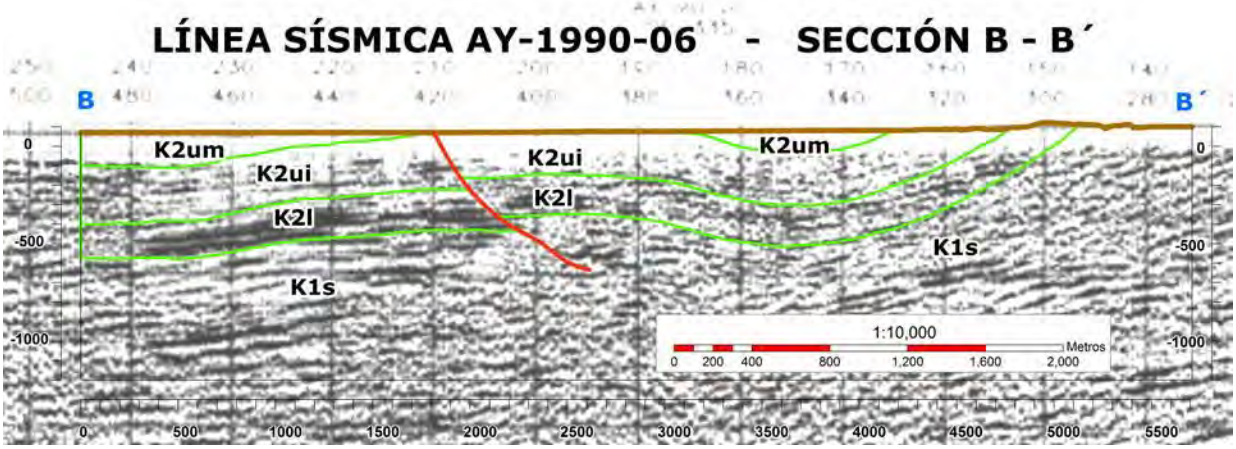


Figure No. 10 - Seismic Line AY-1990-06, with geological interpretation.

5.2. Geoelectric Prospection

The geophysics exploration related to vertical electric Sev's drilling, it is performed in order to evaluate the geometrical conditions as well as deep conditions corresponding to the geological units to give an estimation of their continuity.

The phase of geophysics prospection started with the network vertical electric drilling that was adjusted according to the field physical conditions, once it was on site.

5.2.1. Theoretical foundation

The methodology corresponding to the electric resistance, and/ or property that holds the different types of materials, artificial, or natural to go against

of the electric flow, in presence of an electric field, in any direction X, Y and/or Z. Throughout, the contrast from the obtained values, is possible to make a distinction between the existing material and thickness calculation The methodology is based on the physical principle, where the electric potential distribution at the sub-surface from a point (electrode) of an electrical flow induction, depends on the electric resistance as well as the lithological characteristics of the sub-surface and rocks surrounding such electrode.

The measurement is performed, from the surface, of the electric resistance, ostensible of the diverse geologic sub-surface layers, under the drilling point, (central point of the device), named “drilling” because of its similarity to the information that might be obtained throughout a perforation or mechanical drilling.

The evaluation corresponding to the resistance is performed inducing a continuous electric flow (I) to the field, throughout two electrodes (A y B) from different lengths, of centre division (O), due to the flow depth (of investigation) raises once the electrodes separation is higher, and measuring the potential difference (□V) generated by the get the flow through the sub-surface between the electrodes M y N. (Figure No. 11).

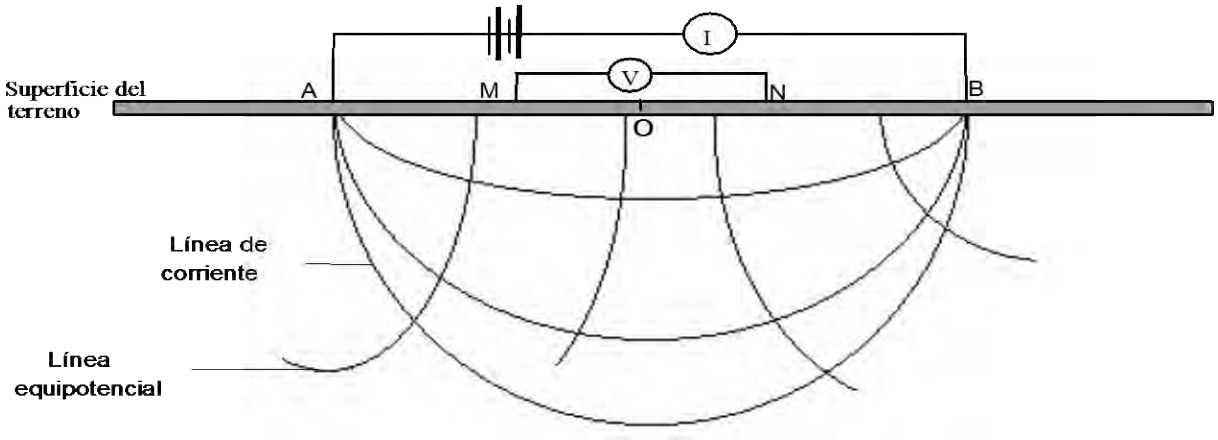


Figure No. 11 - Scheme of the electric configuration Schlumberger type.

The different specific resistivity’s that had been calculated corresponds to many other geologic layers, which level of depth can be determined. As long as the geologic information is available, will be possible to determinate its lithology. The obtained data field (apparent resistance vs distance AB/2) are hand drawn over log-log paper, showing “curves” graphics to be interpreted. This procedure can also be performed by computer software.

Even though, there is evidence of typical resistance values data for some kind of rocks, sediments and fluids that frequently are within the earth´s crust; these values may present fluctuations locally, mainly depending og the water quality of the aquiferous. Chart no 1, Resistance typical values for some rocks, sediments and fluids that frequently are found within the earth crust.

Chart No 1. Real resistivity corresponding to different sediments and rocks.

Rocks and/or sediments	**Resistivity (Ohm / m)**
Clay	2 – 15
Dry clay	>1000
Saturated Sand with fresh water	20-150
Saturated sand with brackish water	5 - 15
Saturated sand with brine spring water	< 5
Saturated grave with fresh water	50-300
Sandstone with fresh water	30 - 50
Porous limestone with brackish water	< 500
Compact limestone	> 500
Igneous and/ or metamorphic rock Saturated, fracture with fresh water	200 - 1000
Igneous and/ or metamorphic rock compact	> 1000

As all the physical sciences, the geoelectric, has a series of laws that in an specific moment, might be defeating in the final result of the interpretation, if such laws are not considered. These laws in general states as follows:

5.2.1. Equivalence Law

A Layer with light thickness as well as high resistance, may be equivalent to one layer of moderate thickness. These effects decreased, having lithology data, that allowed to obtain the real thickness of such layers.

5.2.2. Layer repression Law

There are two types of repressions, the most important states as follows: If the initial resistivity is very high and with a considerable thickness, many thin layers can remain repressed, while the resistivity decreases. Likewise, it states that to certain deep levels, when the increases spacing, thin layer can be repressed ad/or averaged. In order to minimize such effects electric registrations are to be used.

5.2.3. Declivity basement effects law

When declivated layers are covered by horizontal layers such as alluvial deposits; if the direction of the electric drilling does not match with the stratum direction, some mistakes can be presented in the geophysics obtained parameters.

5.2.4. Execution law

The Sev´s were performed following the electric configurations type Schlumberger, with a media division of flow electrodes (AB/2) 150mt, with a preferential direction NE-SW, in order to obtain clear and coincident information with the different geolectric layers that form the sub-surface. An equipment of resistivity, branch AZ with 500 watts of power. Transmission unit of 1000 watts, receiver digital unit . The equipment has roughly dressed ashlars for power measure with a wire of 200m. 20vertical electric drilling were executed- SEV´s and identified accordingly, from SV-1 to SEV.20; in the chart number 2, there is a relation and location of them, as well as in the figure No 12 where the locations is shown. In the pictures 1 to 4, acquisition details (figure No 13).

CHART NO. 2. - VERTICAL ELECTRIC DRILLING LOCATION

SEV	X (este)	Y (norte)	RUMBO
	Coordeadas orígen Bogotá		
1	1044840	1450764	N15E
2	1050306	1450521	N35E
3	1049290	1450208	N25E
4	1047650	1452810	N25E
5	1047113	1449581	N15E
6	1047846	1448423	N25E
7	1048942	1447983	N25E
8	1048440	1444792	N40W
9	1046322	1444101	N30E
10	1047144	1446810	N25E
11	1046855	1443956	N30E
12	1046648	1447135	N20E
13	1046776	1451191	N35E
14	1050248	1455638	N35E
15	1049488	1449784	N30E
16	1048708	1451646	N25E
17	1048576	1451344	N30E
18	1049277	1449350	N18E
19	1048596	1447351	N20E
20	1046414	1446591	N25E

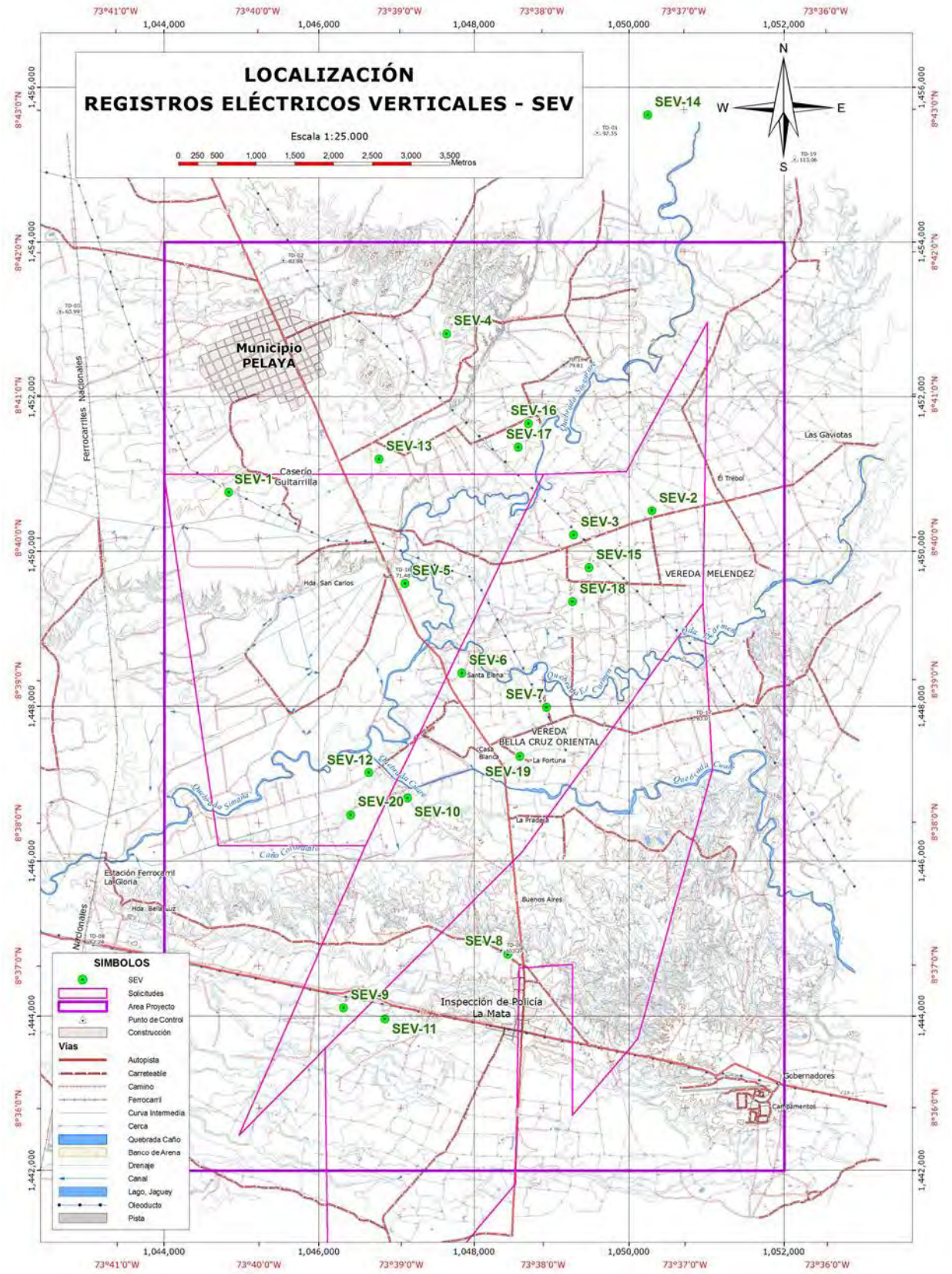


Figure No. 12 - SEV-Vertical electric drilling location.

	
Photograph No. 1 Registration staff.	Photograph No. 2 - Schlumberger On acquisition site de SEV-2
	
Photograph No. 3 - Acquisition site SEV-16.	Photograph No. 4 - Brown and red silt on acquisition site SEV-16.

Figure No. 13 - Vertical acquisition of electric SEV.

5.2.5. Interpretation and data process

The interpretation of the geolectric layers model has been executed, in order to perform correlations with the geologic information available.

The resistivity values registered for each electrode division, are represented through a curve in function of the distances between the induction electrodes AB/2. The perceptible resistivity are placed in the abscissa and ordinates. The medium distances between the flow electrodes (AB/"), drawn in bi-logarithmic paper. The curve shall be interpreted through

algorithms, to determinate the vertical distribution of the real resistivity and layers related to the center measure.

|n general, the geoelectric drilling is interpreted in two stages. In the first one the geolectric stratification and the real resistivity of each layer, starting from the physical- mathematical laws, based on the prospection methodology. In the second stage, the lithological meaning as well as its resistivity has been researched. The first interpretation stage is performed with the aid of a computer analytic algorithm (IPI Win Vr 3.0.1 a 7.0.1, Moscow State University, 2003), that made the adjustment corresponding from a field curves to geoelectric model field, generating different layers presented at the sub-surface, defining for each one of them the thickness, depth and real resistivity. The second stage is performed correlating the geologic information of the field.

5.2.6. Geoelectric model and Lithologic correlation

For each one of the executed drilling, the data field, the graphics with the theoretical curve, belonging to the interpretation model as well as the final results of the obtained model (indicating thickness), depth and real resistivity of the different geolectric layers); Also, the respective lithological correlation that is suitable for the geological conditions of the area are presented. (please refer to attachment II)

Nevertheless, differences can be easily identified within the quaternary deposits at least from two resistivity areas, one more shallow, interpreted as the non saturated vadose area, even though this one is not very clear in many drillings, with resistivity between 5.9 and 1533 ohm/M and thickness of 3 and 18mt, with an average of 10mt and resistivity levels between 46.5 and 1754 ohm7M, which presents contrasts in the underlying resistivities corresponding to the Umir formation, with low resistivities.

Within the Umir formation, two levels can be differentiated with different resistivity, one higher level that was interpreted as shales, with interlays of sandy levels, that will reach thickness between 14 and 73mt, with resistivity between 8 and 106 ohm/m, but in general from 30 to 40 ohm/m and a low level , interpreted with clayey levels, with resistivity under 10 Ohm/m.

According to the afore mentioned, in the chart no. 3, the two areas of resistivity, with its respective differentiations making the corresponding differentiation of the present units by the lithology and the saturation level, that were reflected in the electric resistivity of the rocks and present sediments.

Chart No 3 - Correlation between different geolectric areas.

