

**TECHNICAL REPORT ON THE
OLAROS PROJECT
JUJUY PROVINCE, ARGENTINA**

**NI 43-101 REPORT PREPARED FOR
OROCOBRE LTD.**
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3. SUMMARY

Orocobre Ltd, through its wholly owned Argentine subsidiary Sales de Jujuy S.A.(formerly named Orocobre S.A.) (collectively “the Company”) hold interests in just over 630 km² of mining tenements (“the Project”) over, and in the vicinity of, the Salar de Olaroz in northwestern Argentina. These properties cover aquifer(s) that host a brine body with elevated levels of lithium, potassium and boron.

This Technical Report details the studies undertaken to date and the basis for the Inferred Resource estimate. In addition the report provides recommendations for further investigations aimed at establishing a Measured Resource and/or Probable Reserve, as well as the associated processing testwork, which together, are requisite inputs for the Definitive Feasibility Study currently being undertaken by the Company. This report is prepared according to the requirements of the Canadian Securities Commission National Instrument 43-101 and the Canadian Institute of Mining Best Practice Guidelines. It is authored by John Houston and Peter Ehren, who are Qualified Persons under NI 43-101, and independent of Orocobre Ltd and its subsidiary.

The Salar (dry salt lake) of Olaroz is located in the high altitude Puna region of northwest Argentina, an area renowned for its lithium- and potassium-rich brine resources (for example, the existing lithium production operation at FMC’s Hombre Muerto Project). Brine resources are unlike most mineral deposits for one obvious reason: they are fluid. Thus they have the potential to move and mix with adjacent fluids once abstraction, or exploitation begins. Their evaluation requires special considerations not normally applied to mineral resource evaluation. There are three key factors that determine an in-situ brine resource: the geometry of the host aquifer, its effective porosity, and the brine grade or concentration. In addition there are three further key factors required in order to determine a recoverable resource: the permeability of the host aquifer, its specific yield (the unit volume of fluid that will drain under gravity), and its water balance (fluid inputs and outputs to the aquifer).

The Salar de Olaroz is underlain by a structurally-controlled sedimentary basin that forms an aquifer(s) probably over 500 km² in area, and at depths of up to 600 m or more. The aquifer acts as a host to a brine body with elevated levels of Li, K, and B.

The Company drilled twenty-two cored wells (including six hydrogeological test wells), and undertook downhole geophysical logging, core testing, and brine sampling between September and December 2008. A second brine sampling program from the wells was undertaken by the Company in January and February 2009. Using the data obtained by the Company, Geos Mining, of Sydney, Australia, acting as independent consultants undertook a review of the data and prepared a resource estimate (Geos Mining, 2009).

Geos Mining developed a conceptual geological model that divided the aquifer into three zones:

- Zone 1 - a near-surface layer, from surface to the base of a halite-rich unit, which occurs predominantly in the centre of the salar to a maximum depth of 19 m and averaging 11 m depth,
- Zone 2 - an interbedded sequence of sands, silts and clays to a maximum depth of 64 m and an average depth of 55 m.

- Zone 3 - an underlying clay layer with minor sand, silt and halite interbeds, which was assumed to be the base of the resource.

Initial tests made on drill core indicated an aquifer matrix with a range of total porosity of 30-40%. Since the in-situ resource depends on the effective porosity and the recoverable resource on specific yield, Geos Mining conservatively based their resource estimation on values of specific yield from the literature ranging between 1-22%, depending on lithology.

Mean brine grades used by Geos Mining for their resource estimate were 796 mg l⁻¹ Li (with a range from 310-1,200 mg l⁻¹), and 6,660 mg l⁻¹ K (range 2,839-9,964 mg l⁻¹).

The report concluded that an Inferred Resource existed, amounting to 350 million kL (1 kL = 1 m³) of brine at 800 g kL⁻¹ lithium and 6,600 g kL⁻¹ potassium. This is equivalent to 1.5 million tonnes of lithium carbonate and 4.4 million tonnes of potash (potassium chloride).

Geos Mining declared that confidence in the resource figures was limited by a number of factors:

- Poor understanding of the sedimentary sequence due to high core losses in the drilling,
- Lack of accurate porosity data,
- Limited bore pumping test data,
- Significant variations in assays between the two sampling programs,
- Lack of understanding of grade variability with depth,
- Wide spread drill spacing (approximately 2 km).

Geos Mining reported that due to these limitations, the resource estimate was made using conservative assumptions, and they stated that the collection of additional, more reliable data would likely increase the estimate of available resources. The first Author has reviewed the Resource Estimate undertaken by Geos Mining and the validity of the data on which it was based and is of the opinion that the work undertaken was professionally done and that the resource estimated is reasonable.

There is significant exploration potential for additional brine volume beneath the current resource which extends only to an average depth of 55 m. Drilling in 2008 intersected sandy horizons beneath this level and Geos Mining recommended drilling to test this zone. Gravity modeling has since shown the basin may be 600 m or more deep, with the possibility of coarser clastic materials at the base of the salar deposits. In addition, the Company's property areas have increased significantly since the Inferred Resource was estimated and lateral extensions to the current resource are considered probable.

The chemical composition of Salar de Olaroz brine has positive characteristics, such as a low magnesium to lithium (Mg/Li) ratio and adequate sulfate to magnesium (SO₄/Mg) ratio making it possible to apply the Silver Peak process route for the Clayton Valley brines being operated by Chemetall for over 40 years. Although in a general sense the chemistry is similar, the grades of lithium and potassium and the boron levels compared to lithium and potassium are higher significantly higher at Olaroz,. In addition, there very good climate conditions for solar evaporation at the Salar de Olaroz

A Preliminary Economic Assessment was carried out by the Company in May 2009, based on the Geos Mining resource estimate. This is an internal Company document using information

developed by Orocobre staff and consultants with experience on similar salar projects. The study summarized a potential process route for lithium carbonate and potash, with financial assumptions, including capital and operating costs. The production costs developed in the study were estimated at approximately US\$ 3,000 per tonne of lithium carbonate (without allowance for by-product credits) and US\$ 1,700 per tonne of lithium carbonate (with allowance for by-product credits).

The results of the resource estimate and preliminary economic assessment were sufficiently encouraging to warrant investment in a more detailed investigation to establish the Measured Resource/Probable Reserve, and to prepare a fully detailed Bankable Feasibility Study for their development. This program is currently underway.

4. INTRODUCTION

4.1 Authorship and Terms of Reference

The authors were contracted by the Company to author the current NI 43-101 Technical Report on the Project.

The first author is also contracted as an expert hydrogeological consultant by the Company to advise on the methodology for the assessment of its brine projects, including this Project, and is responsible in this role for provision of technical advice including hydrogeological and resource aspects. The author has visited the Project on a number of occasions.

The second author, Peter Ehren, is also contracted to provide expert process engineering advice for the Project and is responsible for the design and monitoring of current processing testwork programs.

Previous exploration and evaluation data were made available by the Company for the Project, consisting of surface pitting results, drilling, sampling, and test data, as well as initial evaporation and bench scale testing results. A report prepared by Geos Mining of Sydney, Australia, and based on this data, estimated an Inferred Resource. Subsequently, the authors provided detailed technical specifications for a full scale investigation that would lead to a bankable feasibility study (see section 4.3 for a summary). As of the date of this report this investigation is underway but is not yet complete. Thus, in this Technical Report all previous work and studies are considered under Section 8, History, and since the investigation is at an early stage, only limited new information is available for presentation under Sections 10 (Deposit Type), and 11 (Mineralization).

Numerous sources of geologic and climatic data have been compiled for the project area, as indicated in the bibliography. The authors have also reviewed published reports and have undertaken the analysis of data collected through the end of 2009.

The authors experience with similar brine resource projects in the area is highly relevant to the current Orocobre prospects. The scope of the personal involvement by both authors includes ongoing technical oversight of the investigation and evaluation programs, and they have spent several months on-site doing so.

4.2 The uniqueness of brine prospects

It is vital to understand the difference between brine and base/precious metal prospects. Brine is a fluid hosted in an aquifer and thus has the ability to move and mix with adjacent fluids once abstraction starts. An initial in-situ resource estimate is based on knowledge of the geometry of the aquifer, and the variation in porosity and brine grade within the aquifer. In order to assess the recoverable reserve, further information on the permeability and flow regime in the aquifer, **and its surroundings** are necessary in order to predict how the resource will change over the project life. These considerations are examined more fully in Houston and Evans (*in prep.*)

As a consequence, in this and future reports on the Salar de Olaroz Project, section 10 (Deposit Types) deals with the host aquifer, and section 11 (Mineralization) deals with the brine, whilst

section 18 (Mineral Processing and Metallurgical Testing) will include aspects relating to the water balance and brine abstraction.

4.3 Definition of terms

In order to estimate a resource it is essential to understand the terminology related to porosity. Total porosity (P_t) relates to the volume of pores contained within a unit of aquifer material. Some of these pores are isolated from each other and only the pores that are in mutual contact may be drained. The interconnected porosity is known as the effective porosity (P_e). Assuming totally fluid saturated effective porosity, only part may be drained under gravity during the pumping process. This part of the porosity is known as the specific yield (S_y). A portion of the fluid in the pores is retained as a result of adsorption and capillary forces and is known as specific retention (S_r). These parameters are related thus:

$$P_t > P_e \qquad P_e = S_y + S_r \qquad S_y \gg S_r$$

The determination of these parameters is probably the most challenging aspect of brine resource estimation.

4.4 Current program

4.4.1 Resource Evaluation

The design of the current geological and resource evaluation program for the Salar de Olaroz was prepared by the first author in September 2009, and a summary of that document is provided below:

- **Objectives**

The objective of the current phase of work is to develop a Definitive Feasibility Study requiring the resources to be established with a greater level of confidence. The program outlined below is intended to move towards a Measured Resource and/or a Probable Reserve under NI 43-101/JORC terminology for the original claim area (where the previous resource estimate was made).

This means that for the original claim area a reliable in-situ resource estimate will be established with sufficient additional information to estimate the recoverable reserves and to identify any likely issues that require further investigation or might prove problematical during the life of mine. The program will also provide adequate information to be able to prepare a draft design for a wellfield capable of meeting the required brine feed specifications.

It is not intended that this next phase of work will provide sufficient information to be able to predict potential brine grade changes during operation and hence further work would be required before final well sites are defined. Nor will the next phase provide enough information to be able to design any works that might be required in the future to maintain an appropriate brine feed.

- **Scope of work required for resource evaluation**

Aquifer geometry and boundary conditions

It is planned to establish the reserve estimate to a depth of 50 m within the central claim blocks. An estimate of the depth of the basin is required, as well as boundary conditions to establish the limits of the reservoir, and the possible interactions between the contained brine and surrounding groundwater.

Lithological variations and nucleus hydrostratigraphy

Within the nucleus of the salar, the lithology of the aquifer is known to vary widely, from evaporitic halite and gypsum, to siliclastic and potentially volcanic sediments. The distribution of these units requires better definition, especially with regard to the movement of brine under both natural and pumping regimes.

Porosity

Fundamental to the reserve evaluation is a detailed knowledge of the porosity of the aquifer. Without going into further details here, total and effective porosity needs to be established, as well as the specific yield and specific retention of the aquifer.

Brine grade

Also fundamental to the reserve estimate is a detailed three-dimensional knowledge of the distribution of the major ions and species of economic interest. Additional hydrochemical parameters such as density, pH, temperature and total dissolved solids are required.

Permeability

The permeability of the major lithologies is required in order to assess likely flow regimes under natural and pumped conditions.

Catchment hydrometeorology, geology and hydrology

The nucleus does not exist/operate in isolation from its surroundings, so a broad understanding of the catchment characteristics are required in order to establish how the brine reservoir has become established, is maintained, and will react to future changes as a result of pumping.

Water balance and monitoring

Quantification of the catchment hydrology in space and time will allow a water balance to be established. A monitoring program to measure hydrometeorological parameters, surface water and groundwater flows, levels and quality is required to establish baseline conditions against which future changes can be compared.

- **Methodology**

Drilling

Drilling is required to obtain details of the lithology and hydrostratigraphy of the nucleus and its boundaries, and to obtain detailed porosity and brine grade data. Drill sites within the claim areas will be on approximately 2.5 km grid spacing. At one site within the nucleus a deep exploration hole to 300-400 m will investigate possible deeper targets and establish a baseline hydrostratigraphy for the salar. Four additional sites outside the nucleus will be drilled to depths of 100-200 m to evaluate the hydrogeological boundary conditions.