Resistivity Area	Geologic Unit	Resistivity range - Ohm/m	Thickness (mt)	Geological Description
1	Quaternary Deposit - Qca	5.9 - 1533	0.8 – 6.7	Silts, sands and dry gravels
		46.5 - 1754	3 - 18	Sands, gravels and saturated silts.
2	–Umir Formation - Ksu	7.8 - 106	14.6 – 73.3	Shales and sands with a low saturation level
		0.39 - 16.5	Indeterminate	Shales with a low saturation level.

5.2.8. Isopach corresponding to the quaternary deposits

Based on the layer models information related to the whole performed drillings, the thickness fluctuation of the quaternary deposits were between 1.34 and 19.3mts, with an average of 11.73mts. (chart No 4).

Chart No 1. Estimated values corresponding to the quaternary thickness and the slab water level

SEV	X (este)	Y (norte)	Espesor de los Depósitos Cuaternario (m)	Nivel de la tabla de agua
	Coordeadas orígen Bogotá			
1	1044840	1450764	5,73	5,73
2	1050306	1450521	16,1	0,95
3	1049290	1450208	19,3	1,34
4	1047650	1452810	15	6,7
5	1047113	1449581	15,5	1,41
6	1047846	1448423	15	6,72
7	1048942	1447983	5,91	1,93
8	1048440	1444792	12	2,54
9	1046322	1444101	1,34	1,34
10	1047144	1446810	13,3	6,73
11	1046855	1443956	10,8	0,82
12	1046648	1447135	12, 3	3,94
13	1046776	1451191	15,9	6,2
14	1050248	1455638	7,91	1,89
15	1049488	1449784	15	3
16	1048708	1451646	6,24	6,24
17	1048576	1451344	9,37	1,71
18	1049277	1449350	18,6	1,86
19	1048596	1447351	7,05	4,07
20	1046414	1446591	12,9	3,5

In order to show the thickness variation of these sediments, an isopach map related to the colluviums-alluvial deposit, has been performed as shown in the figure No 14, observing an irregular relief stick (palorelieve), with tendency to decrease from south to southeast

It has been estimated that the level of the water slab would be between 0.82 and 6.7mt depth with an average of 3.4mt under the top soil.

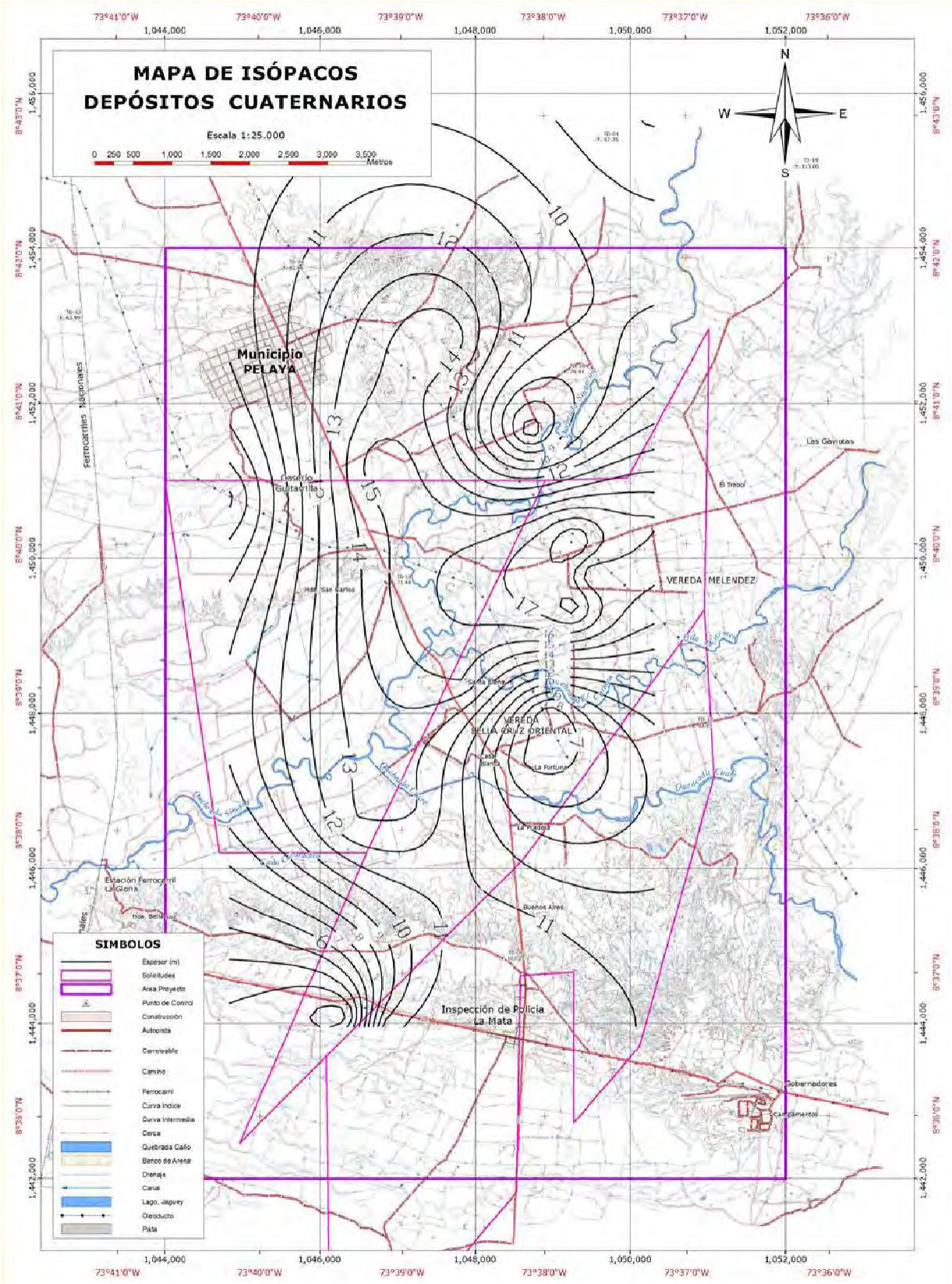


Figure No.14. Isopach map corresponding to the quaternary deposits.

6. DRILLING PROGRAM

After the analysis of the compiled data obtained on field, the intended proposal is to perform five (5) exploratory drillings within the application KCA-09491, at the north area, with a total of 2000m, which will allow to execute the cut at the intermedium segment of the Umir formation; having in mind that is the one that contains the major amount of coal material (Figure No. 15).

For the drilling plan design, the sub-surface structure was determinate, the lithological segments corresponding to the Umir formation projected as well as the La Luna formation, under the unconsolidated alluvial deposits. This interpretation was mainly based on the collected information at the outcrops of the El Tablazo, Simití, La Luna, and Umir formations accordingly, along with information provided related to the seismic lines AY-1990-04 and AY-1990-06.

The Geoelectric drilling allowed to determinate that the thickness of the unconsolidated quaternary deposits are under 20m, and specifically close to the perforation sites selected for the drilling present fluctuation levels between 13m and 19.3m; this thickness levels are to be considered as relatively “thin” and a lack of any inconvenient in drilling activity is expected, since, the observed outcrops in the river cuts are mainly formed by loose sands with some gravels up to 5cm.

6.1. Selected site

Initially, an area corresponding to 900ha, was determinate, in which is to be expected to be present the middle segment of the Umir formation. Within this area the drilling has been scheduled, in those locations where the lithological segment will be cut off in part and/or completely; and consequently, the coal (Please refer to figure No 16).

The five (5) selected sites, were strategically located, in order to keep them together throughout two(2) geological sections, one all the way through the seismic line AY-1990-04, in direction NW-SE

The perforations are identified as follows: Pelaya-1, Pelaya-2, Pelaya-3, Pelaya 4 y Pelaya-5, with depth levels between 300 and 500m (please refer to chart no 5).

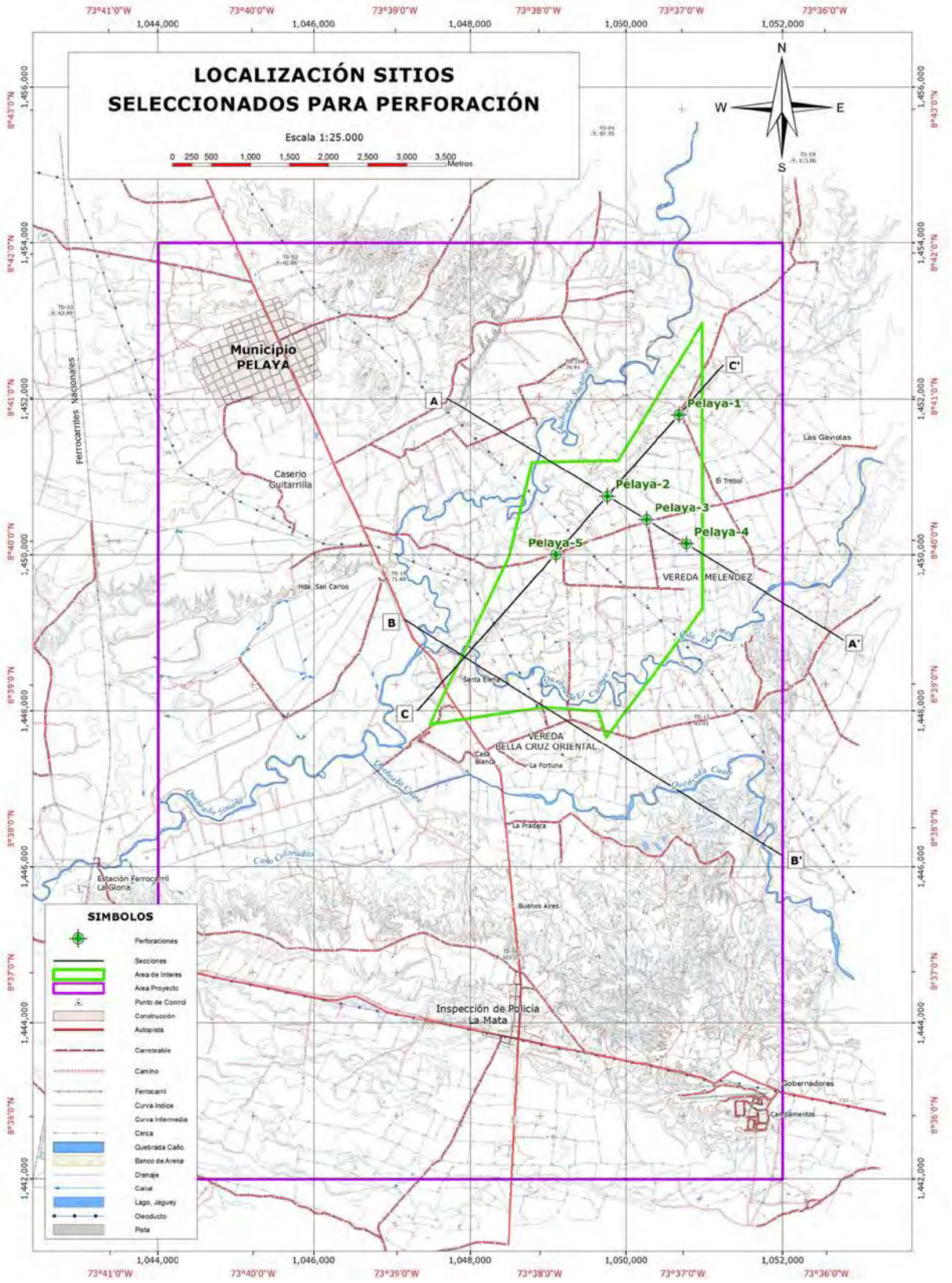


Figure No. 15 - Location of the selected sites for drilling activity.

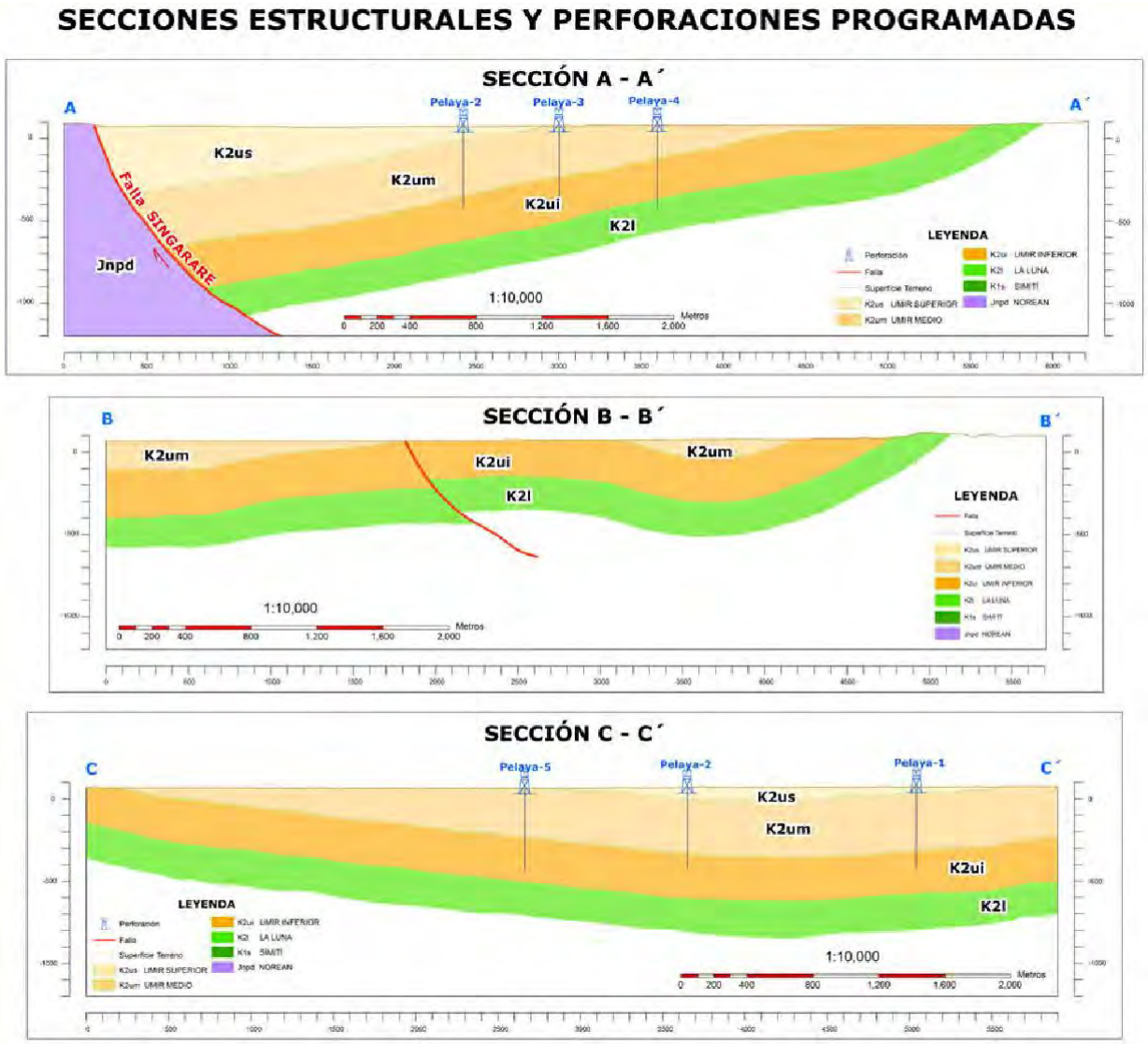


Figure No. 16. Structural sections with locations and depth levels corresponding to the scheduled drilling activity. - Sections A-A´, B-B´ and C-C´.

Chart No 5. Scheduled drilling activity and depth levels.

DRILLING	EAST	NORTH	DEPTH (m)
Pelaya-1	1050675	1451790	450
Pelaya-2	1049760	1450750	500
Pelaya-3	1050260	1450450	400
Pelaya-4	1050770	1450140	300
Pelaya-5	1049100	1450000	350

7. CONCLUSIONS

- In the geological field prospecting, a survey was performed for the units Norean, Tablazo, , La Luna, Umir as well as the quaternary deposits.

Mudstone outcrops, and sandstones at the stratigraphic location corresponding to the Umir formation, have been found, which clearly evidence the presence of the mentioned unit but covered by quaternaries.

- The geoelectrical prospection study was a key tool to determinate a clear contrast between the resistivity's and the quaternary deposits from moderate to high, and the underlying Umir formation presenting low resistivity levels
- The information obtained from the geophysic prospection, allows identifying the quaternary deposits in the assessment area, with fluctuations between 1.3m and 19m, with an average of 11.7m.
- Within the quaternary deposits, it is possible to differentiate from two(2) resistivity areas at least one a quite bit more shallow, considered as a vadoze non-saturated area, with levels of resistivity between 5.9 and 1533 ohm/m and thickness levels between 0.8m and 6.7m approximately, as well as a deepest area related with a thin saturated aquiferous level with fresh water, with a thickness average of 10mt and resistivity levels between 46 and 1754 ohm/m.
- It has been estimated that the water table level would be between 0.82m and 6.7 m depth with an average of 3.4m under the surface.
- The seismic lines interpretation along with the geology has confirmed that the Umir formation is located under the quaternary in a shallow depth and all its sequence has a low structural deformation.
- Along with the surface geology, the seismic interpretation, the geoelectric prospection and the generated structural sections, five (5) drilling activity have been scheduled between 300m and 500m, for a total of 2000m.
- There are serious expectations to perform a cutting in the middle segment of the Umir formation as well as in the coal seams, throughout the five (5) perforations.
- The recommendations regarding to Security, Health and environment must be followed accurately (SSMA).

ATTACHMENT

GEOELECTRIC MODEL HYDROGEOLOGIC CORRELATION AND SEV DATAFIELD

Excel Files

GEOELECTRICAL STUDY IN ORDER TO ESTIMATE THE COLUVIM ALLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 AND KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRICAL DRILLING SEV-1

PELAYA

DATAFIELD

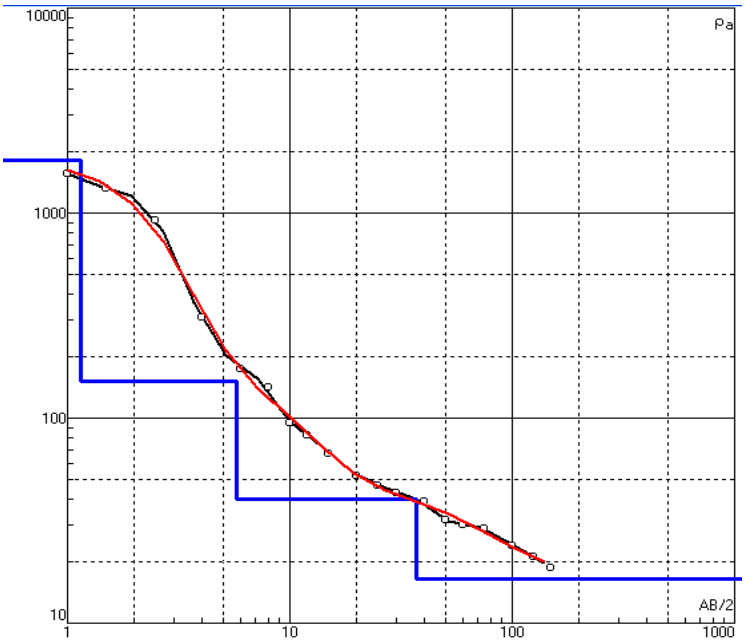
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N15E
EQUIPMENT : AZ Instruments
OPERADOR: C. Suárez.
PATTERN : Schlumberger
DATE July 24th, 2011
COORDINATES (Orígin Bogotá) 1,450,764 m. N. 1,044,840 m. E.

DISPOSITION		DATA READING 1		DATA READING 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	3310	5.0	3400	5.1	1559.8	1570.8	1565.3
0.5	1.5	744	3.5	743	3.6	1335.6	1296.8	1316.2
0.5	2.5	194.2	3.9	189.1	3.9	938.6	914.0	926.3
0.5	4	30.1	4.9	31.1	4.9	303.9	314.0	309.0
0.5	6	5.6	3.9	6.5	3.9	161.3	187.2	174.2
0.5	8	1.3	1.7	1.1	1.7	153.2	129.6	141.4
0.5	10	2	7.0	2.1	6.5	89.5	101.2	95.4
0.5	12	1.2	6.5	1.2	6.5	83.4	83.4	83.4
0.5	15	0.3	4.0	0.5	4.0	53.0	88.3	70.6
5	15	24	22.8	23	22.5	66.1	64.2	65.2
5	20	3.5	7.7	3.4	7.7	53.6	52.0	52.8
5	25	2.0	7.6	1.8	7.5	49.6	45.2	47.4
5	30	1	7.8	1.5	7.8	35.2	52.9	44.1
10	30	2.8	7.8	2.5	7.8	45.1	40.3	42.7
10	40	0.9	5.1	0.8	5.1	41.6	37.0	39.3
10	50	0.8	8.6	0.7	8.7	35.1	30.3	32.7
10	60	0.5	7.4	0.3	7.2	37.1	22.9	30.0
10	75	0.2	6.1	0.2	6.1	28.5	28.5	28.5
25	75	0.6	6.2	0.6	6.2	30.4	30.4	30.4
25	100	0.2	4.7	0.2	4.8	25.1	24.5	24.8
25	125	0.2	8.8	0.2	8.8	21.4	21.4	21.4
25	150	0.2	11.0	0.1	10.2	25.0	13.5	19.2
50	150	0.2	8.5	0.3	8.2	14.8	23.0	18.9

GEOELECTRICAL STUDY IN ORDER TO ESTIMATE THE COLUVIM ALLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491AND KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOLECTRIC DRILLING SEV-1

PELAYA



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GEOLELECTRIC MODEL AND HYDROGEOLOGIC CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth	Hydrogeologic correlation
1	1801	1.16	1.16	Dry silts - Qca
2	152	4.58	5.73	Dry sandstones with low saturation levels - Qca
3	40.5	31.2	36.9	Shales and sandstones with low saturation levels. - Ksu
4	16.5	Indeterminated	Indeterminated	Shales and sandstones with poor saturation levels. - Ksu

GEOLELECTRIC STUDY IN ORDER TO ESTIMATE THE COLLUVIUM ALLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, LA PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENTOFCESAR

GEOLECTRIC DRILLING SEV-2

PELAYA

DATAFIELD

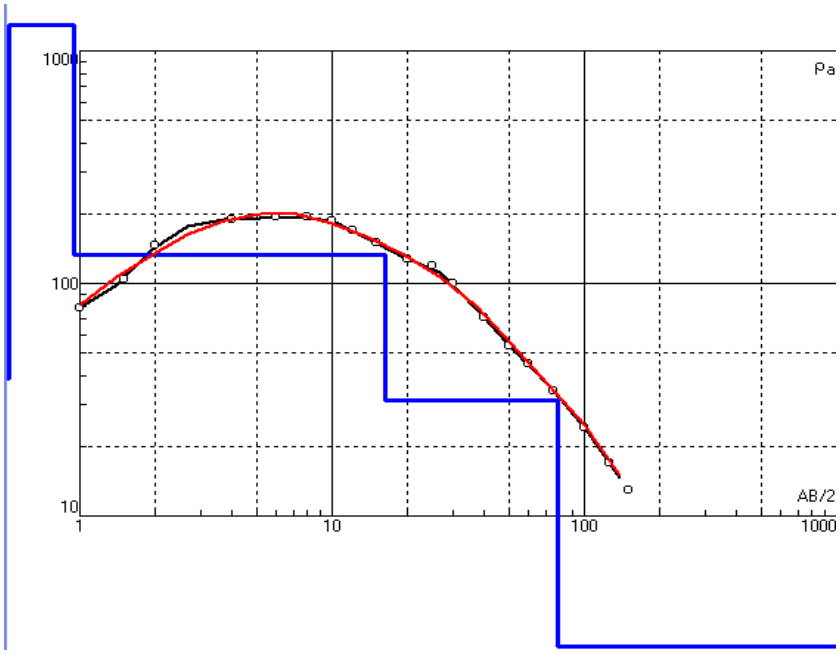
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N35E
EQUIPMENT : AZ Instruments
OPERATOR C. Suárez.
CONFIGURATIÓN : Schlumberger
DATE: July 22th, 2011
COORDINATES (Orígin Bogotá) 1,450,521 m. N. 1,050,306 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	1153	34.9	1180	34.7	77.8	80.1	79.0
0.5	1.5	553	34.1	576	33.8	101.9	107.1	104.5
0.5	2.5	285	37.6	296	37.2	142.9	150.0	146.4
0.5	4	117	31.8	118	30.1	182.0	194.0	188.0
0.5	6	47	27.1	46.4	27.0	194.8	193.0	193.9
0.5	8	23	22.0	20	22.2	209.4	180.4	194.9
0.5	10	12	20.0	12	20.5	188.0	183.4	185.7
0.5	12	7	19.0	6.8	17.9	166.4	171.6	169.0
0.5	15	3.5	15.0	3	15.0	164.8	141.2	153.0
5	15	61	27.3	62.7	26.2	140.4	150.4	145.4
5	20	42.2	38.5	36.6	34.4	129.1	125.3	127.2
5	25	15.9	26.3	17.2	26.0	114.0	124.7	119.3
5	30	11.5	32.8	11.5	30.1	96.4	105.0	100.7
10	30	24.6	31.1	24.4	30.6	99.4	100.2	99.8
10	40	7.5	28.8	9.4	27.4	61.4	80.8	71.1
10	50	7.2	47.0	6.4	46.5	57.8	51.9	54.8
10	60	3.4	34.5	2.2	33.1	54.2	36.5	45.4
10	75	1.4	31.9	1.2	29.7	38.1	35.1	36.6
25	75	3.3	33.3	3.5	31.5	31.1	34.9	33.0
25	100	1	25.5	1	23.3	23.1	25.3	24.2
25	125	0.4	19.1	0.3	19.0	19.7	14.9	17.3
25	150	0.2	20.1	0.2	19.9	13.7	13.8	13.7

GEOLELECTRIC STUDY IN ORDER TO ESTIMATE THE COLLUVIUM ALLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, LA PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOLECTRIC DRILLING SEV-2

PELAYA



Error= 4,14%

GEOLECTRIC MODEL AND HYDROGEOLOGIC CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeologic correlation
1	38.9	0.438	0.438	Dry silts and sandstones - Qca
2	1290	0.512	0.95	Dry sands and gravels - Qca
3	133	15.2	16.1	Saturated sand and gravels - Qca
4	31.4	62.5	78.7	Shales and sandstones with a poor saturation level- Ksu
5	0.399	Indeterminated	Indeterminated	Non saturated shales- Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSITTHICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-3

PELAYA

DATAFIELD

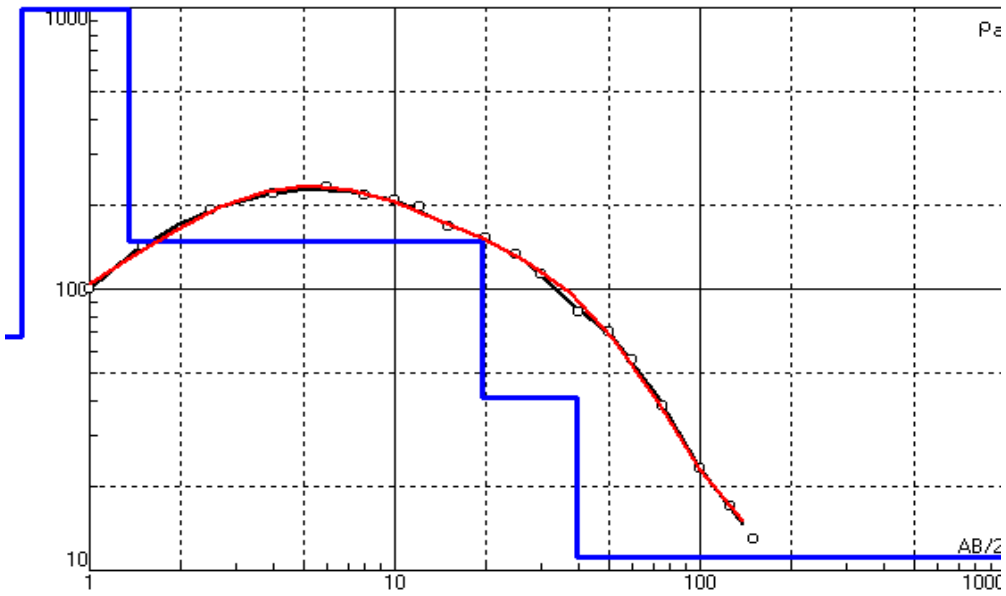
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N25E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: July 23rd, 2011
COORDINATES(Orígin Bogotá) 1,450,208 m. N. 1,049,290 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	4430	103.6	4450	105.5	100.8	99.4	100.1
0.5	1.5	2380	102.8	2270	102.2	145.5	139.6	142.5
0.5	2.5	1060	105.0	1067	103.0	190.3	195.3	192.8
0.5	4	480	109.2	497	111.4	217.5	220.8	219.1
0.5	6	297	144.1	297	147.2	231.5	226.6	229.0
0.5	8	170	158.2	173	159.3	215.2	217.5	216.4
0.5	10	75	113.4	77	115.8	207.3	208.4	207.8
0.5	12	49	112.6	50	114.4	196.5	197.4	197.0
0.5	15	31.0	118.5	29	119.8	184.7	170.9	177.8
5	15	292	118.2	303	117.3	155.2	162.3	158.8
5	20	213.0	162.5	210	167.2	154.4	148.0	151.2
5	25	143.7	202.0	147.1	208.0	134.1	133.3	133.7
5	30	75.2	180.2	85.4	185.0	114.7	126.9	120.8
10	30	155	177.8	148.5	177.3	109.5	105.3	107.4
10	40	66.8	189.6	67.4	190.7	83.0	83.3	83.1
10	50	25	134.1	25.9	136.9	70.3	71.3	70.8
10	60	13	125.1	12.7	123.2	57.1	56.7	56.9
10	75	7.4	153.1	6.8	154.4	41.9	38.2	40.1
25	75	18.1	153.6	18.0	152.3	37.0	37.1	37.1
25	100	6.4	156.5	5.9	156.0	24.1	22.3	23.2
25	125	3.4	213.0	4.7	213.0	15.0	20.8	17.9
25	150	1.5	168.0	1.8	175.0	12.3	14.1	13.2

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-3

PELAYA



Error= 3,13%

GEOELECTRIC MODEL AND HYDROGEOLOGIC CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeologic correlation
1	67.2	0.6	0.6	Dry silts and sandstones - Qca
2	986	0.74	1.34	Dry Sands and gravels - Qca
3	147	18.00	19.3	Sands and saturated gravels - Qca
4	41.1	20.1	39.5	Shales and sandstones with low saturated levlels- Ksu
5	11.1	Indeterminado	Indeterminado	Shales with poor saturation levels - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING. SEV4