Core logging and testing

All logging of cores will be done on-site by an experienced geologist. Innovative core sampling techniques have been developed to obtain undisturbed samples at 100 mm and 35 mm diameter for the determination of effective porosity on-site and specific yield in a world class hydrogeological laboratory.

Geophysical logging

All holes will be logged using, natural gamma, neutron, density and sonic, to compliment the geological core logging and porosity testing.

Brine sampling

Discrete brine samples will be obtained every 6 m during drilling to obtain uncontaminated samples. Density, pH and temperature will be measured in the field. Full major ion analyses plus Li and any other species of interest will be determined in a recognized laboratory. Sampling of off-nucleus surface and groundwater will also be undertaken and a regular (twice yearly) monitoring program set up for a selected network of sites.

Pumping tests

Three pumping test sites have been selected with the claim areas. Test wells will be completed at 200 mm diameter to a nominal 50m depth. Slotted PVC casing will be installed from surface to full depth. At each test site a minimum of four and maximum of six narrow diameter observation wells will be drilled at varying

distances, with piezometers set at different depths. The pump used for testing will be capable of operating over a range of flows from 5-25 l/s. Discharge of the pumped water will be >500 m away to minimize recirculation and a “V-notch” weir tank with an automatic water level monitor installed at the discharge point to measure flow rates. Each test will initiate with a 4-step 8 hour test followed by recovery and then pumped at a constant rate for a minimum of 20 days.

Surface geophysics

Gravity survey to be conducted across the salar to provide an indication of the basin geometry and depth. Audio-magnetic tellurics surveys will be used to provide information on boundary conditions, and the location of the brine-freshwater interface.

Satellite image interpretation

Two images representing maximum wet and dry conditions are required. The dates of such imagery will be determined by analysis of historical meteorological data. Digital image processing will be required to assess the extent of marginal evaporating zones for input to water balance studies, as well as for assessing operating project logistical issues.

Regional water sampling and monitoring

A small network of monitoring points are being established for surface and groundwater. For surface water simple flow measuring equipment (flumes or stage boards) will be used, whilst for groundwater, a selection of the drilled wells (inside and outside the claim blocks) will be converted to long-term monitoring points by the installation of piezometers. A regular measuring program for flow, water level and quality will be established. A simple meteorological station, measuring precipitation, Class A pan evaporation, and max/min temperatures will be established to provide input data for the water balance analysis.

4.4.2 Process Development

The objective of the current process development activities is to develop a route for the brines from the Salar de Olaroz based on the “Silver Peak” type process used on brines of similar chemistry at the Clayton Valley operation in Nevada, USA, which has been in operation for over 40 years. Although in a general sense the chemistry is similar (a low magnesium to lithium ratio and elevated sulfate) there are a number of significant differences including saturation levels, grades of lithium and potassium, and difference in boron levels compared to lithium and potassium. In addition, there are significant differences in climate.

A development program has been developed by the second author in conjunction with other consultants and the Company’s employees to develop the “Silver Peak” process route for application at Olaroz. This has involved, and will continue to involve both laboratory test work at local university facilities and test work at Olaroz. This work has been designed to address:

- Evaporation rate and brine concentration
- Magnesium removal by lime addition
- Boron removal and recovery
- Lithium carbonate precipitation
- Differential flotation for potash recovery.

This program commenced in May 2009 and is continuing.

5. RELIANCE ON OTHER EXPERTS

The authors rely on property reports prepared by independent lawyers, Vargas Galindez of Mendoza, Argentina for information regarding the legal status of the properties, the property agreements, permits and environmental status.

6. PROPERTY LOCATION AND DESCRIPTION

6.1 Location

The Salar de Olaroz project is located in the Puna region of the province of Jujuy (Figure 6.1), at an altitude of 3900 m above sea level, 230 km northwest of the capital city of Jujuy.

The project site is adjacent to the paved highway which passes through the international border with Chile, 45 km to the southwest (Jama Pass), continuing on to the major mining center of Calama, and the port of Mejillones, near Antofagasta in northern Chile.

Approximately 15 kms to the north of the salar, there is a gas pipeline running from northern Argentina to Chile. There is a dehumidifying and compression station where the pipeline crosses the N-S road along the west side of Salar de Olaroz.

Approximately 70kms to the south of the project site a railway crosses from northern Argentina to Chile, providing potential access to a number of ports in northern Chile. There are a number of local villages within 50kms of the project site and the regional administrative centre of Susques (population 2000) is within half an hour's drive.

Figure 6.1 Location of the Orocobre tenements in Northern Argentina. Small squares indicate villages in the area. Orocobre Olaroz properties are shown with a red outline.



There are two types of tenure under Argentine mining regulations; *Cateos* (Exploration Permits) and *Minas* (Mining Permits). Exploration Permits are licenses which allow the property holder to explore the property for a period of time following grant that is proportional to the size of the property. The basis of the timeframe is that an Exploration Permit for 1 unit (500 hectares) has a period of 150 days. For each additional unit (500 hectares) the period is extended by 50 days. The largest Permit is 20 units (10,000 hectares) and has a period of 1,100 days. The period commences 30 days after grant of the permit. The canon payable is ARG\$400 per 500 hectares payable on application.

Mining Permits are licenses which allow the holder to exploit the property subject to regulatory environmental approval. They are unlimited in duration so long as the holder meets its obligations under the Mining Code which include paying the annual canon (rent) payments, completing the survey, submitting a mining investment plan, and meeting the minimum investment commitments which is equal to 300 times the annual canon payment spent over a period of five years payable within five years of the filing of a capital investment plan. The canon varies according mineral occurrence. For brines it is ARG\$800 per annum per 100 hectares.

The type of mineral the holder is seeking to explore and exploit must be specified for both types of tenure. Permits cannot be over-staked by new applications specifying different minerals and adding mineral species to a claim file is relatively straightforward.

The Olaroz tenement package includes both types of tenements.

6.2.2 The Olaroz tenement package

The Olaroz properties cover approximately 63,000 hectares. The Company has rights to these properties either through right of title (the company already being the title holder or the registration process being current following satisfaction of contract terms) or through a contractual right (a purchase contract where payments are made over time with payments outstanding).

Details of these property rights are set out in Table 6.1 .

The property package originated as four cateos of 7,487 hectares over the salar nucleus with purchase terms set out in an agreement entered into by the Company on 27th October 2006. Subsequent to this agreement, additional property rights have been acquired through outright purchase or through purchase contracts, or applications for vacant ground. Rights to additional properties have also been acquired through applications for vacant ground under the provisions of the original contract.

There are two main agreements in terms of materiality. These are discussed below.

Table 6.1 Individual tenements of the Olaroz project showing the areas in hectares. Coordinates are in Gauss Krueger Zone 3, POSGAR94 datum.

Property Name	Title Holder	Property Right By	Tenement ID	Location	Area (Ha)	Status
CATEO	S Rodriguez	Contract	257- R- 2004	Olaroz	2,000	Granted
CATEO	S Rodriguez	Contract	258 - R - 2004	Olaroz	996	Granted
CATEO	S Rodriguez	Contract	390 - R- 2005	Olaroz	2,402	Granted
CATEO	S Rodriguez	Contract	391 - R - 2005	Olaroz	1,993	Granted
Total original 4 Olaroz cateos					7,391	
CATEO	S Rodriguez	Contract	947-R-2008	Olaroz	2,988	In process
CATEO	Orocobre S.A.	Title	1274-P-2009	Olaroz	5,972	In process
Analia	M Moncholi	Contract	131-I-1986	Olaroz	100	Granted
Demian	M Moncholi	Contract	039-M-1998	Olaroz	98	Granted
Ernesto	V Blanco SRL	Contract	112-G-04	Olaroz	100	Granted
Huberto	V Blanco SRL	Contract	117-A-44	Olaroz	44	Granted
Josefina	V Blanco SRL	Contract	114-V-44	Olaroz	100	Granted
Juan Martin	M Moncholi	Contract	40-M-1998	Olaroz	100	Granted
La Nena	M Moncholi	Contract	029-M-1996	Olaroz	100	Granted
Lisandro	V Blanco SRL	Contract	126-T-44	Olaroz	100	Granted
Maria Norte	M Moncholi	Contract	393-B-44	Olaroz	100	Granted
Maria, Pedro y Juana	V Blanco SRL	Contract	112-D-44	Olaroz	300	Granted
Mario	V Blanco SRL	Contract	125-S-44	Olaroz	100	Granted
Mercedes III	Termoboro SRL	Title	319-T-2005	Olaroz	1,473	In process
Oculto Norte	S Rodriguez	Contract	946-R-2008	Olaroz	400	In process
Potosi	Los Andes Compania Minera S.A.	Contract	056-L-1991	Olaroz	560	Granted
Potosi II	Los Andes Compania Minera S.A.	Contract	519-L-2006	Olaroz	2,000	In process
Potosi III	Los Andes Compania Minera S.A.	Contract	520-L-2006	Olaroz	2,000	In process
Potosi IV	Los Andes Compania Minera S.A.	Contract	521-L-2006	Olaroz	2,000	In process
Potosi IX	Los Andes Compania Minera S.A.	Contract	726-L-2007	Olaroz	2,890	In process
Potosi V	Los Andes Compania Minera S.A.	Contract	522-L-2006	Olaroz	2,000	In process
Potosi VI	Los Andes Compania Minera S.A.	Contract	147-L-2006	Olaroz	1,928	Granted
Potosi VII	Los Andes Compania Minera S.A.	Contract	724-L-2007	Olaroz	3,336	In process
Potosi VIII	Los Andes Compania Minera S.A.	Contract	725-L-2007	Olaroz	2,940	In process
Potosi X	Los Andes Compania Minera S.A.	Contract	727-L-2007	Olaroz	3,117	In process
Potosi XI	Los Andes Compania Minera S.A.	Contract	728-L-2007	Olaroz	3,182	In process
Cateo	Los Andes Compania Minera S.A.	Contract	530-L-2006	Olaroz	6,200	In process
San Antonio Norte	S Rodriguez	Contract	943-R-2008	Olaroz	564	In process
San Antonio Oeste II	S Rodriguez	Contract	1136-R-2009	Olaroz	1,199	In process
San Antonio Oestel	S Rodriguez	Contract	1137-R-2009	Olaroz	1,200	In process
San Antonio Sur	S Rodriguez	Contract	944-R-2008	Olaroz Chico	432	In process
San Fermin Norte	S Rodriguez	Contract	1134-R-2009	Olaroz	896	In process
San Fermin Sur	S Rodriguez	Contract	1135-R-2009	Olaroz	1,171	In process
San Juan Norte	S Rodriguez	Contract	963-R-2004	Olaroz Chico	1,195	In process
San Juan Sur	S Rodriguez	Contract	964-R-2008	Olaroz Chico	800	In process
San Miguel II	S Rodriguez	Contract	945-R-2008	Olaroz Chico	1,494	In process
Rio Litio	Orocobre S.A.	Title	1205-P-2009	Olaroz	2,985	In process
Rioros I	Orocobre S.A.	Title	1206-P-2009	Olaroz	2,984	In process
Rioros II	Orocobre S.A.	Title	1215-P-2009	Olaroz	793	In process
Riotin II	Orocobre S.A.	Title	1207-P-2009	Olaroz	2,994	In process
Total Olaroz					62,936	

6.2.3 Option to purchase agreement – the Olaroz Agreement

Rights to the properties over the main part of the Salar de Olaroz are held via a purchase agreement of October 27th, 2006 and addendum of October 14th, 2009. The agreements are in good standing.

The original option to purchase agreement covered four exploration permits (*Cateos*) as shown in Table 6.2. These properties and the subsequent *Minas* that were applied for over the same area, are part of the original contract. The current Olaroz tenement package also includes seven *Minas* that were not included in the original contract, as they were applied for after the signing of the contract. This has been addressed by means of an addendum to the contract.

Table 6.2 Tenements covered by the Olaroz option to purchase agreement.