PELAYA

DATA FIELD

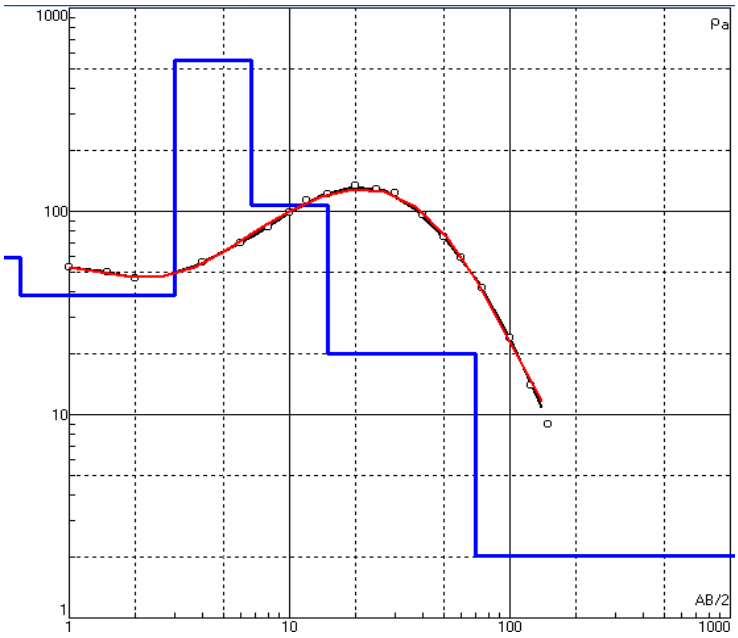
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N25E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: July 24th, 2011
COORDINATES (Origin Bogotá) 1,452,810 m. N. 1,047,650 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	1286	56.5	1304	56.9	53.6	54.0	53.8
0.5	1.5	501	65.3	540	65.5	48.2	51.8	50.0
0.5	2.5	118.6	46.9	117.4	46.9	47.7	47.2	47.4
0.5	4	58.1	50.2	56.7	50.3	57.3	55.8	56.5
0.5	6	30	48.8	31	48.9	69.0	71.2	70.1
0.5	8	21.1	50.7	21.7	51.2	83.3	84.9	84.1
0.5	10	18.7	59.4	19.2	59.5	98.7	101.1	99.9
0.5	12	8.8	35.7	9.3	36.4	111.3	115.4	113.4
0.5	15	9.0	51.6	9	52.2	123.2	121.7	122.4
5	15	101.2	52.7	104.7	52.9	120.7	124.4	122.5
5	20	50.7	44.6	50.3	44.9	133.9	132.0	133.0
5	25	32.0	49.0	35	49.2	123.1	134.1	128.6
5	30	18.4	43.7	19.5	43.7	115.7	122.7	119.2
10	30	40.4	43.7	47.3	43.7	116.2	136.0	126.1
10	40	13.2	31.4	12.5	31.5	99.1	93.5	96.3
10	50	9.4	42.0	7.5	42.1	84.4	67.2	75.8
10	60	5.5	46.7	4.6	46.7	64.7	54.2	59.5
10	75	1.2	26.0	1	26.5	40.1	32.7	36.4
25	75	4.3	26.1	3.9	26.4	51.8	46.4	49.1
25	100	1	30.0	1.5	30.1	19.6	29.4	24.5
25	125	0.9	48.3	0.6	47.7	17.6	11.9	14.7
25	150	0.2	46.0	0.4	45.8	6.0	12.0	9.0
50	150	0.8	46.1	0.6	46.2	10.9	8.2	9.5

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING. SEV4

PELAYA



Error= 2,79%

GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeologic correlation
1	59.3	0.6	0.6	Dry silts and sandstones - Qca
2	38.5	2.41	3.01	Dry silts - Qca
3	555	3.71	6.7	Dry sands and conglomerate- Qca
4	107	8.29	15	Arenas saturadas - Qca
5	19.9	54.9	69.9	Silts and sandstones with a poor saturation level- Ksu
6	2.0	Indeterminado	Indeterminado	Non saturated Silts - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING. SEV. 5

PELAYA

DATAFIELD

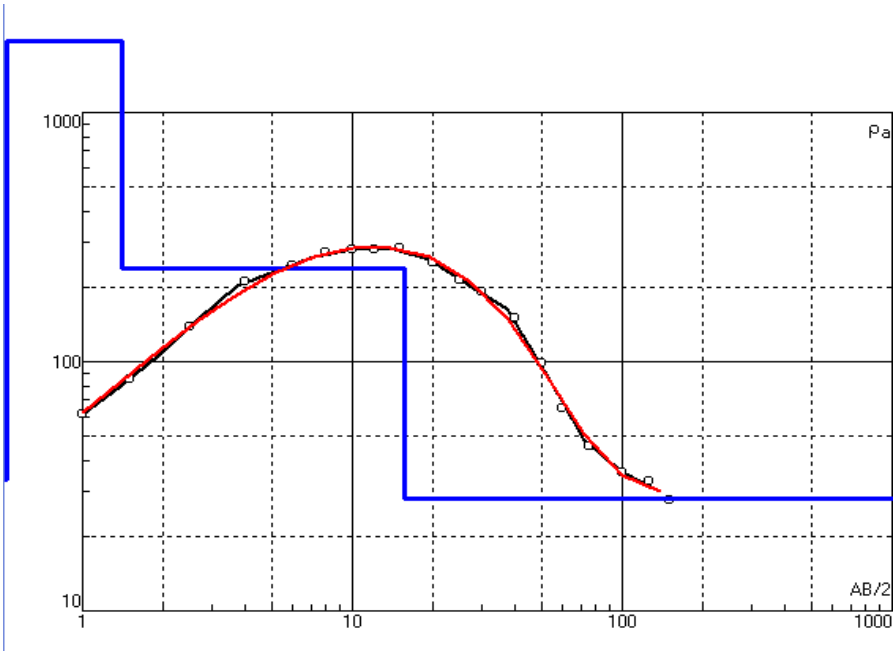
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N15E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: July 23rd, 2011
COORDINATES(Orígin Bogotá) 1,419,581 m. N. 1,047,113 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	1180	43.5	1100	42.7	63.9	60.7	62.3
0.5	1.5	421	31.5	419	30.6	84.0	86.0	85.0
0.5	2.5	201	27.7	203	27.4	136.8	139.7	138.2
0.5	4	110	26.1	108	25.2	208.5	212.1	210.3
0.5	6	65	31.3	70	31.1	233.2	252.8	243.0
0.5	8	40	30.0	43	30.1	267.0	286.1	276.6
0.5	10	23	26.4	24.7	26.4	273.0	293.2	283.1
0.5	12	22	35.5	22	35.1	279.9	283.1	281.5
0.5	15	13.4	32.1	13	31.9	294.7	287.7	291.2
5	15	141.2	32.3	146.5	32.5	274.7	283.2	278.9
5	20	73.1	33.5	72.8	34.9	257.1	245.7	251.4
5	25	80.3	70.1	79.3	70.8	215.9	211.1	213.5
5	30	40.5	60.0	39.6	58.4	185.6	186.4	186.0
10	30	88	60.2	98.6	58.6	183.7	211.4	197.6
10	40	21	41.1	30.6	40.4	120.4	178.5	149.4
10	50	8.2	35.6	9.4	31.5	86.8	112.5	99.7
10	60	3	29.2	3.9	29.0	56.5	73.9	65.2
10	75	2.5	45.7	2.3	45.3	47.5	44.1	45.8
25	75	7.4	45.6	6.3	45.3	51.0	43.7	47.3
25	100	2.8	37.0	1.8	37.0	44.6	28.7	36.6
25	125	1.1	37.8	1.6	37.6	27.4	40.1	33.8
25	150	1.3	60.1	1.2	59.7	29.7	27.6	28.7
50	150	2.5	60.2	2.9	60.0	26.1	30.4	28.2

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING. SEV. 5

PELAYA



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GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	33.4	0.523	0.523	Dry silts - Qca
2	1947	0.884	1.41	dry Sands and conglomerates - Qca
3	237	14.1	15.5	Saturated sands and gravels - Qca
4	28.2	Indeterminated	Indeterminated	Silts and sandstoneswith a poor saturation level - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING. SEV-6

PELAYA

DATAFIELD

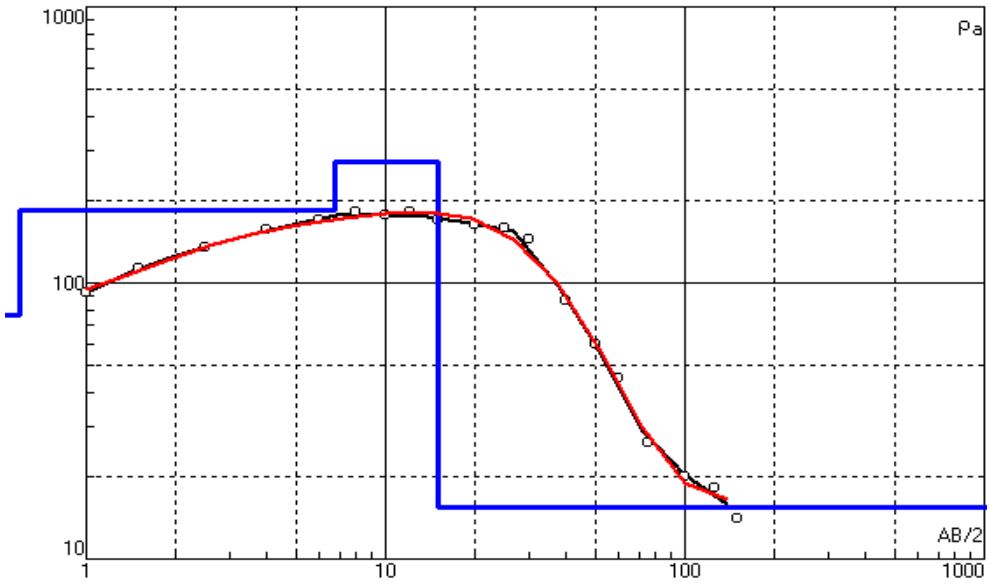
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N25E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE July 24th, 2011
COORDINATES(Origin Bogotá) 1,448,423 m. N. 1,047,846 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	4720	120.2	4700	119.2	92.5	92.9	92.7
0.5	1.5	1120	62.4	1120	62.0	112.8	113.5	113.1
0.5	2.5	310	43.3	312	43.4	135.0	135.5	135.2
0.5	4	54.2	17.5	57	17.8	153.2	158.4	155.8
0.5	6	5.2	3.5	5.5	3.6	166.9	171.6	169.2
0.5	8	11.8	13.9	13.1	13.8	170.0	190.1	180.1
0.5	10	16.2	30.2	17.6	30.0	168.1	183.8	176.0
0.5	12	3.2	8.0	3.3	8.2	180.6	181.7	181.2
0.5	15	4.4	18.4	4.3	18.5	168.8	164.1	166.5
5	15	51	18.4	52	18.7	174.2	174.7	174.4
5	20	13.6	8.6	12	10.0	186.3	141.4	163.8
5	25	5.5	6.6	5.4	6.4	157.1	159.0	158.1
5	30	8	15.6	8.8	15.7	141.0	154.1	147.5
10	30	19.6	15.6	15.6	15.9	157.9	123.3	140.6
10	40	19.5	51.6	18.3	51.6	89.0	83.6	86.3
10	50	5.5	32.5	4.9	32.3	63.8	57.2	60.5
10	60	3.5	36.0	2.5	36.2	53.5	38.0	45.7
10	75	1.5	48.7	1.5	48.5	26.7	26.8	26.8
25	75	4	48.8	4.6	48.6	25.8	29.7	27.7
25	100	1.4	40.8	1.4	40.2	20.2	20.5	20.4
25	125	0.6	31.0	0.6	32.0	18.2	17.7	18.0
25	150	0.4	33.1	0.3	33.4	16.6	12.3	14.5
50	150	0.8	34.1	0.8	33.9	14.7	14.8	14.8

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING. SEV-6

PELAYA



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GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	76.3	0.6	0.6	Dry silts - Qca
2	183	6.12	6.72	Dry Sands - Qca
3	275	8.29	15.0	Sands and saturated gravels - Qca
4	15.4	Indeterminated	Indeterminated	Shales and fine sandstones with a poor saturation level - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-7

PELAYA

DATAFIELD

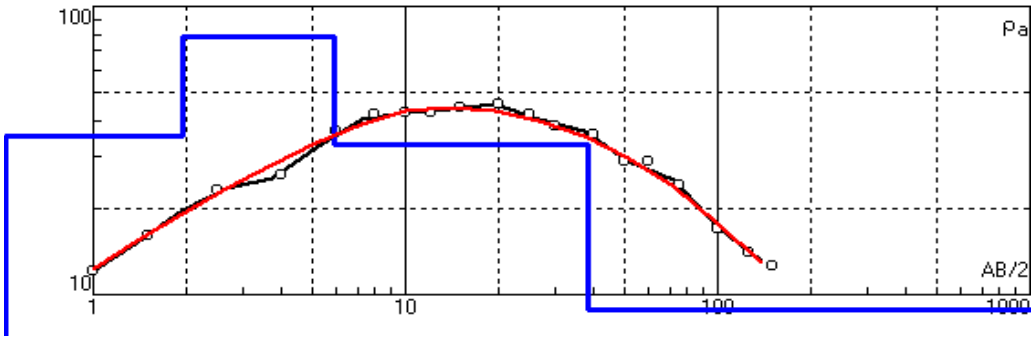
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N25E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
CONFIGURATION : Schlumberger
DATE: July 26th, 2011
COORDINATES (Origin Bogotá) 1,447,983 m. N. 1,048,942 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	420	90.0	558	90.7	11.0	14.5	12.7
0.5	1.5	168.9	67.7	189.2	67.3	15.7	17.7	16.7
0.5	2.5	50.1	38.8	79	66.6	24.3	22.4	23.3
0.5	4	18.6	27.8	11.7	27.9	33.1	20.7	26.9
0.5	6	9.4	24.4	7	24.1	43.3	32.6	37.9
0.5	8	19.9	90.0	18.4	89.4	44.3	41.2	42.8
0.5	10	10.4	76.4	10.9	77.7	42.7	44.0	43.3
0.5	12	6.9	63.2	5.3	64.1	49.3	37.3	43.3
0.5	15	4.5	75.6	4.5	76.3	42.0	41.6	41.8
5	15	58	76.3	60.2	75.9	47.8	49.8	48.8
5	20	31.6	71.6	27.2	76.8	52.0	41.7	46.9
5	25	14.7	61.4	13.2	61.6	45.1	40.4	42.8
5	30	10	69.5	9.1	70.4	39.6	35.5	37.5
10	30	21.4	69.5	23.7	70.1	38.7	42.5	40.6
10	40	7.3	52.1	9	52.2	33.0	40.6	36.8
10	50	4.1	61.4	5.4	61.4	25.2	33.2	29.2
10	60	2.8	52.7	2.8	52.7	29.2	29.2	29.2
10	75	1.4	58.0	1.7	58.4	20.9	25.3	23.1
25	75	4.4	55.0	4.7	56.0	25.1	26.4	25.7
25	100	1.5	53.7	1.7	53.9	16.5	18.6	17.5
25	125	0.8	54.8	0.9	54.5	13.8	15.6	14.7
25	150	0.3	26.3	0.2	26.6	15.7	10.3	13.0
50	150	0.6	27.8	0.5	28.1	13.6	11.2	12.4

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-7

PELAYA



Prof (m)

Error= 4,3%

GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	6.22	0.379	0.379	Dry silts - Qca
2	35.6	1.56	1.93	Sands and dry silts s - Qca
3	78.5	3.98	5.91	Saturated sands - Qca
4	33.2	32.5	38.4	Shales and sandstones with a poor saturation level - Ksu
5	8.9	Indeterminated	Indeterminated	Non saturated shales - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-8