Agreement	Tenements covered
Original signed October 27th, 2006	Cateos: 257-R-2004; 258-R-2004; 390-R-2005; 391-R-2005
Addendum signed October 14th, 2009	MDs: 943-R-2008; 944-R-2008; 945-R-2008; 946-R-2008; 963-R-2008; 964-R-2008; 1134-R-2009; 1135-R-2009; 1136-R-2009; 1137-R-2009. Cateo: 947-R-2008 .
MD tenements covered by Cateo tenements	257-R-2004 (covered by 963-R-08 and 964-R-08); 258-R-2004 (covered by 943-R-2008 and 944-R-2008); 390-R-2005 (covered by 1136-R-2009 and 1137-R-2009); 391-R-2005 (covered by 1134-R-2009 and 1135-R-2009)

Under the agreements, the Company has the right to explore within the properties covered by the contracts, with the option to purchase the properties by paying the purchase price. Orocobre has to exercise the option in order to commercially develop a mine on the properties.

The payments remaining to maintain the purchase contract in good standing under the contracts are:

- US\$ 110,000 on or before 10th August 2010
- US\$ 120,000 on or before 10th February 2011
- US\$ 120,000 on or before 10th August 2011

The Company may purchase the properties at any time prior to 10th February 2012 by paying US\$ 1,000,000 to the vendors. In addition, following the commencement of commercial production, there are the following payments to the vendors:

- US\$250,000 at the commencement of commercial production
- US\$50,000 per annum for 10 years after the commencement of commercial production
- A royalty of 1.2% which can be purchased at any time for US\$500,000.

6.2.4 Purchase agreement - the Los Andes Agreement

Rights to the properties on the west side of the Salar de Olaroz are held through a purchase agreement dated October 30th, 2009. The agreement is in good standing. The Company has the right to purchase the shares in Los Andes Compañía Minera S.A . (an Argentine registered

company) from its shareholders by making payments which total US\$ 3.5 million over four years. \$300,000 has been paid. The properties held by Los Andes S.A are Potosi, Potosi II, Potosi III, Potosi IV, Potosi V, Potosi VI, Potosi VII, Potosi VIII, Potosi IX, Potosi X, Potosi XI and *cateo* 530-L-06.

The remaining payments are:

- US\$ 200,000 on or before 12 months
- US\$ 200,000 on or before 18 months
- US\$ 300,000 on or before 24 months
- US\$ 300,000 on or before 30 months
- US\$ 300,000 on or before 36 months
- US\$ 500,000 on or before 42 months
- US\$ 1,400,000 on or before 48 months

In the second half of 2009 the Company also made a series of smaller acquisitions of exploration and exploitation permits from four other parties. A total of \$760,000 was payable (of which \$80,000 remains to be paid) to acquire a 100% interest in 13 exploitation titles covering 3,115 hectares. In December 2009, the Company entered into a contract with Borax Argentina S.A (a subsidiary of Rio Tinto) to purchase a 10,000 hectare exploration permit for US\$750,000. The contract is dependent on the registration of the transfer of the permit from Rio Tinto to Borax Argentina S.A. A royalty of US\$100,000 per annum would be payable in the event of commercial production.

6.2.5 Standing of licences

According to advice from lawyers, Vargaz Galindez of Mendoza, the third party agreements are valid and enforceable and all properties relating to contracts on which monies have been paid are in good standing. Properties “in process” are expected to proceed over time to grant.

6.3 Environmental Liabilities

The Olaroz properties are not subject to any known environmental liabilities. There has been active ulexite (Borax) mining within the boundaries of the tenements, but the operations are limited to within five meters of the surface and are expected to naturally reclaim fairly quickly as mining has halted.

6.4 Permits

Exploration and mining activities on *cateos* and *minas* are subject to regulatory authority approval of an environmental impact report (“EIR”). The company has obtained approvals for its activities both through approvals on the EIRs it has lodged with regulatory authorities and relevant local aboriginal communities, and also through prior approvals on properties it has acquired or on which it has contractual rights. Subsequent EIA updates have been presented to reflect the ongoing activities. The authors are advised by Vargas Galindez that approved EIRs cover the areas of current field activity.

No additional permits are required for surface access. The National Mining Code provides for primacy of Exploration and Mining Permit holders rights over surface owners rights and activities are permitted subject to the payment of compensation for damage caused or the lodgement of a surety with the government. In the event of a development at the Project, the Company would negotiate a compensation package with the affected local communities as part of the EIR process.

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

7.1 Accessibility, Local Resources and Infrastructure

The Olaroz project is located in the Puna area of northwest Argentina, within the province of Jujuy (Figure 7.1). The project covers an area of approximately 705 km², over the Olaroz salar, which is approximately 25 km long (north-south) and 20 km across (east-west) at its widest.

The project site is adjacent to the paved highway Route 52 which passes south of the salar through the international border with Chile, 45 km to the northwest (Jama Pass), continuing on to the major mining center of Calama and the port of Mejillones, near Antofagasta in northern Chile. Approximately 70kms to the south of the project site a railway crosses from northern Argentina to Chile, providing potential access to a number of ports in northern Chile. Access to good road systems and potentially rail are important for project development.

Approximately 15 kms to the north of the salar, there is a gas pipeline running from northern Argentina to Chile. There is a dehumidifying and compression station where the pipeline crosses the N-S road along the west side of Salar de Olaroz. This has the potential to provide a gas supply for onsite electricity generation.

There is a local village close to the project site (Olaroz Chico, population ~150), and the regional administrative centre of Susques (population 2000) is within half an hour's drive and offers basic services. There are a number of other local villages within 50 kilometers radius of the salar. The company employs many people for these local communities.

Access to the area from the City of San Salvador de Jujuy, where the Company has an office, is via Route 9, which heads north-northwest for approximately 60 km, meeting the international highway Route 52 near the town of Purmamarca. Following Route 52 leads to the town of Susques. Access to the project area is from Route 52, which heads south along the eastern side of the Olaroz Salar. Route 70, leading north from Route 52, provides access to the western side of the salar. The total drive distance between the City of San Salvador de Jujuy and the Olaroz project is approximately 220 km, and takes approximately 3 hours. A potential project development could draw on local labour from Olaroz Chico, other villages and Susques and more skilled and other contract services from San Salvador de Jujuy.

Water of a quality suitable for a supply of process water has been intersected in potentially sufficient quantities by drilling.

Local accommodation is provided by a basic hotel - Hostal de Pastos Chicos – located approximately 5 km west of Susques and half an hour's drive east of the project, on Route 52 leading to the Jama Pass and Chile. The hotel provides services to travelers crossing the international border.

7.2 Physiography

The Altiplano-Puna is a high elevated plateau within the central Andes (see Figure 4 below). Part of the central Andes the Puna covers part the Argentinean provinces of Jujuy, Salta, Catamarca, La Rioja and Tucuman with an average elevation of 3,700 m above sea level.

The Altiplano-Puna Volcanic Complex (APVC) is located between the Altiplano and Puna, and is associated with numerous stratovolcanoes and calderas. Recent studies have shown that the APVC is underlain by an extensive magma chamber at 4-8 km depth (de Silva et al., 2006). It seems likely that this could be the ultimate source of the anomalously high values of lithium in the area.

Figure 7.1 Project location, access and infrastructure.



The physiography of the region is characterized by basins separated by ranges, with marginal canyons cutting through the Western and Eastern Cordilleras and numerous volcanic centers,

particularly in the Western Cordillera. Abundant dry salt lakes (salar) fill many basins (see Figure 7.3 below).

The Olaroz-Cauchari salars are located in a closed basin, with internal (endorheic) drainage. The combined Olaroz-Cauchari basin is split in two by the delta of the Archibarca River, which enters the basin from the west. The Olaroz salar project is located in the northern portion of the basin (Figure 7.3). The elevation at the surface of the salar is approximately 3900 m asl. The salar is a flat area, probably hydraulically connected with the Cauchari salar to the south. The water inflow into the salar is produced by precipitation, superficial and groundwater inflows. The largest surface water drainage is that of the Rosario River, draining from the north into the Olaroz salar. Deltaic fans are formed in the northern area where the river enters into the salar. The approximately area of the basin is 6,000 km². Drainage within the salar is towards the interior, where discharge occurs by evaporation. The drainage basins of the salars in the Orocobre tenement package are shown in Figure 7.4.

Figure 7.2 Physiographic and morphotectonic features of the Central Andes, showing the Altiplano-Puna Volcanic Complex (APVC) and associated stratovolcanoes (triangles) and calderas (circles). The locations of the salar projects are shown in yellow. 1) Olaroz, 2) Cauchari, 3) Salinas Grandes, 4) Guayatayoc.

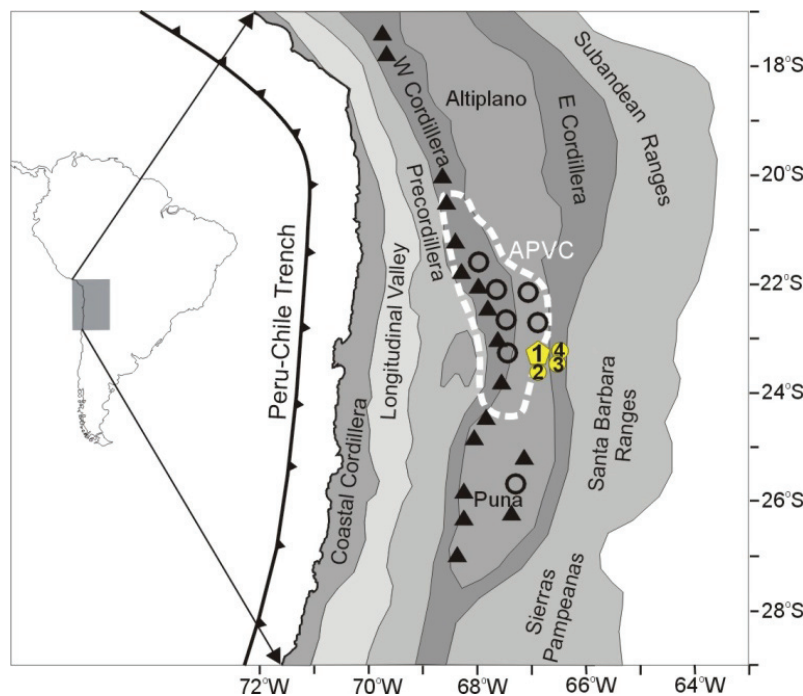


Figure 7.3 Digital elevation model of the Puna showing the location of salars and the salar project areas Olaroz, Cauchari, Salinas Grandes and Guayatayoc

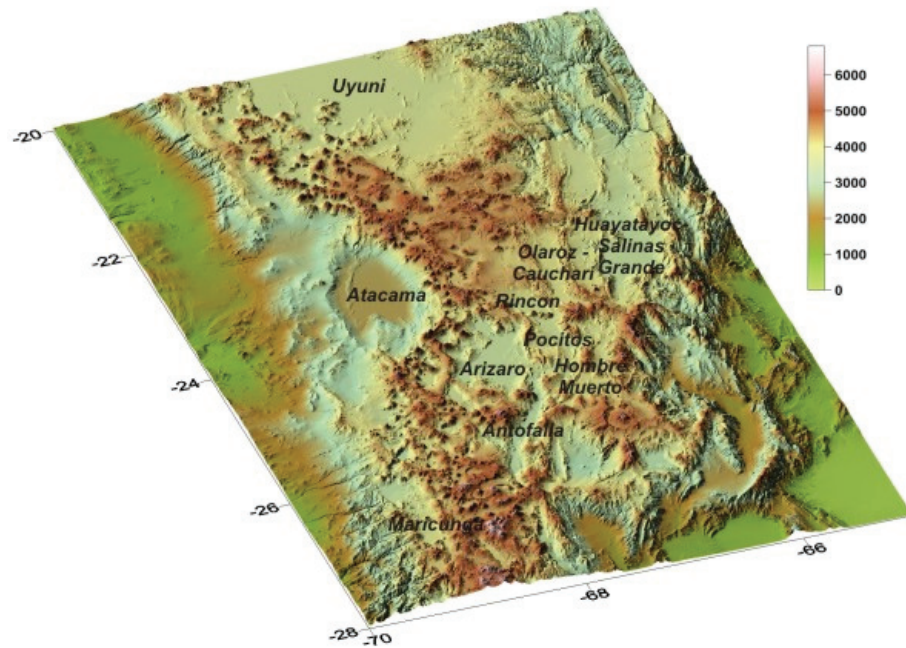
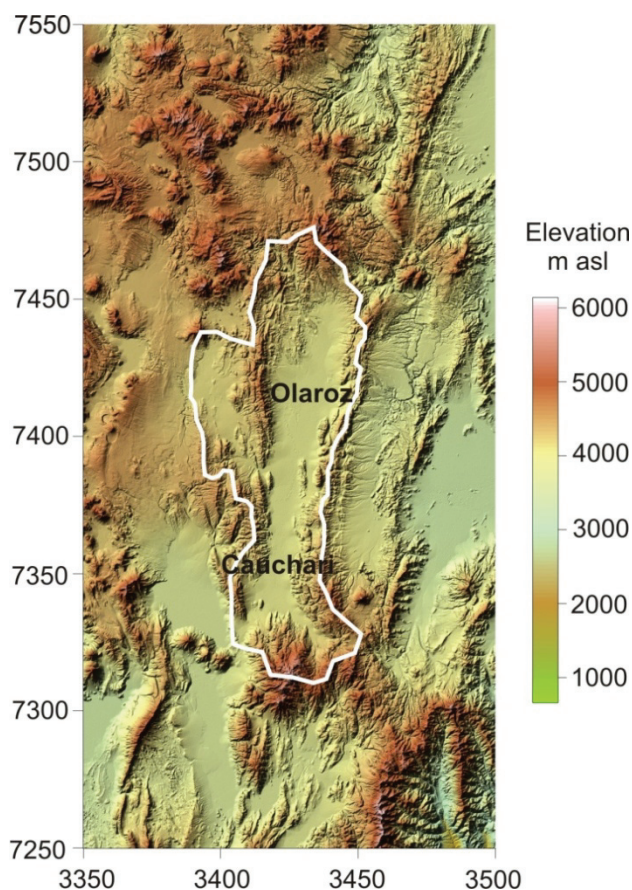