PELAYA

DATAFIELD

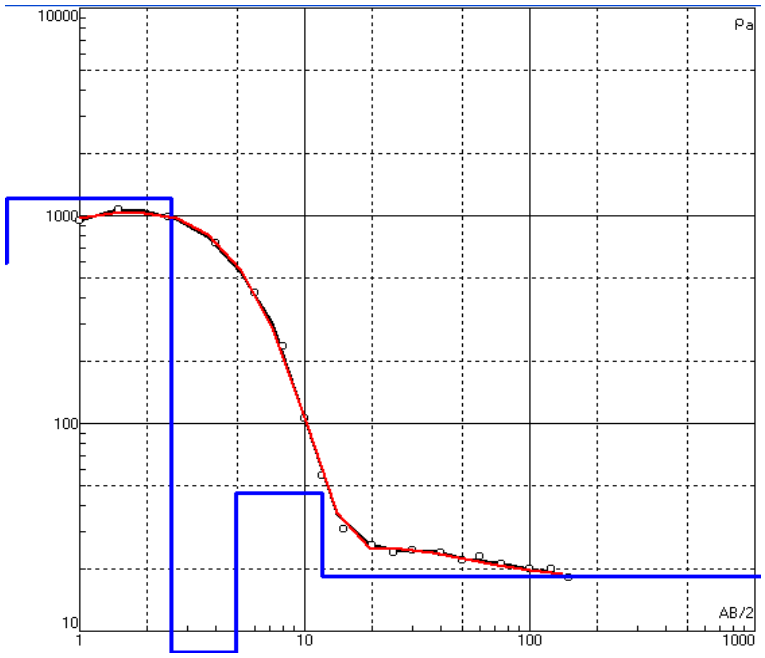
MUNICIPALITY: La Mata, Department of Cesar DIRECTION : N40W
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: July 25th, 2011
COORDINATES (Origin Bogotá) 1,444,792 m. N. 1,048,440 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	1572	3.8	1516	3.9	974.7	915.9	945.3
0.5	1.5	521	3.1	524	3.0	1056.0	1097.5	1076.7
0.5	2.5	86.8	1.7	96.4	1.8	962.4	1009.5	986.0
0.5	4	80.5	5.4	80.6	5.4	737.6	738.5	738.1
0.5	6	18.1	4.9	18.8	4.8	414.9	439.9	427.4
0.5	8	4.8	4.9	6.6	4.8	196.2	275.4	235.8
0.5	10	1.4	4.7	1.8	4.7	93.3	120.0	106.7
0.5	12	0.8	7.2	1	7.1	50.2	63.6	56.9
0.5	15	0.3	7.0	0.3	6.9	30.3	30.7	30.5
5	15	3.5	7.0	3.6	6.9	31.4	32.8	32.1
5	20	2.6	11.2	2.6	11.8	27.3	26.0	26.7
5	25	1.2	9.0	1.1	9.0	25.1	23.0	24.1
5	30	0.9	9.2	0.8	9.3	26.9	23.6	25.3
10	30	1.9	9.0	1.6	9.1	26.5	22.1	24.3
10	40	1	8.6	0.8	8.6	27.4	21.9	24.7
10	50	0.6	10.9	0.7	10.7	20.8	24.7	22.7
10	60	0.5	13.0	0.6	12.5	21.1	26.4	23.8
10	75	0.6	20.1	0.4	20.0	25.9	17.4	21.6
25	75	1.8	24.5	1.5	24.4	23.1	19.3	21.2
25	100	0.5	14.4	0.5	14.1	20.5	20.9	20.7
25	125	0.3	14.1	0.3	14.2	20.1	19.9	20.0
25	150	0.1	11.0	0.2	11.5	12.5	23.9	18.2
50	150	0.4	15.0	0.4	12.9	16.8	19.5	18.1

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-8

PELAYA



Error= 2,84%

GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	590	0.208	0.208	Silts and dry sands - Qca
2	1206	2.33	2.54	Dry sands - Qca
3	6.87	2.41	5.0	Clay and Silts - Qca
4	46.5	7.01	12.0	Sands and saturated silts - Qca
5	18.3	Indeterminated	Indeterminated	Shales and fine sandstoneswith a low saturation level. - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING **SEV-9**

PELAYA

DATAFIELD

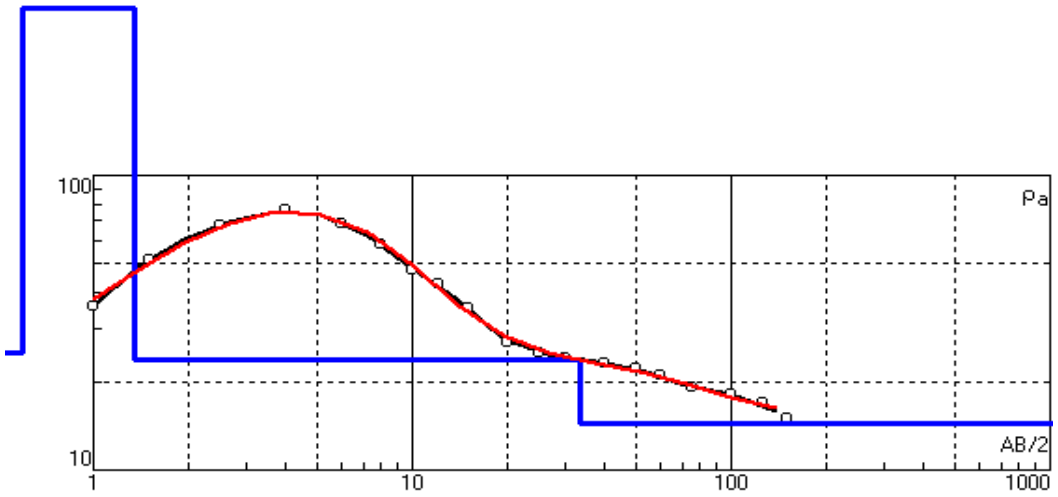
MUNICIPALITY: La Gloria, Department of Cesar DIRECTION: N30E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
CONFIGURATION: Schlumberger
DATE: July, 25th, 2011
COORDINATES (Origin Bogotá) 1,444,101 m. N. 1,046,322 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	618	40.0	629	40.0	36.4	37.1	36.7
0.5	1.5	285	34.5	288	34.8	51.9	52.0	52.0
0.5	2.5	76.2	20.7	75.3	20.9	69.4	67.9	68.7
0.5	4	43.9	27.8	41.6	27.9	78.1	73.8	76.0
0.5	6	13.4	22.7	14.8	22.8	66.3	72.9	69.6
0.5	8	5.6	19.4	5.7	19.3	57.8	59.1	58.5
0.5	10	3.9	23.4	3.3	23.3	52.2	44.4	48.3
0.5	12	2.8	27.2	2.5	27.5	46.5	41.1	43.8
0.5	15	1.0	22.1	1.2	21.9	31.9	38.7	35.3
5	15	12.8	22.0	13	22.1	36.6	37.0	36.8
5	20	4.4	21.3	5.6	21.4	24.3	30.8	27.6
5	25	2.3	17.6	2.5	17.5	24.6	26.9	25.8
5	30	1.8	18.8	1.6	19.0	26.3	23.1	24.7
10	30	3.7	19.1	3.7	19.1	24.3	24.3	24.3
10	40	1	12.7	1.5	12.6	18.6	28.1	23.3
10	50	0.7	11.7	0.7	11.5	22.6	22.9	22.8
10	60	0.5	10.2	0.2	7.3	27.0	15.1	21.0
10	75	0.2	8.5	0.2	9.3	20.4	18.7	19.5
25	75	1	16.0	1.0	17.0	19.6	18.5	19.1
25	100	0.6	18.0	0.5	17.0	19.6	17.3	18.5
25	125	0.3	16.8	0.3	16.5	16.8	17.1	17.0
25	150	0.2	14.0	0.1	12.5	19.6	11.0	15.3

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-9

PELAYA



Error= 2,62%

GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	25	0.6	0.6	Dry Silts - Qca
2	368	0.74	1.34	Silts and dry sands - Qca
3	24	32.20	33.5	Shales and fine sandstones with a low saturation level- Ksu
4	14	Indeterminated	Indeterminated	Non saturated shales - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-10

PELAYA

DATAFIELD

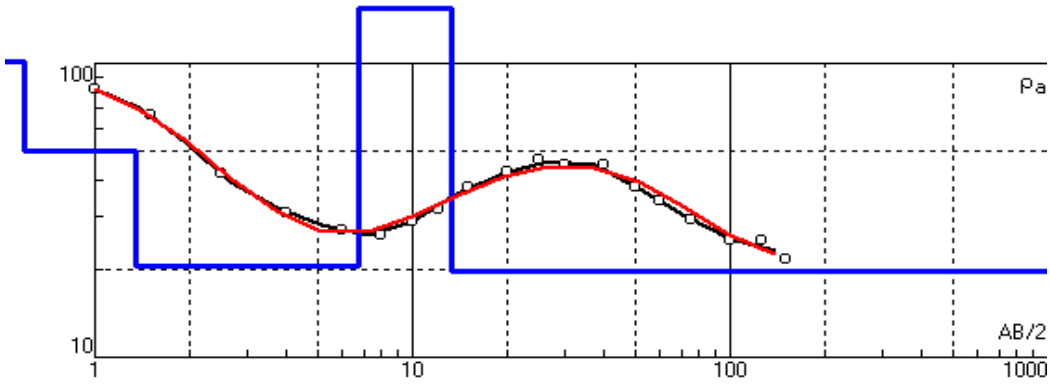
MUNICIPALITY: La Gloria, Department of Cesar DIRECTION : N25E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: July 25th, 2011
COORDINATES (Origin Bogotá) 1,446,810 m. N. 1,047,144 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	1563.6	50.1	1554.6	40.5	73.5	90.4	82.0
0.5	1.5	700.3	60.8	700.8	70.2	72.4	62.7	67.5
0.5	2.5	143	65.5	146.3	64.5	41.2	42.8	42.0
0.5	4	40.3	63.9	40.4	62.1	31.2	32.2	31.7
0.5	6	31	117.5	26	116.1	29.6	25.2	27.4
0.5	8	20.1	161.4	22.3	160.3	24.9	27.9	26.4
0.5	10	6.8	65.2	5.8	68.5	32.7	26.5	29.6
0.5	12	8.1	125.8	9.9	125.2	29.1	35.7	32.4
0.5	15	7.5	129.0	6.5	124.1	41.1	37.0	39.0
5	15	76.9	123.9	70	123.6	39.0	35.6	37.3
5	20	46.8	130.8	49.6	131.7	42.2	44.4	43.3
5	25	32.2	141.6	39.1	143.9	42.9	51.2	47.0
5	30	20.1	139.1	25	138.7	39.7	49.5	44.6
10	30	50.8	140.0	52	139.4	45.6	46.9	46.2
10	40	29	160.5	32	159.2	42.6	47.4	45.0
10	50	18.3	161.9	15	164.2	42.6	34.4	38.5
10	60	9.8	147.2	8.8	147.3	36.6	32.8	34.7
10	75	4	128.5	4.6	129.5	27.0	30.8	28.9
25	75	13.4	128.7	12.4	129.6	32.7	30.1	31.4
25	100	5.4	130.6	5.9	130.7	24.4	26.6	25.5
25	125	3.7	132.5	3.6	135.9	26.3	25.0	25.6
25	150	3.3	189.3	3	190.2	24.0	21.7	22.8
50	150	6.4	187.4	6.3	188.8	21.5	21.0	21.2

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-10

PELAYA



Error= 3,63%

GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	101	0.6	0.6	Silts and dry sands - Qca
2	50.6	0.742	1.34	Dry sands - Qca
3	20.4	5.39	6.73	Dry Silts - Qca
4	154	6.54	13.3	Saturated sands - Qca
5	19.6	Indeterminated	Indeterminated	Shales and sands with a low saturation level - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-11

PELAYA

DATAFIELD

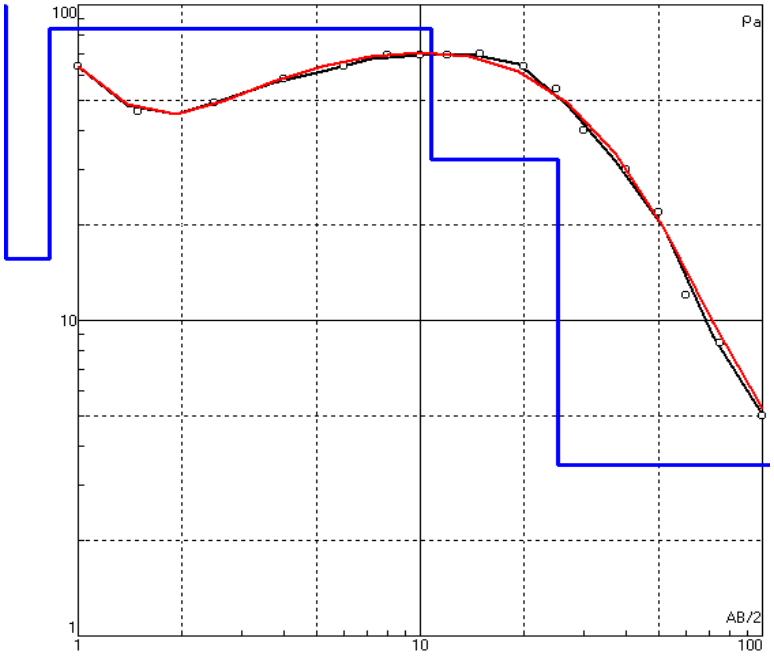
MUNICIPALITY: La Gloria, Department of Cesar DIRECTION : N30E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: JULY 25th 2011
COORDINATES (Origin Bogotá) 1,443,956 m. N. 1,046,855 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	230	8.4	226	8.4	64.5	63.4	64.0
0.5	1.5	66.8	9.1	68.3	9.2	46.1	46.6	46.4
0.5	2.5	23.4	9.4	26	9.5	46.9	51.6	49.3
0.5	4	23.2	20.0	24.2	20.0	57.4	59.9	58.6
0.5	6	6.9	10.9	5.7	11.0	71.1	58.2	64.6
0.5	8	6.8	17.7	5.5	17.9	76.9	61.5	69.2
0.5	10	9.4	40.1	7.6	36.6	73.5	65.1	69.3
0.5	12	2.6	17.3	2.6	16.7	67.9	70.3	69.1
0.5	15	1.4	12.2	1.1	12.6	81.0	61.6	71.3
5	15	13.6	12.5	13	11.6	68.4	70.4	69.4
5	20	8.9	16.4	8.8	16.2	63.9	64.0	64.0
5	25	3.4	10.9	3	11.1	58.8	50.9	54.9
5	30	2.4	16.6	2.6	16.8	39.7	42.5	41.1
10	30	5	16.8	5.5	16.9	37.4	40.9	39.1
10	40	2.4	17.0	2.6	22.2	33.3	27.6	30.4
10	50	1.3	23.0	1.5	23.0	21.3	24.6	22.9
10	60	0.5	20.6	0.4	20.6	13.3	10.7	12.0
10	75	0.2	19.0	0.2	19.4	9.1	8.9	9.0
25	75	0.5	19.5	0.5	19.6	8.1	8.0	8.0
25	100	0.1	17.2	0.2	17.3	3.4	6.8	5.1

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-11

PELAYA



Error= 3,67%

GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	131	0.422	0.422	Silts and dry sands - Qca
2	15.7	0.402	0.82	Dry silts - Qca
3	84	9.94	10.8	Sands and saturated silts - Qca
4	32.4	14.6	25.3	Shales and fine sandstones with a poor saturation level - Ksu
5	3.49	Indeterminated	Indeterminated	Non saturated shales - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-12

PELAYA

DATAFIELD

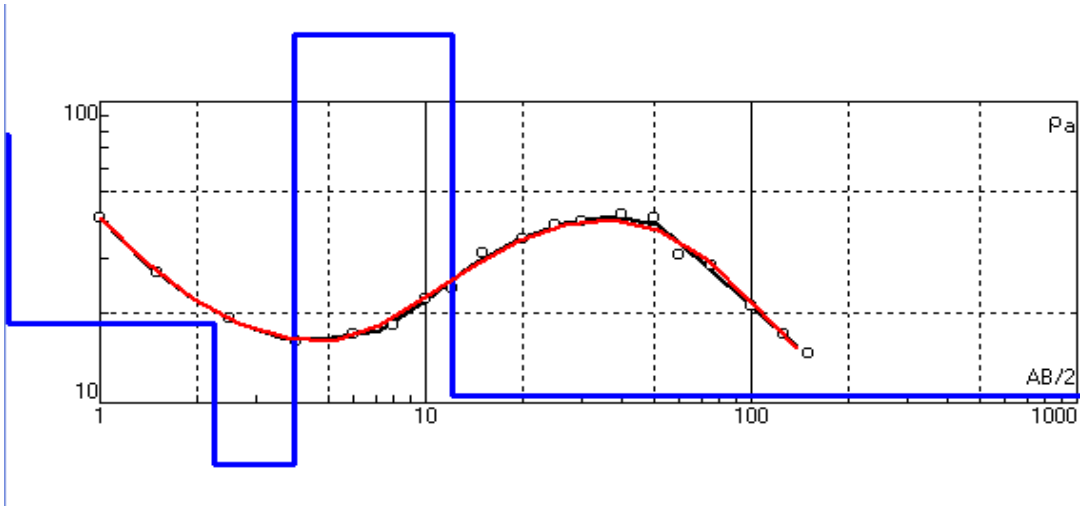
MUNICIPALITY La Gloria, Department of Cesar DIRECTION : N20E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: July 25th, 2011
COORDENADAS (Orígen Bogotá) 1,447,135 m. N. 1,046,648 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	266	14.4	276	16.3	43.5	39.9	41.7
0.5	1.5	148.2	35.0	156.5	35.4	26.6	27.8	27.2
0.5	2.5	31.6	30.5	31.9	30.1	19.5	20.0	19.8
0.5	4	6	17.5	6.1	18.8	17.0	16.1	16.5
0.5	6	14.9	92.8	13.9	92.8	18.0	16.8	17.4
0.5	8	4.5	38.2	3.1	45.5	23.6	13.6	18.6
0.5	10	2.1	32.0	2.5	32.1	20.6	24.4	22.5
0.5	12	7.4	129.7	8	157.8	25.8	22.9	24.3
0.5	15	12.0	240.0	10	246.0	35.3	28.7	32.0
5	15	110.4	240.0	132.2	245.0	28.9	33.9	31.4
5	20	79.4	280.0	89.4	276.0	33.4	38.2	35.8
5	25	46.6	193.1	33.8	190.2	45.5	33.5	39.5
5	30	24.4	180.8	28.8	180.1	37.1	44.0	40.5
10	30	60.3	179.5	55.3	179.5	42.2	38.7	40.5
10	40	34.5	192.3	34.9	192.6	42.3	42.7	42.5
10	50	19.6	166.4	16.5	164.2	44.4	37.9	41.1
10	60	13.2	210.0	11.1	209.0	34.6	29.2	31.9
10	75	6.5	198.2	5.4	164.7	28.5	28.5	28.5
25	75	18.9	166.0	12.5	164.6	35.8	23.9	29.8
25	100	7.8	196.8	6.5	195.3	23.3	19.6	21.5
25	125	0.9	63.3	1.3	59.2	13.4	20.7	17.0
25	150	0.7	55.3	0.4	51.1	17.4	10.8	14.1
50	150	1.4	53.8	1.2	54.1	16.4	13.9	15.1

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-12

PELAYA



Error= 2,37%

GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	77.9	0.418	0.418	Silts and dry sands - Qca
2	18.4	1.83	2.25	Dry silts - Qca
3	6.3	1.69	3.94	Dry clays - Qca
4	166	8.15	12.1	Saturated sands- Qca
5	10.6	Indeterminated	Indeterminated	Shales with a poor saturation level - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

SONDEO GEOELÉCTRICO SEV-13

PELAYA

DATAFIELD

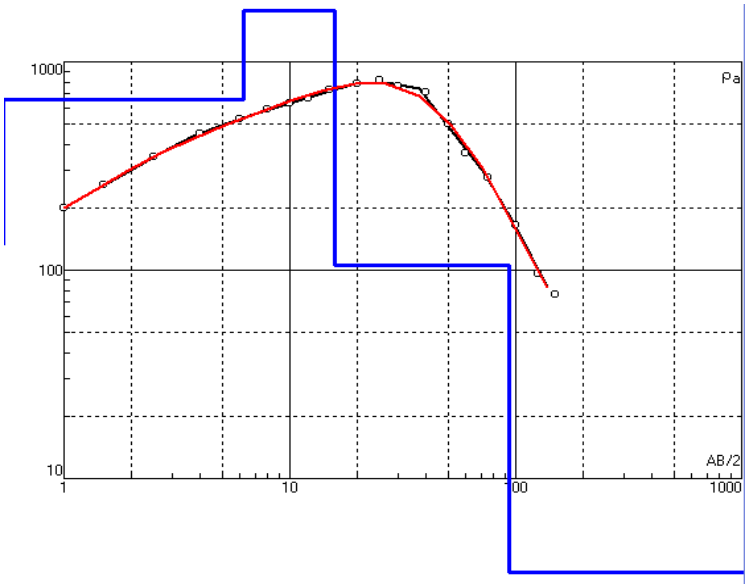
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N35E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: July 23rd, 2011
COORDINATES (Origin Bogotá) 1,451,191 m. N. 1,046,776 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	420	5.5	513	5.5	179.9	219.8	199.8
0.5	1.5	138	3.3	134	3.4	262.8	247.6	255.2
0.5	2.5	91	5.0	96	5.1	343.1	354.8	348.9
0.5	4	28	3.1	29	3.1	446.9	462.9	454.9
0.5	6	20.6	4.2	19	4.2	550.9	508.1	529.5
0.5	8	14.3	4.5	12.3	4.5	636.4	547.4	591.9
0.5	10	7.8	4.2	8.2	3.8	582.0	676.2	629.1
0.5	12	6.5	4.8	7.2	4.5	611.5	722.6	667.1
0.5	15	3.8	3.9	3.7	3.5	688.0	746.4	717.2
5	15	42.3	3.9	45	3.5	681.5	807.8	744.7
5	20	22.0	3.7	24.6	3.3	700.5	878.2	789.4
5	25	14.7	3.3	12.5	3.0	839.7	785.4	812.5
5	30	7	2.9	8	2.5	663.5	879.6	771.6
10	30	17.2	3.0	17.4	2.7	720.5	809.8	765.2
10	40	7.8	2.7	7	2.2	680.7	749.7	715.2
10	50	3	2.5	3.5	2.4	452.4	549.8	501.1
10	60	1.7	2.7	1.8	2.6	346.2	380.6	363.4
10	75	0.7	2.9	1	2.9	209.5	299.3	254.4
25	75	1.9	2.0	1.9	1.9	298.5	314.2	306.3
25	100	0.6	2.5	0.8	2.5	141.4	188.5	164.9
25	125	0.2	3.0	0.4	2.9	62.8	130.0	96.4
25	150	0.2	3.6	0.2	3.6	76.4	76.4	76.4

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-13

PELAYA



Prof (m)

Error= 3,31%

GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1.00	132.0	0.5	0.54	Silts and dry sands - Qca
2.0	655.00	5.69	6.2	Sands and dry gravels- Qca
3.00	1754.0	9.6	15.90	Sands and saturated conglomerates - Qca
4.00	106.0	77.3	93.20	Shales and sandstones with a low saturation level - Ksu
5.00	3.6	Indeterminated	Indeterminated	Non saturated shales - Ksu

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRICAL DRILLING SEV-14

PELAYA

DATAFIELD

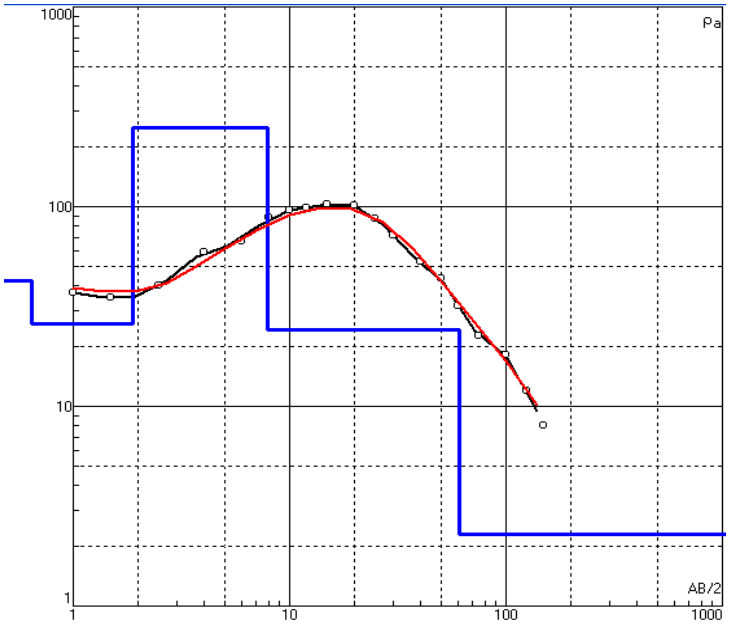
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N35E
EQUIPMENT : AZ Instruments
OPERATOR C. Suárez.
PATTERN : Schlumberger
DATA: Julio 23 de 2011
COORDINATES (Origin Bogotá) 1,455,638 m. N. 1,050,248 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	1119	69.6	1120	70.2	37.9	37.6	37.7
0.5	1.5	408	73.2	415	74.4	35.0	35.0	35.0
0.5	2.5	122.5	58.1	126.9	59.1	39.7	40.5	40.1
0.5	4	70.2	58.6	71.2	59.0	59.3	59.7	59.5
0.5	6	32.3	51.2	30	53.1	70.9	63.5	67.2
0.5	8	23	53.3	25.3	55.8	86.4	90.8	88.6
0.5	10	17	53.1	16.1	54.2	100.3	93.1	96.7
0.5	12	12.3	58.6	13.5	59.2	94.8	103.0	98.9
0.5	15	8.7	52.0	7	52.5	118.1	94.1	106.1
5	15	83.3	52.5	85	52.8	99.7	101.2	100.4
5	20	45.0	52.4	50	57.7	101.2	102.1	101.6
5	25	25.7	59.3	29.4	58.9	81.7	94.1	87.9
5	30	15.8	59.4	17.7	60.2	73.1	80.8	77.0
10	30	31.6	60.0	33.9	61.4	66.2	69.4	67.8
10	40	12	57.2	14.7	59.7	49.4	58.0	53.7
10	50	5.1	42.7	5.5	46.6	45.0	44.5	44.8
10	60	3.3	52.5	3.1	54.5	34.6	31.3	32.9
10	75	1.2	53.2	1.6	54.6	19.6	25.4	22.5
25	75	4.4	57.2	4.0	55.0	24.2	22.8	23.5
25	100	2.4	65.7	1.7	66.1	21.5	15.1	18.3
25	125	0.7	53.8	0.7	55.1	12.3	12.0	12.1
25	150	0.5	78.4	0.5	78.8	8.8	8.7	8.7

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRICAL DRILLING SEV-14

PELAYA



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GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	42.7	0.64	0.64	Silts and dry sands - Qca
2	25.9	1.24	1.89	Dry silts - Qca
3	248.0	6.02	7.91	Sands and saturated conglomerates - Qca
4	24.3	53.00	60.90	Shales and sandstones with low saturation levels- Ksu
5	2.3	Indeterminated	Indeterminated	Shales with a poor saturation level- Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-15

PELAYA

DATAFIELD

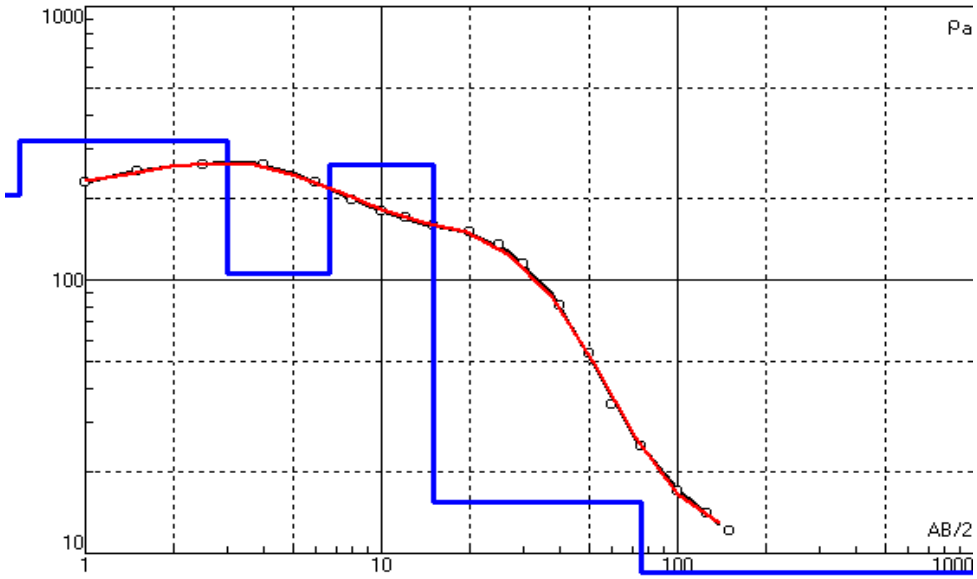
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N30E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: Julio 24 de 2011
COORDINATES (Origin Bogotá) 1,449,784 m. N. 1,049,488 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	2920	30.3	2920	30.2	227.1	227.8	227.4
0.5	1.5	1023	25.7	1026	25.7	250.1	250.8	250.5
0.5	2.5	293	20.9	295	21.0	264.3	264.8	264.5
0.5	4	145.3	27.4	147.1	27.4	262.4	265.6	264.0
0.5	6	51.1	25.5	51.3	25.1	225.1	229.5	227.3
0.5	8	25.1	25.5	24.7	25.3	197.1	195.5	196.3
0.5	10	17.6	30.9	17.6	30.8	178.5	179.1	178.8
0.5	12	10.5	27.4	10.1	27.4	173.1	166.5	169.8
0.5	15	8.1	38.2	8.9	38.3	149.7	164.1	156.9
5	15	95.9	38.3	98.2	38.2	157.3	161.5	159.4
5	20	56.8	45.8	58.9	45.7	146.1	151.8	149.0
5	25	44.8	62.1	43.5	62.0	136.0	132.3	134.1
5	30	19.5	50.3	21.7	50.4	106.6	118.4	112.5
10	30	44.9	50.3	49.7	50.3	112.2	124.2	118.2
10	40	15.1	45.0	15.8	44.9	79.1	82.9	81.0
10	50	5.4	41.2	6.5	41.2	49.4	59.5	54.4
10	60	3.9	55.8	3.3	55.2	38.4	32.9	35.6
10	75	1.4	61.9	2	61.3	19.6	28.3	24.0
25	75	4.9	63.2	5.5	63.0	24.4	27.4	25.9
25	100	1.6	50.7	1.4	50.7	18.6	16.3	17.4
25	125	1	53.8	0.7	53.8	17.5	12.3	14.9
25	150	0.5	37.2	0.2	37.3	18.5	7.4	12.9
50	150	0.7	37.2	0.8	37.3	11.8	13.5	12.6