Figure 7.4 Catchment area draining to the Olaroz-Cauchari salars.



7.3 Climate

The climate in the project area is severe, although not so severe as to restrict working activities at any time during the year. Daily temperature variations up to 25°C. The climate can be described as a continental cold high altitude desert, with resultant scarce vegetation. Solar radiation is intense, especially during the summer months of October through March, leading to high evaporation rates.

The climatic conditions are considered attractive for solar evaporation processes. Although not quite as high as the evaporation rate at Salar de Atacama, the conditions are expected to be very similar to the Salar Hombre Muerto, which has been producing lithium for over 10 years and is located 230 km south of Olaroz.

Due to the remote location there is limited historical climate data available for the project. Because of the inadequate local climate data for the project the company has established local automated weather stations, although data collected is still limited to date.

At the Salar de Olaroz three weather stations have been installed. In the center of the salar a Davis Weather with a solar radiation sensor is installed, and on the eastern border of the salar, an Easy Weather Station has been installed, whilst in the northern part of the salar, another Easy Weather Station has been installed.

Partial data collection between September 2008 and July 2009 showed the average temperature was 8.24°C; the average wind speed 21.90 km hr⁻¹; the average relative humidity 30.6%, and the accumulated rainfall 84.9 mm total.

Figure 7.5 A weather station installed at the Salar by the Company.



7.3.1 Rainfall

The main rainy season is between the months of December to March, when most of the annual rainfall occurs, often in brief convective storms that originate from Amazonia to the northeast. The period between April and November is typically dry. Annual rainfall tends to increase towards the northeast, especially at lower elevations. Significant control on annual rainfall is exerted by ENSO (El Niño-Southern Oscillation) (Houston, 2006a).

Limited information is available directly from the salar. Information from the Olaroz project weather station (on the salar), and the surrounding weather stations at Olacapato (65 km south), Susques (35 km east), La Quaica (185 km northeast), Mina Pan de Azucar (120 km northeast) and the Hombre Muerto salar (180 km south) are presented in Table 7.1. Data from the Olaroz project weather station includes the period from September 2008 to August 2009. The rainfall data in Table 7.1 for the four Argentine rainfall stations is listed in order from southwest to northeast, reflecting increasing summer rainfall with proximity to Bolivia.

At the FMC lithium extraction project in the Salar de Hombre Muerto, a mean annual rainfall of 73.2 mm was recorded between 1992 and 1995.

Table 7.1 Average monthly rainfall, for rainfall stations, standardized over the rainfall period 1982-1990.

Olaroz project weather station, 60 km west of project August 2008-September 2009 (3900 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
19	15.5	9.4	0	0	0	0	0	0	0	0	5	48.9
Hombre Muerto salar, 180 km south of project 2008-2009 (4000 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
8.7	17.1	25.2	0	0	0	0	0	0	2.4	4.2	17	74.6
Susques, 50 km west of project 1982-1990 (3675 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
53.3	58.3	30.4	0.6	0	0	0	0	0	0.3	16	29.1	188.1
La Quaica, 185 km northeast of project 1982-1990 (3442 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
80.3	72.6	52.4	11.8	0	0	0	0	0	12.8	35.2	73.9	339
Mina Pan de Azucar, 120 km northeast of project 1982-1990 (3690 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
100.6	100	66.4	19.7	0	0	0	0	0	6.7	76.3	87.9	457.6
Olacapato, 65 kms South of project 1950-1990 (3820 m)												
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total mm
34	23	4	0	0	0	0	0	0	0	0	10	71

7.3.2 Temperature

Records from the weather station at Susques (35 km east of Olaroz) and the Olaroz weather station include temperature (Table 7.2, below) in addition to rainfall.

The average annual temperature at the project site is approximately 7° C, with extremes of 30° C and -15° C. The coldest months with temperatures below zero correspond to May through August. November till March are months with almost no frost. Details are collated in the Table 7.2, below. An annual mean temperature of 8 °C was registered in the locality of Catua, with 6 °C measured in the Hombre Muerto salar during the 1979 - 1995 period.

Table 7.2 Average monthly temperature °C at the Olaroz weather station and other weather stations in northwestern Argentina

Olaroz project weather station, August 2008-September 2009 (3900 m)													Average
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Mean	12.8	14.1	11.6	10.8	6.9	5.1	4.3	5.3	5.5	9.3	11.5	13.0	9.2
Maximum	22.9	24.1	21.9	21.6	19.1	15.5	13.4	16.8	17.9	21.2	22.6	24.1	20.1
Minium	2.7	4.1	1.4	-0.8	-5.2	-5.3	-4.9	-6.3	-7.0	-2.7	0.4	1.9	-1.8
Susques, 35 km east of project 1972-1996 (3675 m)													
Mean	11.3	11.2	10.5	8.1	4.9	3.0	2.5	4.6	6.6	8.9	10.4	11.1	7.8
Other Puna area data													
La Quiaca	12.3	12.0	12.2	10.0	6.4	3.9	4.1	5.8	8.6	10.4	12.0	12.2	9.2
Abra Laite	11.3	11.2	10.5	8.2	5.1	3.2	2.7	4.7	6.6	8.9	10.4	11.0	7.8
Barrios	11.9	11.7	11.2	9.0	6.1	4.2	3.7	5.7	7.5	9.8	11.1	11.6	8.6
Cangrejillos	11.6	11.5	10.2	7.5	4.0	1.6	1.1	3.3	5.4	7.8	10.1	11.4	7.1
Castro Tolay Abdon	12.4	12.2	11.5	9.1	6.0	4.0	3.4	5.6	7.6	10.0	11.5	12.2	8.8
Abra Pampa	11.8	11.8	11.5	10.6	6.5	4.0	3.9	6.1	8.5	10.5	11.8	12.2	8.0
Susques	10.8	10.6	10.2	8.3	5.0	2.3	2.0	3.8	6.1	9.8	10.3	11.1	7.5
Tres Cruces	10.3	10.2	9.7	8.5	5.4	3.3	3.1	5.1	7.4	9.0	10.5	10.7	7.8
Cieneguillas	10.7	10.7	10.3	8.2	5.3	3.5	2.9	4.8	6.5	8.8	10.0	10.5	7.7
Cochinoca	11.2	11.0	10.5	8.3	5.2	3.4	2.8	4.8	6.7	9.0	10.3	10.9	7.8
Condor	10.0	10.0	9.6	7.5	4.5	2.8	2.1	4.1	5.8	8.0	9.3	9.8	7.0
Coranzuli	9.1	9.1	8.6	6.4	3.3	1.6	0.9	3.0	4.8	6.9	8.3	8.9	5.9

7.3.3 Wind

Strong winds are frequent in the Puna, reaching speeds of up to 80 km hr⁻¹ during warm periods of the dry season. During summer, the wind is generally pronounced after midday, usually calming during the night. During this season, the winds are warm to cool. During winter wind velocities are generally higher and more frequent.

Table 7.3 Mean wind speeds (km hr⁻¹) for stations in northwest Argentina.

Localidad	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Purmamarca	3.56	3.79	4.28	4.3	5.58	5.04	4.7	3.61	3.99	5.03	4.44	3.86	4.35
Susques	2.37	3.38	4.73	4.62	6.6	4.38	1.68	3.61	4.09	4.44	2.32	2.62	3.74
Olaroz	6.4	7.4	8.7	8.6	10.6	8.4	5.7	7.6	8.1	8.4	6.3	6.6	7.7

7.3.4 Evaporation

Average annual evaporation in the Salar Hombre Muerto is 2,710 mm, calculated for the period 1992-2001 at the El Fenix Camp (FMC) weather station. Evaporation decreases with increasing elevation, and the highest naturally occurring rates are usually associated with the marginal areas of salars where water availability is greatest (Houston, 2006b).

Since May 2009, a Class A evaporation pan has been installed. Evaporation rates were difficult to register because the water has been frozen for most of the time during July and August. Hence next to the Class A pan A, a slightly bigger evaporation pan (known as Pan A bis) with unsaturated salt water solution, was installed in order to measure the evaporation rate. Preliminary measurements from May 2009 till January 2010 suggest that the yearly evaporation rate will be 2600 mm or more. These evaporation rates are similar to the Salar de Hombre Muerto and only slightly lower than at the Salar de Atacama. It should be noted that evaporation rates fluctuate from year to year, and easily can change 10 to 15 %.

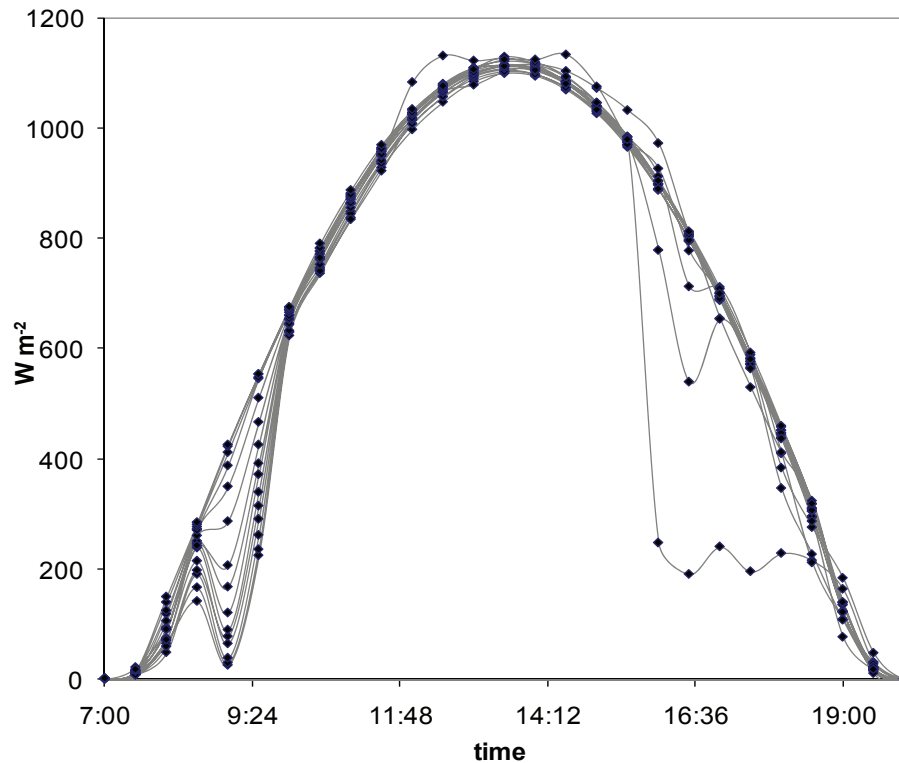
Figure 7.6 Class A Evaporation Pan and Pan A bis installed at Olaroz.