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-15

PELAYA



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GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	205.4	0.6	0.6	Dry silts - Qca
2	320.7	2.406	3.006	Sands and dry silts - Qca
3	105.2	3.708	6.714	Saturated sands - Qca
4	264.5	8.292	15.01	Sands and saturated gravels -Qca
5	15.33	60.01	75.01	Shales and sandstones with a poor saturation level - Ksu
6	8.451	Indeterminated	Indeterminated	Non saturated shales- Ksu

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-16

PELAYA

DATAFIELD

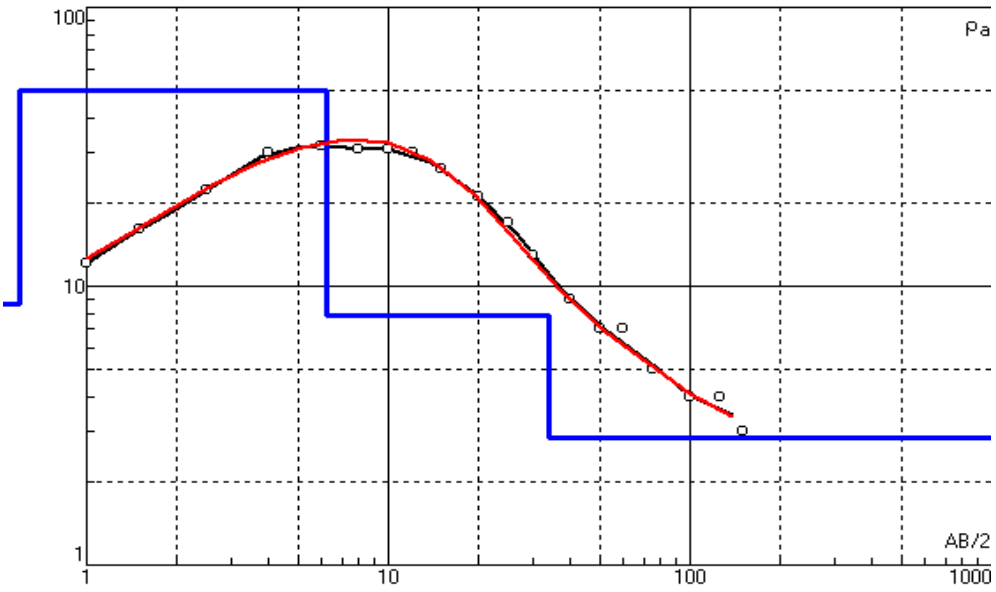
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N25E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: July 23rd, 2011
COORDINATES (Origin Bogotá) 1,451,648 m. N. 1,048,708 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	190	32.4	170	37.0	13.8	10.8	12.3
0.5	1.5	72.4	27.5	70.2	27.6	16.5	16.0	16.3
0.5	2.5	33.8	29.2	34.8	28.9	21.8	22.7	22.3
0.5	4	15	21.2	14.1	27.8	35.0	25.1	30.1
0.5	6	6.6	21.7	5.6	21.0	34.2	29.9	32.1
0.5	8	4.4	26.5	4	26.5	33.3	30.2	31.7
0.5	10	3	30.0	3.1	30.0	31.3	32.4	31.9
0.5	12	2.5	34.7	2.1	34.5	32.5	27.5	30.0
0.5	15	1.7	35.8	1.2	35.4	33.5	23.9	28.7
5	15	15.3	36.2	14	34.8	26.6	25.3	25.9
5	20	4.2	21.0	4.6	26.9	23.6	20.1	21.9
5	25	2.5	29.6	3	28.8	15.9	19.6	17.8
5	30	1.8	37.2	1.6	37.0	13.3	11.9	12.6
10	30	4.6	37.1	4	36.6	15.6	13.7	14.7
10	40	1.4	32.1	1	30.9	10.3	7.6	9.0
10	50	0.6	26.0	0.5	26.3	8.7	7.2	7.9
10	60	0.3	27.6	0.4	27.7	6.0	7.9	7.0
10	75	0.2	29.0	0.2	30.0	6.0	5.8	5.9
25	75	1.2	69.0	1.3	70.0	5.5	5.8	5.6
25	100	0.5	69.0	0.6	71.0	4.3	5.0	4.6
25	125	0.3	57.0	0.2	60.0	5.0	3.1	4.1
25	150	0.1	40.0	0.1	41.0	3.4	3.4	3.4

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-16

PELAYA



Error= 3,37%

GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	8.66	0.6	0.6	Dry silts - Qca
2	50.3	5.64	6.24	Sands and dry silts- Qca
3	7.81	27.8	34.1	Shales - Ksu
4	2.87	Indeterminado	Indeterminado	Shales - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-17

PELAYA

DATAFIELD

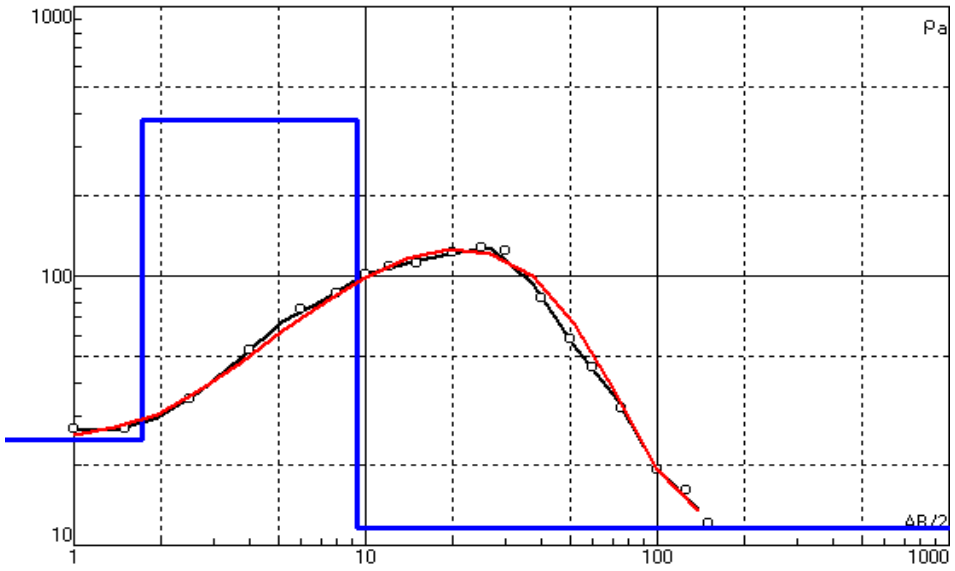
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N25E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: July 24th, 2011
COORDINATES (Origin Bogotá) 1,449,350 m. N. 1,049,277 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	1282	108.7	1271	108.3	27.8	27.7	27.7
0.5	1.5	346	80.2	343	79.8	27.1	27.0	27.1
0.5	2.5	147.1	76.5	148.8	79.8	36.2	35.1	35.7
0.5	4	60.9	55.8	58.8	55.9	54.0	52.0	53.0
0.5	6	38.9	58.1	39.3	58.1	75.2	76.0	75.6
0.5	8	28.5	65.9	28	64.9	86.6	86.4	86.5
0.5	10	17.5	51.9	16	51.5	105.7	97.4	101.5
0.5	12	13	54.6	13.6	55.1	107.5	111.5	109.5
0.5	15	7.6	45.0	6	44.0	119.2	96.3	107.8
5	15	46	25.2	48	25.3	114.7	119.2	117.0
5	20	28.8	27.2	27	26.6	124.7	119.6	122.2
5	25	17.0	25.7	17.5	25.3	124.7	130.4	127.5
5	30	17.6	37.4	16.8	39.2	129.4	117.8	123.6
10	30	36.2	37.3	39.6	39.1	122.0	127.3	124.6
10	40	8.5	26.0	10.1	26.4	77.0	90.1	83.6
10	50	4.9	31.8	4.9	31.7	58.1	58.3	58.2
10	60	3.2	36.1	2.9	36.2	48.7	44.0	46.4
10	75	1	36.4	1.9	36.1	23.8	45.7	34.8
25	75	3.5	36.4	3.8	36.1	30.2	33.1	31.6
25	100	1.7	47.8	1.4	47.8	20.9	17.3	19.1
25	125	0.4	32.8	0.7	32.3	11.5	20.4	16.0
25	150	0.2	28.3	0.3	28.6	9.7	14.4	12.1
50	150	0.5	28.3	0.6	28.4	11.1	13.3	12.2

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-17

PELAYA



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GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	24.6	1.71	1.71	Dry silts - Qca
2	379	7.63	9.35	Sands and saturated conglomerate- Qca
3	11.6	Indeterminated	Indeterminated	Non saturated shales - Ksu

GEOELECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING **SEV-18**

PELAYA

DATAFIELD

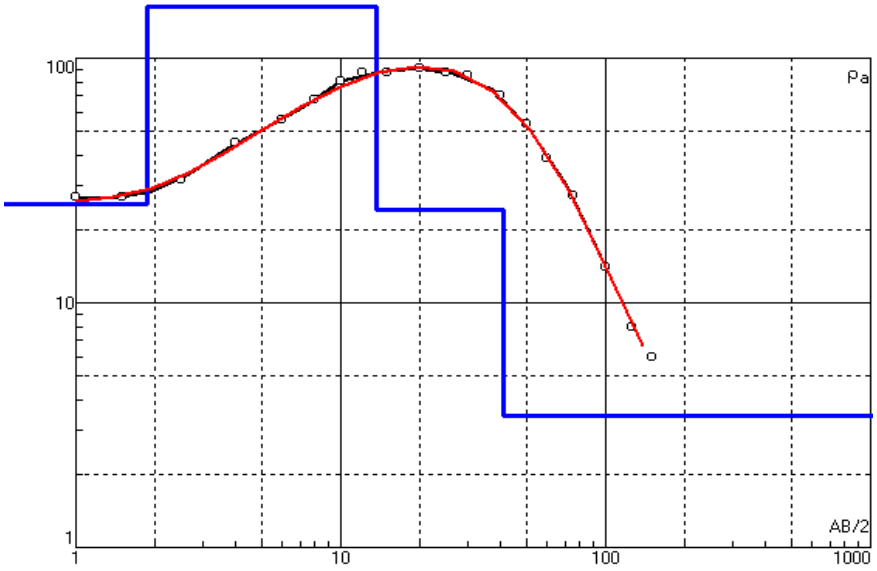
MUNICIPALITY: Pelaya, Department of Cesar DIRECTION : N18E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
CONFIGURATIÓN : Schlumberger
DATE: July 24th, 2011
COORDINATES (Origin Bogotá) 1,449,350 m. N. 1,049,277 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	1282	108.7	1271	108.3	27.8	27.7	27.7
0.5	1.5	346	80.2	343	79.8	27.1	27.0	27.1
0.5	2.5	127	76.5	138.8	79.8	31.3	32.8	32.0
0.5	4	50	55.8	51.8	55.9	44.3	45.9	45.1
0.5	6	29	58.1	29.3	58.1	56.1	56.6	56.3
0.5	8	23.5	65.9	21.4	64.9	71.4	66.0	68.7
0.5	10	13.3	51.9	13.5	51.5	80.3	82.1	81.2
0.5	12	10.6	54.6	10.6	55.1	87.7	86.9	87.3
0.5	15	9.0	70.6	9.1	71.3	90.0	90.1	90.1
5	15	96	71.4	102	71.8	84.5	89.3	86.9
5	20	45.0	56.9	43	57.0	93.2	88.9	91.0
5	25	21.7	46.4	21.1	46.2	88.2	86.1	87.1
5	30	16.2	51.0	15.9	50.8	87.3	86.0	86.7
10	30	30.8	50.8	38.1	50.7	76.2	94.4	85.3
10	40	16.2	54.7	16.5	55.0	69.8	70.7	70.2
10	50	5.6	39.8	5.9	40.2	53.0	55.3	54.2
10	60	1.1	17.3	1.4	17.3	35.0	44.5	39.7
10	75	1.1	31.8	1.1	32.2	30.0	29.6	29.8
25	75	3.1	31.4	2.3	32.1	31.0	22.5	26.8
25	100	1.2	46.3	1	46.3	15.3	12.7	14.0
25	125	0.3	26.8	0.2	27.1	10.6	7.0	8.8
25	150	0.2	50.0	0.3	53.0	5.5	7.8	6.6

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-18

PELAYA



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GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	25	1.86	1.86	Silts and dry sands - Qca
2	162	11.80	13.60	Saturated sands - Qca
3	24	27.40	41.10	Shales and sandstones with a poor saturation level. - Ksu
4	3	Indeterminated	Indeterminated	Non saturated shales- Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-19

PELAYA

DATAFIELD

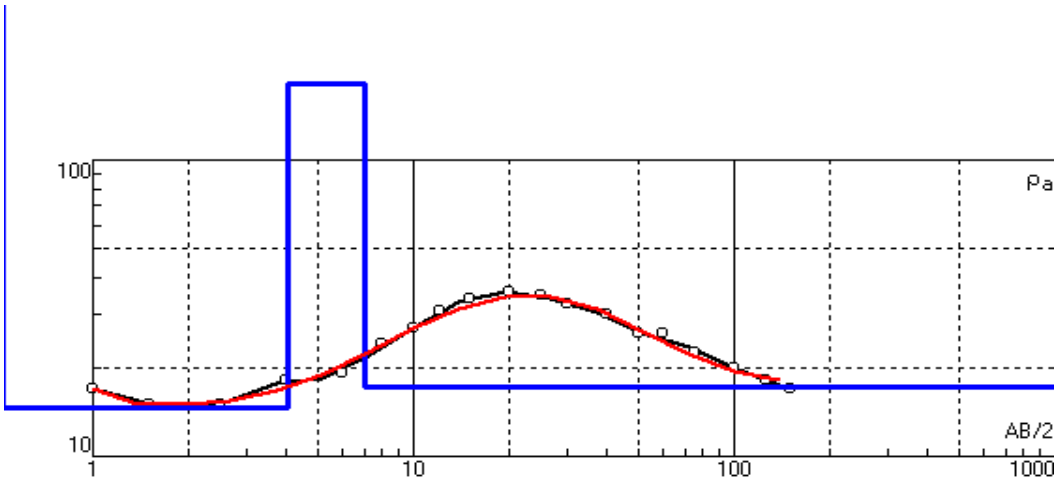
MUNICIPALITY: La Gloria, Department of Cesar DIRECTION : N20E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
PATTERN : Schlumberger
DATE: July 26th, 2011
COORDINATES (Origin Bogotá) 1,447,351 m. N. 1,048,596 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	778	102.4	755	102.2	17.9	17.4	17.7
0.5	1.5	201	86.4	215	86.4	14.6	15.6	15.1
0.5	2.5	44.5	62.3	58.5	61.2	13.5	18.0	15.7
0.5	4	21.8	58.8	21.4	58.7	18.3	18.0	18.2
0.5	6	15.6	78.1	12.5	80.9	22.4	17.4	19.9
0.5	8	7.4	66.8	9.2	67.4	22.2	27.3	24.8
0.5	10	4.4	53.0	5	52.9	26.0	29.6	27.8
0.5	12	4.3	62.7	4.3	62.6	31.0	31.0	31.0
0.5	15	2.8	57.2	2.9	57.8	34.6	35.4	35.0
5	15	29	55.3	30.2	56.3	32.9	33.7	33.3
5	20	20.1	65.3	20.1	65.4	36.3	36.2	36.2
5	25	9.0	48.8	9	48.1	34.8	35.3	35.0
5	30	6.9	54.6	6.5	55.3	34.7	32.3	33.5
10	30	14.1	55.0	14	55.0	32.2	32.0	32.1
10	40	7	55.1	7.5	56.8	29.9	31.1	30.5
10	50	4.5	61.2	4.2	60.9	27.7	26.0	26.9
10	60	3.1	64.7	3	64.3	26.3	25.7	26.0
10	75	2.5	89.0	2.4	89.2	24.4	23.4	23.9
25	75	6.8	89.0	6.1	88.6	24.0	21.6	22.8
25	100	2.3	63.2	2.2	63.5	21.4	20.4	20.9
25	125	1.1	55.3	1.1	54.9	18.7	18.9	18.8
25	150	0.6	48.3	0.6	47.3	17.1	17.4	17.3
50	150	1.4	50.1	1.3	48.1	17.6	17.0	17.3