7.3.5 Solar Radiation

Preliminary data reveals that the solar radiation at the Salar de Olaroz is almost as strong as at the Salar de Atacama. Solar radiation is the most important source of energy for evaporation. In Figure 7.7 the behavior of solar radiation during several days in October is given. The reduced solar radiation at approximately 09:00 hrs is an artifact of shadow caused by the wind sensor on the station.

Figure 7.7 Daily solar radiation during October 2009.



7.4 Vegetation

Due to the extreme weather conditions in the region, the predominant vegetation is of the high-altitude xerophytic type adapted to high levels of solar radiation, winds and severe cold. The vegetation is dominated by woody herbs of low height from 0.40 - 1.5m, grasses, and cushion plants. With high salinity on its surface, the nucleus of the salar is devoid of vegetation.

To date no specific vegetation survey had been carried out in the tenement area. However, it is possible to define a number of vegetation areas, based on their physiography.

7.4.1 Low lying areas in the vicinity of water

These environments are characterized by having vegetation cover of 70-85, occupying small areas (1 km maximum) associated with water logged soils and more or less permanent bodies of water.

7.4.2 Mixed Steppes

Different types are recognized, depending on the grass species, which may consist of *Stipa sp.*, *Festuca sp.* and *Panicum chloroleucum*.

7.4.3 Bushy Steppes

Three different types are recognized, depending on the dominant bush species, such as rica-rica (*Acantholippia sp.*), tall tolillar (*Fabiana densa*) and short tolillar (*Fabiana sp.*).

8. HISTORY

As explained in the Introduction, this section covers all the work done prior to the current programs associated with the Bankable Feasibility Study being undertaken by the Company, which commenced in May 2009. The current program has only been underway for a short period and the results so far obtained are discussed in later Sections.

8.1 Pre-Orocobre

Fabricaciones Militares (Argentine government agency) carried out sampling of brines from Puna salars, in 1970. The presence of anomalous Li values was detected at this time, when only salt and borates were exploited from the Puna salars.

Initial evaluation of the mineral potential of the salars in Northern Argentina is documented by Igarzábal (1984) as part of the Institute of Mineral Benification (IN-BE-MI) investigation carried out by the University of Salta. This investigation involved a geological and geomorphic evaluation and limited sampling of salars in the Puna for Li, K and other elements. The Olaroz and Cauchari salars showed amongst the highest lithium values in this investigation with values of 0.09 % Li and 0.56% K at Olaroz, and 0.092% Li and 0.52% K at Cauchari.

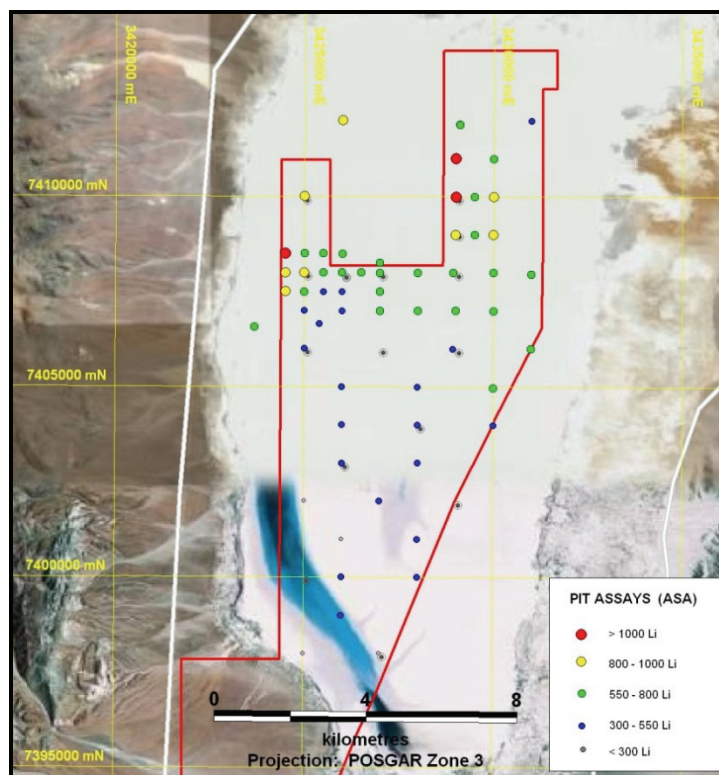
8.2 Orocobre pitting program 2008

Orocobre undertook pit sampling of the Olaroz salar on a variable grid between March and May 2008, to evaluate lithium concentrations and the superficial salar geology. The initial sampling (see section 14 for sampling protocol and section 15 for the QA/QC procedures and analysis) included a total of 62 brine samples from 60 pits. Summary statistics for these pits are given in Table 8.1 below. The plot of the lithium values are reproduced from Geos Mining as Figures 8.1 below.

Table 8.1 Pit sample statistics.

	Li	K	Mg	Mg/Li
N	62	62	62	62
Mean	641	8,918	1,964	3.1
Standard deviation	225	2,837	724	0.7
Max	1,207	16,219	3,926	8.0
Min	168	3,249	839	2.6

Figure 8.1 Distribution of pit simple results for Li (mg l^{-1}), taken from Geos Mining (2009).



The results of the pitting program confirmed similar values to the earlier Institute of Mineral Benification programme and lead to the decision to drill a series of holes at regular intervals across the salar, to evaluate the distribution of porous brine host lithologies and to obtain additional brine samples for analysis.

8.3 Orocobre drilling program 2008

8.3.1 Drilling

Orocobre undertook a drilling program between 4 September and 2 December 2008 using Falcon Drilling. Twenty-two HQ3 diamond core holes were drilled, totalling 1496.3 m. Drillhole locations provided by Orocobre gave elevations for the collars (based on handheld GPS readings) varying between 3890 m and 3955 m. However, since the salar is known to be flat, all holes were given a collar relative level of 3900 m by Geos Mining (2009). A summary of these wells is provided in Tables 8.2 and 8.3 below, and their location is shown in Figure 8.2.

The initial 16 HQ3 diamond drill holes (core diameter 61 mm) in the program were drilled on a variable grid, to an average depth of 60 m. Two holes in this program were drilled to greater depths of 125.4 and 199 m. Six further HQ3 holes were drilled as monitoring wells for the hydrogeological test work.

Table 8.2 Drillhole locations, depths and date drilled.

Hole	East	North	Depth (m)	Date
16-PM-1	3426115	7402889	60.0	
16-PM-2	3426115	7402889	60.0	
19-PM-1	3425114	7399890	60.0	1/12/2008
19-PM-2	3425114	7399890	60.0	2/12/2008
6B-PM-1	3426134	7407867	60.5	22/11/2008
6B-PM-2	3426134	7407867	60.0	24/11/2008
FD-01	3425096	7409888	46.0	4/09/2008
FD-02	3429116	7411887	45.7	6/09/2008
FD-04	3429114	7409890	43.6	5/09/2008
FD-05 #	3429125	7408934	63.7	27/09/2008
FD-06	3425114	7407891	95.4	9/09/2008
FD-06B #	3426134	7407867	63.7	9/09/2008
FD-07	3427114	7407888	45.7	7/09/2008
FD-08	3429112	7407887	45.7	6/09/2008
FD-10	3425111	7405889	49.7	10/09/2008
FD-11	3427113	7405890	125.3	14/09/2008
FD-12	3429114	7405890	55.9	15/09/2008
FD-14B #	3428113	7403889	63.7	26/09/2008
FD-16B #	3426115	7402889	62.2	24/09/2008
FD-18 #	3429114	7401887	199.0	19/09/2008
FD-19 #	3425114	7399890	69.8	23/09/2008
FD-22 #	3427113	7397889	60.7	21/09/2008

Table 8.3 Core recovery and proportions of main lithological units in drillholes (excluding 16-PM-1 and 16-PM-2 monitoring holes).

Hole	LOST %	SAND %	SILT %	CLAY %	HALITE %	ULEXITE %
19-PM-1	53.0	10.5	0.0	34.9	1.7	0.0
19-PM-2	55.5	8.6	0.2	35.3	0.5	0.0
6B-PM-1	62.3	0.7	0.0	35.6	1.4	0.0
6B-PM-2	66.4	2.8	0.0	29.7	1.1	0.1
FD-01	77.3	1.0	2.4	19.1	0.2	0.0
FD-02	61.4	17.6	4.1	16.8	0.0	0.0
FD-04	69.3	5.8	1.3	22.7	0.9	0.0
FD-05	62.1	0.2	0.0	37.7	0.0	0.0
FD-06	52.9	2.3	3.9	40.9	0.0	0.0
FD-06B	66.0	0.0	0.0	32.7	1.3	0.0
FD-07	62.7	1.5	3.4	30.7	1.7	0.0
FD-08	64.1	9.2	0.4	25.1	0.9	0.3
FD-10	56.1	0.4	0.6	41.3	1.6	0.0
FD-11	35.7	5.6	0.8	56.2	1.7	0.0
FD-12	55.7	4.6	1.5	36.7	1.6	0.0
FD-14B	56.5	0.7	0.0	34.2	8.6	0.1
FD-16B	49.2	2.0	0.0	32.5	16.1	0.2
FD-18	27.9	7.6	0.5	53.1	10.8	0.0
FD-19	39.6	3.1	0.0	56.4	0.9	0.0
FD-22	52.6	5.0	0.0	40.4	2.0	0.0
AVERAGE	56.3	4.5	1.0	35.6	2.7	0.0

Figure 8.2 Locations of boreholes, showing pumping and observation wells and the position of the section shown in Figure 8.7 (from Geos Mining, 2009).

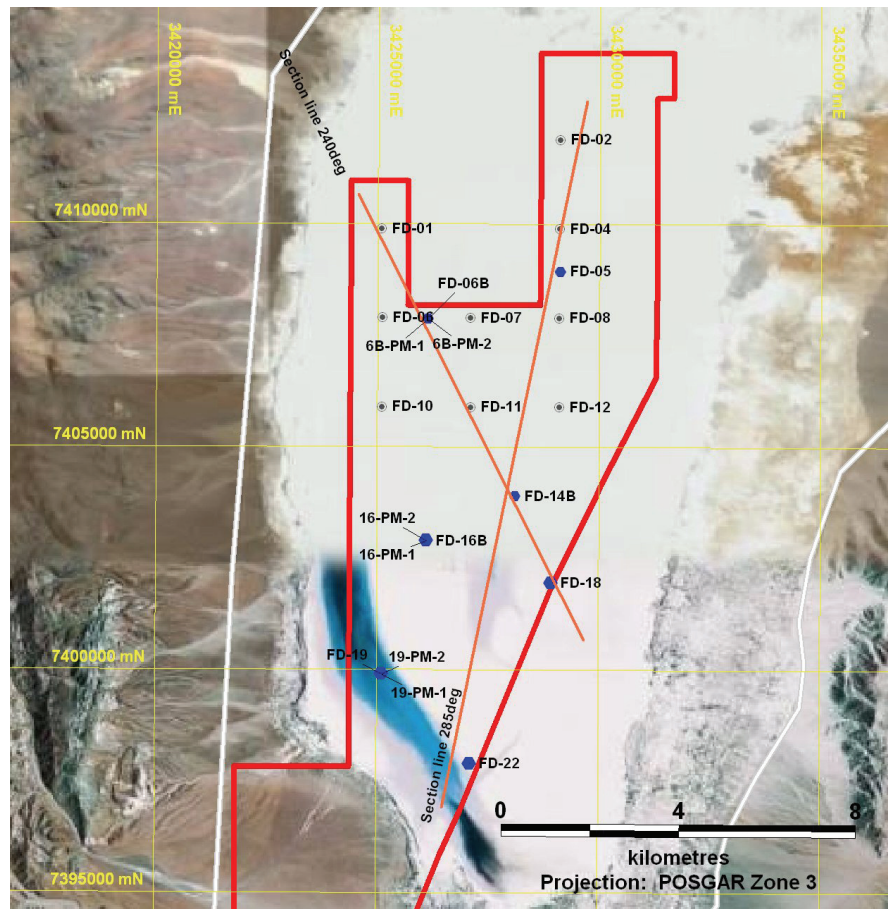
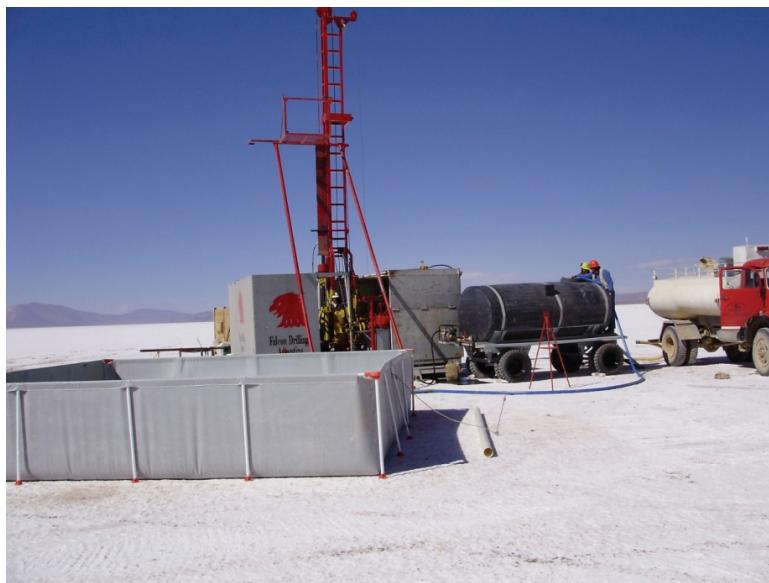


Figure 8.3 Core drilling rig on the salar site, with holding tank for brine in the foreground.