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-19

PELAYA



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GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	15330	0.116	0.116	Dry silts - Qca
2	14.5	3.95	4.07	Dry silts- Qca
3	181	2.98	7.05	Sands and saturated gravels - Qca
4	17.1	Indeterminated	Indeterminated	Shales and sandstones with a low saturation level - Ksu

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-20

PELAYA

DATAFIELD

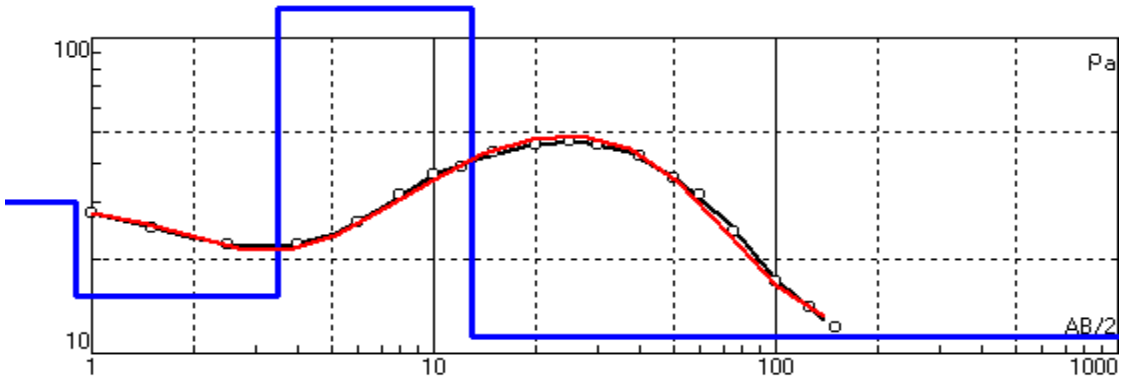
MUNICIPALITY: La Gloria, Department of Cesar DIRECTION : N25E
EQUIPMENT : AZ Instruments
OPERATOR: C. Suárez.
CONFIGURATION : Schlumberger
DATE: July 25th, 2011
COORDINATES (Origin Bogotá) 1,446,591 m. N. 1,046,414 m. E.

DISPOSITION		READING DATA 1		READING DATA 2		RESULTS		
MN/2	AB/2	V1	A1	V2	A2	RESIST. 1 (Ohm-m)	RESIST. 2 (Ohm-m)	RESIST (Ohm-m)
0.5	1	619	50.6	619	50.6	28.8	28.8	28.8
0.5	1.5	152.8	37.8	154.9	37.9	25.4	25.7	25.5
0.5	2.5	31.9	27.1	31.5	25.8	22.2	23.0	22.6
0.5	4	12.9	27.6	12.7	27.6	23.1	22.8	22.9
0.5	6	2	8.4	1.8	7.6	26.7	26.6	26.7
0.5	8	3.7	20.1	2.8	20.2	36.9	27.8	32.3
0.5	10	3.6	30.8	3.8	31.3	36.6	38.0	37.3
0.5	12	3.4	35.9	2.8	34.1	42.8	37.1	39.9
0.5	15	2.7	45.3	3.1	45.6	42.1	48.0	45.0
5	15	32	45.4	30.1	46.3	44.3	40.8	42.6
5	20	21.9	58.6	24.1	58.8	44.0	48.3	46.2
5	25	13.7	54.1	13.4	54.1	47.7	46.7	47.2
5	30	9	54.9	9.7	55.1	45.1	48.4	46.7
10	30	20.6	54.8	18.8	51.1	47.2	46.2	46.7
10	40	10.8	58.2	10.3	58.5	43.7	41.5	42.6
10	50	8.6	80.2	6.8	80.6	40.4	31.8	36.1
10	60	6.3	99.1	5.4	99.3	35.0	29.9	32.4
10	75	4.3	133.6	3.7	133.8	27.9	24.0	26.0
25	75	10.9	134.0	9.2	133.0	25.6	21.7	23.6
25	100	3.4	122.4	3.9	122.4	16.4	18.8	17.6
25	125	1	106.0	2.2	105.7	8.9	19.6	14.3
25	150	0.7	75.8	0.7	75.3	12.7	12.8	12.7

GEOLECTRIC STUDY IN ORDER TO GIVE AN ESTIMATE TO THE COLLUVIUM AFLLUVIAL DEPOSIT THICKNESS, OVER THE UMIR FORMATION ON BLOCKS KCA-09491 Y KDT-14341, PELAYA AND LA GLORIA MUNICIPALITIES, DEPARTMENT OF CESAR

GEOELECTRIC DRILLING SEV-20

PELAYA



Prof (m)

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GEOELECTRIC MODEL AND HYDROGEOLOGICAL CORRELATION

Layer No	Resistivity Ohm-m	Thicknessm	Depth m	Hydrogeological correlation
1	30.0	0.89	0.89	Dry silts - Qca
2	15.2	2.60	3.50	Dry silts - Qca
3	124.0	9.42	12.90	saturated sands - Qca
4	11.3	Indeterminated	Indeterminated	Shales with poor saturation level- Ksu

JORC Code, 2012 Edition – Table 1 report Coal

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• **Escalones Project: Phillips River has not taken any coal samples for quality control purposes from the Escalones project area. Carbhid SA has been conducting small-scale underground coal mining since 2013 and selling the product to a local thermal power generator. Carbhid, as most other coal producers in the district, uses underground workings to locate and follow the coal seams. It is believed that the power generator does carryout frequent coal quality analyses on the coal it is purchasing from Carbhid and its other suppliers. Mr. P. O'Dowd, who prepared a NI 43-101 report in Jan 14 on the Escalones project for the Andean Coal Alliance, reports the analyses of coal quality for four samples collected by Carbhid in 2012 and 2013, two from the coal seam 7 (El Diamante mine) and two from the coal seam 4 (Carbhid 2 mine) that Carbhid is exploiting in the Escalones project. O'Dowd also reports the results of two coal samples he collected, one from each of the same two coal seams sampled by Carbhid, and found that his results were in close agreement to those obtained by Carbhid. (Further details in the section below "Exploration done by other parties").** • **Pelaya Project: No coal sampling has been carried out by Phillips River and there are no records of any coal occurrences on the property. The project is located to the south from a well known coal producing area in the Cesar District of northern Colombia. This project is a conceptual**

Criteria	JORC Code explanation	Commentary
		exploration play. Geological data and interpretation of seismic data from the northern part of the Pelaya area is suggestive that the widespread Quaternary alluvium cover may be covering coal-bearing units of the Umir Formation which is known to host multiple coal beds elsewhere.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• **Escalones Project: No drilling has been done by Phillips River however one historic diamond core hole (Cucaita 1) is reported to have been drilled in 2011 in the northern part of the project as part of an oil and gas exploration program (details below).** • **Pelaya Coal Property: Phillips River has not carried out any drilling on this project.**
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• **Not applicable**

Criteria	JORC Code explanation	Commentary
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• **Not applicable**
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• **Not applicable**
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.*	• **Not applicable.**

Criteria	JORC Code explanation	Commentary
	• *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• **Not applicable.**
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• **Not applicable.**
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• **Not applicable**
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• **Not applicable.**
Sample	• *The measures taken to ensure sample security.*	• **Not applicable.**

Criteria	JORC Code explanation	Commentary
security		
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• **Not applicable**

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• **Escalones Project: the project comprises 90.58 ha and is part of the mining agreement FGL-111 (area of 154.237 ha) issued to Mr. Hector Vargas Cruz on Dec 6, 2012 and valid through to Dec 5, 2042. Carbhid SA signed an operating contract with Mr. Cruz on Sept 11, 2013, valid through to Dec 5, 2042. Under the operation agreement Carbhid is entitled to the income from 95% of the coal sold from Escalones and Mr.Cruz to the remaining 5%. Additionally, the contract contains an exclusion zone to the north of the Carbhid 2 mine that refers to the coal layer number 4 (or Cerrejoncito Dos) from which production is the exclusive right of Mr. Cruz.** • **Andean Coal (BVI) Ltd. holds a 25% interest in Carbhid S.A.. Kiwanda and Lara formed the Andean Coal Alliance in 2013 and have since negotiated an option to acquire a 51% interest in the Carbhid Escalones mining rights.** • **The Escalones mining area is fully licensed for mining and Carbhid is producing from three separate mines.** • **Phillips River has the right to acquire the Andean Coal**

Criteria	JORC Code explanation	Commentary
		Alliance's option to earn 51% interest in the Carbhid's Escalones mining rights and to acquire Andean's 25% interest in Carbhid S.A. • **Lara Exploration has a net product royalty of 2% of coal production, which is payable on all coal production above 50,000 tons of annual production.** • **Pelaya Project: The Pelaya project is formed by two licenses; KCA 09491 (1609 ha) and KCA 09492X (33 ha). Carbones de Pelaya SAS has negotiated an operating contract with the underlying owner of these two licences.** • **The Andean Coal Alliance has negotiated an option to acquire from Carbones de Pelaya up to a 100% interest in the Pelaya coal property.** • **Phillips River has the right to acquire the Andean Coal Alliance's option to earn up to a 100% interest in the Pelaya coal property.** • **Lara is entitled a 2% net product royalty on all production from the Pelaya coal project.**
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• **Escalones Project: Carbhid has obtained data and drill logs for a vertical diamond core drill hole (Cucaita 1) drilled on the Escalones project in 2011 by a government agency in partnership with a local university in the area to the east of the position of the El Diamante coal mine portal. The hole was abandoned at 290 m after passing**

Criteria	JORC Code explanation	Commentary
		through a zone of faulting. Coal seams are reported both above and below the fault zone with a cumulative 11.25m of coal. Carbhid has not been able to locate any of the drill core nor has Carbhid been able to determine the exact location of the hole as the general area indicated by local residents has since been disturbed for potato cropping. • Carbhid has been producing and selling coal since 2013 and now has three underground fronts (El Diamante, Carbhid 2 and Carbhid 4) developed for artisanal coal extraction utilizing room and pillar extraction techniques for a combined mining rate of over 800 tonnes per month and plans to bring this to 1000 tpm to full-fill a contract with a local thermal power plant. The mining shafts, inclined 35 degrees, range in depths from 100 meters to 120 meters and are lined with tracks for rail cars to hoist the coal. • Carbhid analysed four (4) coal samples, two of 4 kg each from the ore bin at the El Diamante mine (producing area in coal seam # 7) and two of 4 kg each from the stockpile at the Carbhid 2 mine (coal seam #4). These were analyzed at Interlabco SAS Laboratorio Quimico International, Ubale, Cundinamarca, Columbia, a laboratory conforming to international standards ASTM, ISO9001:2008 and ICONTEC. • The samples were analyzed for Proximate Analysis and determination of the FSI (Free Swelling Index). Results were reported for % Moisture total, % Ash, % Volatile matter, % Fixed carbon, % Sulfur, Gross Calorific value (Kcal/kg), and FSI. O'Dowd collected two samples of 2 kg each, one from the El Diamante ore bin and the other from the stock pile at Carbhid 2 and had Interlabco do

Criteria	JORC Code explanation	Commentary
		the same Proximate Analysis and determination of FSI as done for the Carbhid samples. Results for the O'Dowd samples were very similar to those of Carbhid. From the data O'Dowd concluded that the coal, although classified by Carbhid personnel as metallurgical or coking coal, should more correctly be classified as a Semi-soft Coking Coal. Based on the gross calorific value (7,700 kcal/kg dry) the Carbhid samples correspond to High Volatile A bituminous coal and High Volatile B bituminous coal according to international standard SSTM D-388. • **Pelaya Coal Property: An extensive Quaternary alluvium covers the Pelaya property. Shallow west-ward dipping Cretaceous age sediments of the Simiti and La Laguna Formations are reported along the eastern margin of the property and field mapping by Carbhid has tentatively identified tropically weathered outcrops of Lower Umir sedimentary strata supposedly in the Pelaya Property. In the Cesar coal field to the north from Pelaya the Umir Formation is the host to multitude of open-cut coal mines.** • **Carbhid have obtained two seismic sections from a survey covering part of the northern part of the Pelaya property. Interpretation of these two sections indicates that the alluvial cover is relatively thin and is possibly underlain by shallow-dipping sedimentary sequences possibly correlating with the coal-bearing strata of the Umir Formation. Carbhid have also obtained results for a series of 20 resistivity depth soundings in the Pelaya area carried out in order to attempt to determine the depth of the Quarternary Alluvium which overlies the interpreted sedimentary sequences. Most readings are in the 8 to 14 m range with a maximum of 20 m. While the**

Criteria	JORC Code explanation	Commentary
		technique utilized to collect this data is relatively reliable, simple to execute and analyze, it is not infallible and a false depth to basement may be caused by variations in the salinity of groundwater or conductive layers (such as clay beds) within the profile.

Criteria	JORC Code explanation	Commentary
Geology	• *Deposit type, geological setting and style of mineralization*	• **Escalones project: The project is underlain by Upper Cretaceous to Tertiary terriginous sediments forming the axial zone of the Albarracin-Tunja syncline. The oldest units, outcropping to the NW of the project, consist of up to 350 m of sandstones and mudstones-siltstones of the Plaeners Fm and Arenisca Tierna Fm of the Upper Cretaceous Guadalupe Group.** • **The coal seams in the Escalones project are hosted in the Middle Mudstone succession. The Upper Member is not observed on the property. At Escalones 11 different, gently ESE-dipping coal seams (known locally as "Mantos") are present and have an average cumulative thickness of approximately 15 metres. Individual seams can be up to 5 m thick but are generally much thinner at of the seams by faulting to 2 m thickness. Lateral continuity of seams can be for kilometers but small-scale faults frequently cause off-setting of the seams.** • **Pelaya Coal property: This property is underlain by extensive Quaternary alluvium and outcrops of shallow-west-dipping sediments of the Simiti and La Lunar Formations (Cretaceous age) are known along the eastern margin of the property.** • **In the Cesar coal fields the La Lunar Formation is overlain by the Umir Formation (Campanian-Maastrichtian age)which is dominantly carbonaceous mudstones and hosts multiple coal seams as indicated below:**

Criteria	JORC Code explanation	Commentary
		• **Interpretation of the seismic sections are suggestive that the stratigraphy underlying the widespread Quaternary Alluvium present at Pelaya is represented by the La Lunar and the Lower, Middle and Upper Umir Formations.** • **This is very much a grass roots /greenfields project based on conceptual geological targets.**

Criteria	JORC Code explanation	Commentary
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• **Not applicable**
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• **Not applicable.**
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to*	• **Not applicable**

Criteria	JORC Code explanation	Commentary
	this effect (eg 'down hole length, true width not known').	
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• **Not applicable**
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• **Not applicable**
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• **Not applicable**
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive*	• **Not applicable.**