8.3.2 Interpretation of drilling results

Diamond drilling was carried out with the triple tube drilling system. However, core recoveries were very poor during drilling, with an average core recovery of only 44% (Table 8.3). The poor core recovery was attributed to the unconsolidated nature of the salar deposits and loss of the sand and other unconsolidated layers during drilling. Orocobre geologists conducted detailed geological logging of the drill core. Lithological units encountered include sand, silt, clay, halite and ulexite (borate).

Geophysical logs, self-potential, short and long resistivity, and natural gamma were run in the 7 holes which had been cased to significant depths. The logging was limited to the upper sections of these holes as a result of fine sediment filling the basal sections through the slotted casing. This was to a depth of between 27 m to 45 m with an average of 34m. These, together with geological logs of the recovered material provide the basis of the later geological interpretation of the subsurface by Geos Mining. Since the geophysical logs did not extend to the full depth of most bores, the interpretation of the deeper lithologies relied solely upon the core logging.

Figure 8.4 Examples of halite core from holes FD-16B (left) and FD-19 (right).



Based on the recovery data, geological and geophysical logging, sections at 295° and 240° were constructed across the salar (Figures 8.5 and 8.6). This information was analysed by Geos Mining (2009) and is discussed in Section 8.5.

Figure 8.5 Cross section trending 295° through the salar, showing lithological information, core recovery (left) and natural gamma log (right). See Figure 8.4 for section location.

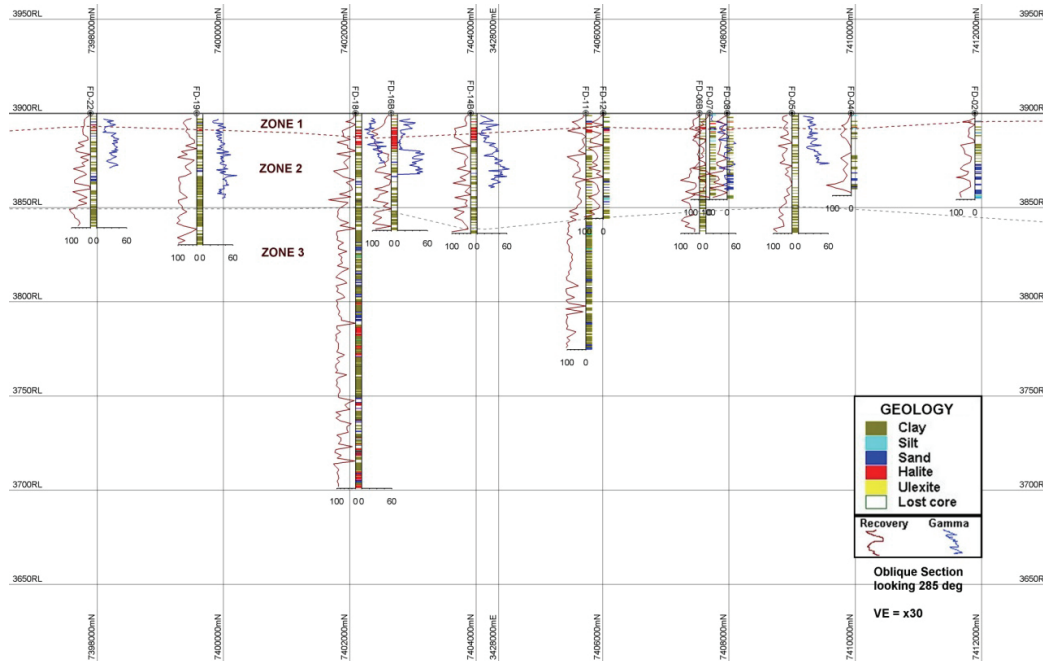
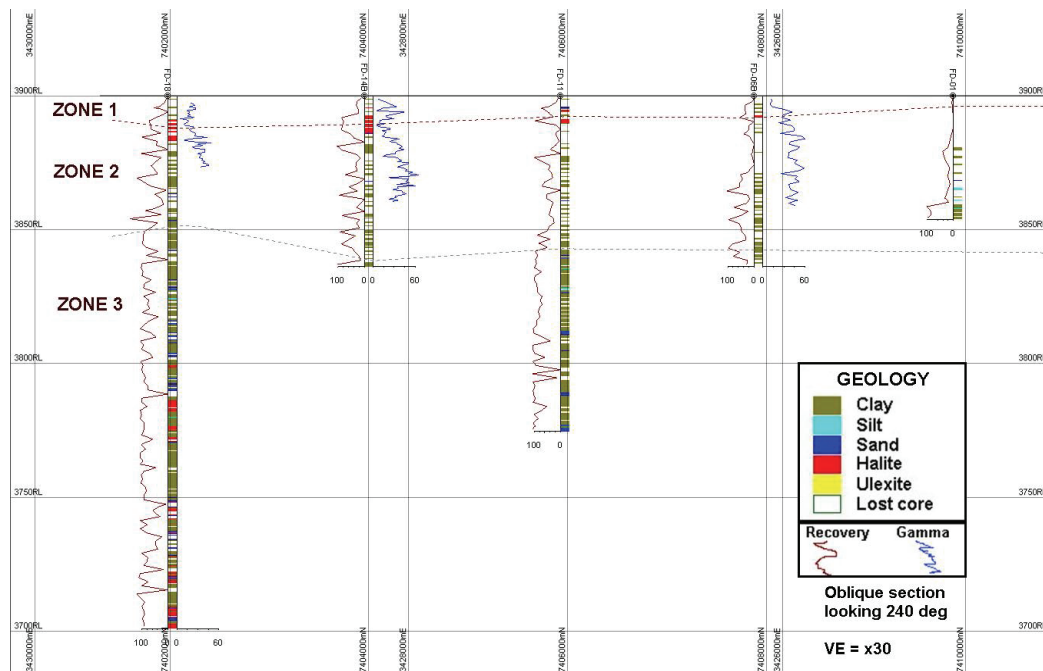


Figure 8.6 Cross section trending 240° through the salar, showing lithological information, core recovery (left), and natural gamma log (right). See Figure 8.4 for section location.



8.3.3 *Geological interpretation*

The surface of the salar was considered by Geos Mining (2009) to show typical zoning, with deposition of carbonates on the margins of the salar. Gypsum is deposited further towards the center, with halite forming a central zone.

At depth, the Olaroz salar consists of bedded fluvial and lacustrine sediments that comprise gravels, sands, silts and clays interbedded with evaporites (primarily halite, with minor sulfates and ulexite).

The drill logs show a lens of halite-rich sediments exists at around 7 m below the salar surface. The lens averages 3.6m thick (Geos Mining, 2009), with a maximum thickness of 11.55 m in hole FD-16B. In most holes, the halite unit consists of thin bands and patches of halite within clays and fine sands. Solid crystalline halite is prominent in holes FD-14B, FD-16B and FD-18. These units to the base of the halite layer were defined as Zone 1 (see Figures 8.5 and 8.6) in the resource model of Geos Mining (2009). Beneath the halite unit is a zone of mixed clays, sands and silts down to around 45-60 m below the salar surface. This unit has been defined as Zone 2 in the resource model of Geos Mining (2009).

For those holes greater than 60 m deep, the underlying units average around 60% core recovery. This significant change suggests the deeper sediments are more consolidated, higher in clay content, and consequently lower in porosity. This unit was defined as Zone 3 in the Geos Mining (2009) resource model of the salar. Zone 3 was not included in the resource estimate.

8.3.4 *Porosity measurements*

Porosity measurements undertaken by Orocobre were made by measuring moisture content of the recovered drill core (Table 8.4), using the difference between the wet and dry weight of the sample. The void volume was calculated from the weight loss after correcting for an assumed fluid density of 1.200. The matrix volume was calculated from the dry weight after correcting for an assumed density of 2.5. The technique proved difficult in practice because of the unconsolidated nature of the material, bias toward more consolidated core, and the errors associated with weight conversions to volume. Measuring moisture content may approximate to either total porosity where the material is disaggregated or effective porosity where the material retains its original shape and volume. The results strongly suggest that what has been determined is the total porosity.

Table 8.4 Summary of moisture content determinations made by Orocobre.

Well	Material	Depth m	Dry Weight gm	Wet Weight gm	Void Vol cm ³	Solids Vol cm ³	Porosity Void/Solid Vol
11-FD	sand	87.78	540	703	136	216	0.39
02-FD	sandy gravel	33.53	1208	1495	239	483	0.33
02-FD	muddy sand	44.50	1158	1461	253	526	0.32
08-FD	fine sand	33.53	982	1243	218	393	0.36
08-FD	muddy sand	39.62	745	991	205	339	0.38
06-FD	sand	15.24	1057	1381	270	423	0.39
11-FD	sand+ulexite	39.00	1022	1297	229	409	0.36
11-FD	sand	88.39	1023	1347	270	409	0.40
11-FD	sand	124.97	1011	1279	223	404	0.36
12-FD	sand+ulexite	36.57	946	1270	270	378	0.42
18-FD	sand	90.22	1086	1383	248	434	0.36
18-FD	sand	105.46	1079	1399	267	432	0.38
18-FD	fine sand	109.73	939	1249	258	376	0.41
18-FD	muddy sand	195.00	859	1141	235	390	0.38
18-FD	muddy sand	199.00	923	1185	218	420	0.34
22-FD	sand	33.53	920	1204	237	368	0.39
16 bis-FD	sand+ulexite	33.53	838	1155	264	335	0.44

8.3.5 Brine depth sampling

Excluding hydrogeological monitoring holes, cased bores were established to significant depths at 7 of the core drill hole sites across the salar. The core drill holes were reamed out with a tri-cone bit to a diameter of 165 mm (6 ½ inches) and a well screen of 100 mm (4") diameter PVC was installed from 0.5 m below surface to the total depth of the hole, with 2-3 cm long slots.

Subsequent to completion of the bores, they were developed by airlifting to establish data on potential yields, to ensure that all drilling fluid and cuttings were removed, and the brine bearing zones were in good hydraulic connection with the test bore.

During airlift development and subsequent testing, airlift flow rates were monitored with a V-notch weir, or by filling a known volume. The airlift flow data established bores with high yields and several with low yields. This information was used to plan the subsequent pumping tests.

Brine sampling was undertaken by Company staff in December 2008, with resampling of some bores during the February sampling event. The sampling protocol details are outlined in section 14.2, and a description of QA/QC procedures is provided in section 15, with the results of the sampling program being presented below in Table 8.5.

Because of the construction of the bores with screened sections throughout the test bore, pumped samples with the pump set at specific depths do not represent discrete depth samples, but are integrated samples, with brine volumes in proportion to the transmissivity of different layers within the aquifer(s).

Table 8.5 Results for brine analyses from wells (ASA Analyses).

Well	Depth (m)	Sample #	Sample Date	Li	K	Mg	Na	Ca	B	Mg/Li	B/Li	K/Li
W01	13	416	17-Dec-08	560	3983	1259	107836	466	652	2.25	1.16	7.11
W01	13	432	07-Feb-09	602	4651	1321	110058	521	713	2.19	1.18	7.73
W02	0.7	425	07-Feb-09	1016	9174	2835	112421	739	973	2.79	0.96	9.03
W04	0.7	426	07-Feb-09	1159	9964	3332	111498	529	898	2.87	0.77	8.60
W 05	25	417	17-Dec-08	1018	8372	2996	112936	493	899	2.94	0.88	8.22
W 05	25	427	07-Feb-09	717	6596	2013	114384	721	637	2.81	0.89	9.20
W 05	19	428	07-Feb-09	871	6902	2383	111284	557	831	2.74	0.95	7.92
W 05	13	430	07-Feb-09	795	7101	2239	116913	660	708	2.82	0.89	8.93
W06	4	431	07-Feb-09	673	6076	1400	115375	817	633	2.08	0.94	9.03
W06 Bis	36	415	16-Dec-08	748	NR	2154	NR	279	457	2.88	0.61	NR
W06 Bis	0	419	06-Feb-09	740	6386	2123	114125	710	741	2.87	1.00	8.63
W06 Bis	25	420	07-Feb-09	712	6443	2067	112624	745	731	2.90	1.03	9.05
W06 Bis	13	421	07-Feb-09	739	6551	2081	113080	743	746	2.82	1.01	8.86
W07	4	422	07-Feb-09	1108	9228	3461	111906	554	940	3.12	0.85	8.33
W08	4	424	07-Feb-09	800	7418	2255	114236	687	713	2.82	0.89	9.27
W10	4	433	07-Feb-09	285	2839	805	117246	1172	316	2.82	1.11	9.96
W11	25	418	18-Dec-08	1267	10037	4293	113526	310	1085	3.39	0.86	7.92
W11	4	434	07-Feb-09	1192	9611	3634	117008	282	1043	3.05	0.88	8.06
W12	13	435	08-Feb-09	566	5130	1365	110872	796	568	2.41	1.00	9.06
W 14 Bis	24	401	04-Dec-08	939	7167	2592	119167	395	1062	2.76	1.13	7.63
W 14 Bis	13	436	08-Feb-09	498	4598	1341	114655	740	497	2.69	1.00	9.23
W 14 Bis	31	438	08-Feb-09	508	4763	1360	114090	727	520	2.68	1.02	9.38
W 16 bis	30	408	14-Dec-08	749	6200	2230	112399	463	860	2.98	1.15	8.28
W 16 bis	13	441	09-Feb-09	497	4664	1342	111772	795	536	2.70	1.08	9.38
W 16 bis	19	442	09-Feb-09	495	4764	1360	111667	806	551	2.75	1.11	9.62
W 16 bis	30	443	09-Feb-09	502	4605	1323	111200	798	538	2.64	1.07	9.17
W18	30	402	05-Dec-08	946	7508	2429	115074	369	1033	2.57	1.09	7.94
W18	13	439	08-Feb-09	610	5353	1667	110185	612	660	2.73	1.08	8.78
W18	19	440	08-Feb-09	644	5557	1649	109055	624	670	2.56	1.04	8.63
W19	36	404	08-Dec-08	555	4168	1656	114439	544	844	2.98	1.52	7.51
W19	13	445	09-Feb-09	467	3822	1124	111652	712	624	2.41	1.34	8.18
W19	22	446	11-Feb-09	454	3833	1164	112002	763	579	2.56	1.28	8.44
W19	31	447	11-Feb-09	463	3911	1185	110290	758	588	2.56	1.27	8.45
W22	30	403	07-Dec-08	607	5063	1419	118824	425	867	2.34	1.43	8.34
W22	11	448	11-Feb-09	273	2773	725	111994	983	415	2.66	1.52	10.16
W22	25	449	11-Feb-09	334	3301	871	109134	947	466	2.61	1.40	9.88

8.4 Pump test program

At three of the test bores, two additional holes drilled were constructed as observation bores for pumping tests. Pump testing was carried out by Company staff. Details of the testing, carried out with an airlift pump, are summarized in Table 8.6 and in the following section. Pump testing consisted of three constant rate drawdown tests of between 5.5-24 hours duration, and five pumped well recovery tests.

The data collected by Orocobre was provided to Australian Groundwater and Environmental Consultants (AGEC) of Brisbane, Australia, to analyse and determine hydraulic parameters.

Airlift yields of up to $420 \text{ m}^3 \text{ d}^{-1}$ (4.9 l s^{-1}) from a 100 mm diameter borehole suggest that a properly designed and constructed production bore might be capable of significantly higher yields. The tests were analyzed for both confined and unconfined aquifer conditions using one or more of the following methods of analysis:

- Neuman curve matching for unconfined aquifer conditions,
- Theis curving matching for confined aquifers,
- Cooper-Jacob Method for confined aquifer conditions,
- Theis Recovery Method for confined aquifer conditions.

Table 8.6 Summary of the pump testing program and interpreted hydraulic parameters (from AGECE, 2009).

Bore number	Pump & Obs bores	Northing	Easting	Date of test	Pumping Rate 'Q' (m ³ /day)	Pump depth (m)	Test Duration (min)	Distance (m)	SWL (mbGL)	Screen interval (mbGL)	Aquifer thickness (m)	Maximum Drawdown (m)	Transmissivity (m ² /day)	Hydraulic Conductivity (m/day)	Specific Yield	Method of Analysis
Constant rate test and observation bores																
06bis FD	Pump	7407867	3426134	2/6/2009	62.2	40	600		0.47	0.5 – 48	12.5m	2.96	6.7	0.54		Recovery
06bis FD	O1							7	0.46	0.5 – 58	13.3	1.2	9.6	0.72	0.018	Theis
													12.1	0.92		CJ
													28.1	2.11		Recovery
06bis FD	O2							12	0.37							
16bis FD	Pump	7402889	3426115	12/13/2008	380	40	1440			0.5-45						
16bis FD	O1							7	0.51	0.5-58.7	30	5.83	62.9	2.09	0.212	Neuman
													45.9	1.53		CJ
													31.3	1.04		Recovery
16bis FD	O2							12					63	2.1	0.224	Neuman
													51.2	1.7		CJ
													30.1	1		Recovery
19 FD	Pump	7399890	3425114	12/11/2008	420	40	330									
19 FD	O1							7		0.5-57.8	16.2	5.5	63.3	3.9	0.179	Neuman
													55.4	3.42		CJ
																Recovery
19 FD	O2							12	0.82	0.5-58	16.2	4.91	63.2	3.9	0.258	Neuman
													56	3.45		CJ
													40.7	2.51		Recovery
Constant rate test - recovery recorded in pump bore																
01FD	Pump/O1	7409888	3425096	3/18/2009	59.28	~12			0.03	0.5-19.6	6.8	8.23	4.08	0.6		CJ
													2.99	0.44		Recovery
05Bis-FD	Pump/O1	7408934	3429125	3/18/2009	59.76	~20			0	0.5-26	3.9	5.3	30.8	2.36		CJ
													7.21	0.55		Recovery
14Bis-FD	Pump/O1	7403889	3428113	3/20/2009	62.46	~30			0.11	0.5-39.6	18	0.41	90.3	5.02		CJ
													82.4	4.58		Recovery
18-FD	Pump/O1	7401887	3429114	3/10/2009	59.58	~24			0.44	0.5-26	13	1.53	14.1	1.08		CJ
													24.9	1.91		Recovery
22-FD	Pump/O1	7397889	3427113	3/19/2009	62.16	~30			0	0.5-29	16.5	3.44	25.6	1.55		CJ
													11.7	0.71		Recovery

Values of permeability in the range $0.4\text{-}5 \text{ m d}^{-1}$ are typical for fine sands. Specific yield values averaging 18% obtained from the field tests are also typical for the fine sand intersected in the boreholes.

8.5 Geos Mining Report

Geos Mining of Sydney, Australia, were contracted to undertake an initial resource assessment of the Olaroz salar. The resource model was developed by evaluating drill logs, downhole geophysical data, the AGECE hydrogeological assessment, and brine depth sample assays. Their report (Geos Mining, 2009) concluded with an Inferred Resource estimate.

8.5.1 Geology

Geos Mining split the sedimentary sequence within the salar into three zones:

Zone 1 - From 3899 m relative level (1 m below the surface) to the base of the halite-rich unit (average depth 10.9m, maximum depth 19m in hole FD-16B).

Zone 2 - From the base of Zone 1 to a depth, averaging around 54 m, where there is a significant increase in core recovery due to the prevalence of consolidated clay units.

Zone 3 - A sequence of consolidated clays, sands and halite below Zone 2 with a maximum drilled depth of 199 m.

8.5.2 Specific Yield

Measurements of total porosity for sections of drill core, mostly unconsolidated sands, gave values generally in the range of 30-40%. However, the technique employed was not considered adequate to give a reliable estimate of specific yield .

Consequently, widely accepted literature values of specific yield were adopted for the individual stratigraphic units (sand, silt, and clay) as set out in Table 8.7. Because of the uncertainty in the specific yield values for sand units, which often contain some silt and clay, a range of values was used in the modelling.

Table 8.7 Values of specific yield (in percent) used for the resource model of Geos Mining (2009).

	Sand	Silt	Halite	Clay
Preferred Estimate	22	5	10	1
Higher Estimate	27	5	10	1
Lower Estimate	17	1	10	1

The specific yields given above were applied to the lithologies recorded in each hole, and for each zone a lithology-thickness weighted specific yield was calculated. These values are given in Table 8.8.

Table 8.8 Zone thickness and lithology weighted specific yield in each drillhole (Geos Mining, 2009).

Hole	Zone 1		Zone 2		Zone 3		Zone 1 + 2	
	Thickness	Porosity	Thickness	Porosity	Thickness	Porosity	Thickness	Porosity
FD-01*	3.96	14.8%	42.06	3.5%			46.02	5%
FD-02*	4.88	10.0%	40.84	9.2%			45.72	9%
FD-04*	12.22	10.9%	31.37	8.9%			43.59	10%
FD-05	10.36	9.1%	38.14	7.5%	15.20	3.1%	48.50	8%
FD-06	7.01	11.5%	53.34	5.3%	35.05	4.7%	60.35	6%
FD-06B*	8.15	10.2%	55.55	2.1%			63.70	3%
FD-07*	9.75	10.0%	35.97	6.1%			45.72	7%
FD-08*	8.80	7.2%	36.92	5.4%			45.72	5%
FD-10*	9.89	6.2%	39.79	4.6%			49.68	5%
FD-11	10.02	7.6%	47.28	3.9%	67.97	3.6%	57.30	5%
FD-12	10.11	7.1%	44.14	4.1%	1.53	4.0%	54.25	5%
FD-14B	13.94	7.5%	48.24	7.2%	1.52	1.0%	62.18	7%
FD-16B	18.99	11.1%	32.52	6.3%	10.69	5.4%	51.51	8%
FD-18	16.80	11.5%	31.36	6.0%	150.84	4.8%	48.16	8%
FD-19	9.17	6.4%	45.39	5.5%	15.24	2.2%	54.56	6%
FD-22	9.29	10.4%	41.31	5.1%	10.06	1.9%	50.60	6%
Average	10.21	9.5%	41.51	5.7%		3.4%	51.72	6.3%

* Holes FD-01, FD-02, FD-04, FD-06B, FD-07, FD-08 and FD-10 did not extend to the base of Zone 2.

8.5.3 Accepted Assays

As there were two sampling rounds conducted from the bores, with some repeat sampling in the February round, assays accepted from each hole for use in the resource estimate were determined by Geos Mining (2009, p22) as follows:

- If the February, 2009 assays were comparable to the December, 2008 assays, the average of all assays was used,
- If the February, 2009 results were significantly different, the average of the December, 2008 assays only was used,
- For those holes that were not sampled in the December program (FD-02, FD-04, FD-06, FD-07, FD-08, FD-10 and FD-12) the average of the February assays was used.

This procedure meant that those holes that did not have December assays may have been assigned low values. It was decided not to adjust these values up, but to note that the overall resource grade may be reporting low.

Table 8.9 Accepted grades for Li, Mg and K (in mg l⁻¹) for each drillhole (Geos Mining, 2009).

Hole	Li	Mg	K
FD-01	580	1290	4317
FD-02	1016	2835	9174
FD-04	1150	3332	9964
FD-05	900	2604	7619
FD-06	670	1400	6076
FD-06B	748	2122	6460
FD-07	1108	3461	9228
FD-08	800	2255	7418
FD-10	310	805	2839
FD-11	1200	3964	9824
FD-12	550	1365	5130
FD-14B	800	2592	5924
FD-16B	700	2230	5439
FD-18	850	2429	6482
FD-19	555	1656	4012
FD-22	600	1419	4050
Average	796	2289	6660

8.5.4 Volumes

Wireframes were created in Micromine for the base of Zone 1 and base of Zone 2, as interpreted from the drill logs. Dummy holes were created in order to extrapolate the wireframes outside of the tenement boundaries. The wireframes were then clipped to the outline of the resource, being the tenement boundaries and a line approximating the southern end of the salar (Geos Mining, 2009, Figure 9, p23).

For Zone 1, the volume was computed as the ground between the 3899 m elevation and the base of Zone 1 wireframe. This elevation takes into account the low porosity of the surface crust of halite and the groundwater level being 0.5m - 1m below the surface. The total volume of Zone 1 was $545 \times 10^6 \text{ m}^3$.

The volume of Zone 2 was computed as the ground between the wireframes marking the base of Zone 1 and the base of Zone 2. The total volume of Zone 2 was $3,455 \times 10^6 \text{ m}^3$.

Zone 3 was not included in the resource model.

8.5.5 Thickness-specific yield and grade-thickness-specific yield parameters

For each Zone and each hole Geos Mining (2009) created a thickness-porosity (TSy) parameter. The first step in this process is to calculate the combined thickness of each material (ie. sand, silt, clay, halite) in each Zone and each hole and multiply it by its appropriate specific yield (Table 8.7) to arrive at an equivalent thickness of brine for that material within each Zone. Subsequently, the equivalent brine thickness for each material is summed within each Zone to give the TSy parameter.

The TSy parameter calculated for each drillhole was gridded across the resource area within each Zone using a minimum curvature method with 200 m square grid cells, and then contoured.

Grade-thickness-specific yield parameters (GTSy) were calculated as $GTSy$, where G is the average grade for each hole within each Zone. $GTSy$ was gridded and contoured across the resource area, to arrive at an in-situ resource.

The average grade of the resource was calculated as the sum of the gridded values of $GTSy$ divided by the sum of the gridded TSy values. Average values for Li and K were calculated as 787 and 6,567 mg l⁻¹, respectively. However, because of the variability in the brine assays, particularly the significant decrease in grades for the February samples, these grades were rounded up by Geos Mining to 800 and 6600 mg l⁻¹, respectively.

8.5.6 Resource estimate and classification

The mineral resources contained within the Olaroz brines are regarded by Geos Mining (2009, p24) as being Inferred Resources in accordance with the 2004 JORC Code. This is equivalent to an Inferred Resource under NI 43-101 (CIM Definition Standards, 10 November 22, 2005).

Geos Mining considered that since extraction may not allow selectivity of brines, a cut-off grade should not be applied. The resource figures are presented in Table 8.10, below.

Table 8.10 Inferred Resource estimate, as prepared by Geos Mining (2009).

Classification	Area (km ²)	Zone	Zone Volume (10 ⁶ m ³)	Average Specific Yield	Brine Volume (10 ⁶ m ³)	Li (gm m ³)	K (gm m ³)	B (gm m ³)
		1	545	11.5%	63			
Inferred Resource	75.0	2	3,455	8.3%	287	800	6600	800
		TOTAL	4,000		350			

The brine resources are equivalent to 1.5 million tonnes of lithium carbonate and 4.4 million tonnes of potash (potassium chloride).

The sensitivity of the estimated resources to variability in the specific yield was investigated and the range of estimates are provided in Table 8.11, below.

Table 8.11 Estimated range of resource based on different values of Specific Yield.

	Brine vol. (million kL)	Lithium (g/kL)	Potassium (g/kL)	Lithium Carbonate equivalent (million tonnes)	Potash equivalent (million tonnes)	Zone 1 Average Specific Yield	Zone 2 Average Specific Yield
Preferred Estimate	350	800	6,600	1.49	4.40	11.5%	8.3%
Higher Estimate	415	800	6,600	1.76	5.22	13.3%	9.9%
Lower Estimate	255	800	6,600	1.09	3.23	9.0%	6.0%

8.5.7 Limitations of the Resource Model

Geos Mining (2009) concluded that confidence in the resource figures is limited by the following factors:

- Poor understanding of the sedimentary sequence due to high core losses in the drilling
- Lack of accurate porosity data,
- Limited bore pumping test data,
- Significant variations in assays between the two sampling programs,
- Lack of understanding of grade variability with depth, and
- Wide spread drill spacing (approximately 2 km).

Due to these limitations, Geos Mining (2009) reported that their resource estimate had been estimated using conservative assumptions and that collection of additional, more reliable data would likely increase the estimate of available resources.

8.5.8 Exploration Potential

Geos Mining concluded that , Zone 3 had been poorly tested, with only three drillholes (FD-06, FD-11 and FD-18) extending to depths greater than 70m below the salar surface. These holes, however, had intersected significant intervals of sand and halite, particularly hole FD-18. Given that Li grades may be increasing with depth, further testing of Zone 3 is warranted.

8.6 Preliminary Economic Assessment

An initial scoping study, equivalent to a Preliminary Economic Assessment study under NI 43-101, was carried out by the Company in May 2009, following completion of the drilling, testing and the initial resource estimate.

The Preliminary Economic Assessment is preliminary in nature, includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no

certainty that the preliminary assessment will be realized. Mineral resources that are not mineral reserves do not have demonstrated economic viability.

The study was an internal Orocobre exercise, summarizing the work undertaken, the potential process route, the financial assumptions and costs for capital items. Inputs into the study were provided by staff and consultants with experience on similar salar projects. The positive outcome of the scoping study led to planning of additional drilling and test work for the project as part of a definitive feasibility study to be undertaken in 2010.

The Salar de Olaroz brine has a composition that is relatively similar to brine from operating lithium producers at Silver Peak (Nevada) and Hombre Muerto (Argentina). For that reason their production processes, and an alternative solar evaporation processes were analyzed.

It was concluded that:

- there was significant exploration potential beneath the resource depth of 55 m
- the application of the Silver Peak process was feasible, because the Mg/Li ratio is low and sufficient levels of sulfate were present. The Hombre Muerto process, if permitted for use, is also directly applicable but may have patent issues to be overcome.
- the project could produce 15,000 tonnes per year of lithium carbonate and about 36,000 tonnes per year of potassium chloride.
- capital costs should be between US\$ 80-100 million .
- low cash operating costs and strong operating margins are indicated which are comparative with current low cost brine producers.

The results of the study were reviewed as part of this report by the second author. The production levels of lithium carbonate and potash are considered reasonable, and in addition, other products, such as boric acid may also be produced. The initial capital cost estimates are considered as potentially optimistic, but these estimates may be achieved if the construction of the solar evaporation ponds can be undertaken using predominantly clays instead of plastic liners. The operating costs estimated in the scoping study of about US\$ 3,000 per tonne of lithium carbonate (without allowance for by-product credits) and US\$ 1,700 per tonne (with allowance for by-product credits) appears to be quite conservative.

9. GEOLOGICAL SETTING

9.1. Regional

The following publications have been used as background information in preparing this Technical Report, in addition to those specifically referenced in the text:

- Alonso, R. N., 1999. Los salares de la Puna y sus recursos evaporíticos, Jujuy, Salta y Catamarca. En Recursos Minerales de la República Argentina (Ed. E. O. Zappettini), Instituto de Geología y Recursos Minerales. SEGEMAR, Anales 35: 1907-1921, Buenos Aires
- Evans, R., K. 2010. Lithium reserves and resources. Lithium Supply and Markets Conference, Las Vegas.
- Garrett, D. 2004. Handbook of lithium and natural calcium chloride: their deposits, processing, uses and properties.
- Igarzábal, A. P. 1984. Estudio geológico de los recursos mineros en salares del NOA (Puna Argentina). Proyecto de Investigación. Consejo de Investigación. Universidad Nacional de Salta
- Kunasz, I. 2005. Global lithium dynamics.
- Ramos, V.A. 1999. Los depósitos sinorogénicos terciarios de la región Andina.
- Roskill Information Services. 2009. The Economics of Lithium. 11th ed. Roskill Information Services Ltd., 27a Leopold Road, London SW19 7BB, United Kingdom.

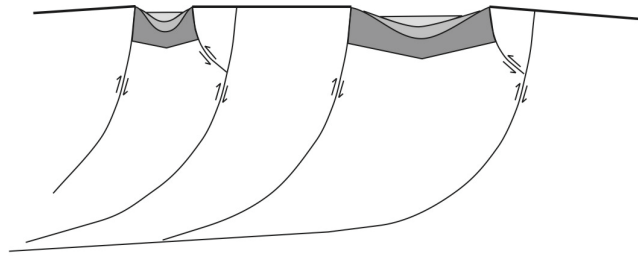
9.1.1 *Jurassic-Cretaceous*

The Andes have been part of a convergent plate margin since the Jurassic, and both the volcanic arc and the associated sedimentary basins developed as a result of subduction processes. An initial island arc formed along the west coast of South America during the Jurassic (195-130 Ma), moving eastward during the mid Cretaceous (125-90 Ma) (Coira et al., 1982). An extensional regime persisted through the late Cretaceous (see fig. x) generating back-arc rifting and grabens (Salfity & Marquillas, 1994). Marine sediments covering most of the Central Andean region indicate an extensive back-arc seaway with little land above sea level (Lamb et al., 1997; Scotese, 2001).

9.1.2 *Paleogene*

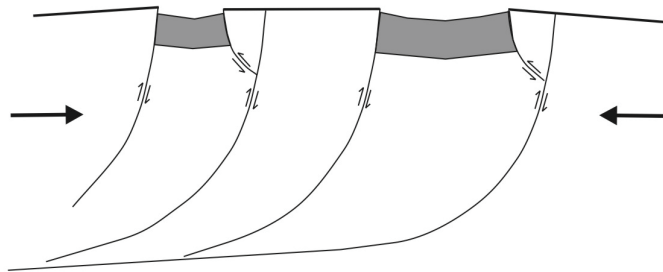
During the late Cretaceous to Eocene (78-37 Ma), the arc shifted farther east to the location of the current Precordillera (Allmendinger et al, 1997; Lamb et al., 1997). Significant shortening commenced during the Incaic Phase (44-37 Ma) largely in the west, with associated uplift to perhaps 1000 m (Gregory-Wodzicki, 2000) creating a major north-south watershed. Coarse clastic continental sediments eroded from this ridge indicate eastward transport in Chile and Argentina (Jordan & Alonso, 1987). The subsequent initiation of shortening and uplift in the Eastern Cordillera of Argentina (~38 Ma), led to the development of a second north-south watershed with coarse continental sediment accumulating throughout the Puna (Allmendinger et al., 1997; Coutand et al., 2001).

Figure 9.1 Generalized structural evolution of the Puna basins



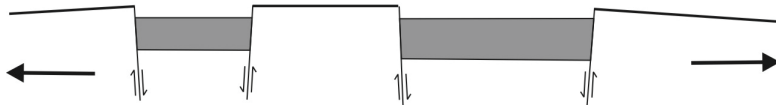
Miocene - Pleistocene (15-0.01Ma)

tectonic activity moves east to Sub-Andean zone
two-stage basin infill
late Mio-Plio braidplain seds form base
Plio-Pleistocene salar deposits overly



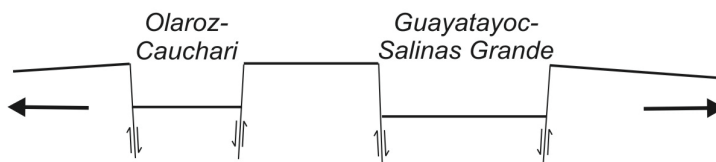
Oligocene - mid Miocene (26-14Ma)

compression -
reversal of faults caused by major thrusting
originating from mid-crustal decollement
and near surface backthrusts
diagenesis and warping of basin sediment



Paleogene (50-30Ma)

syn-tectonic basin infill
coarse gravels fining up



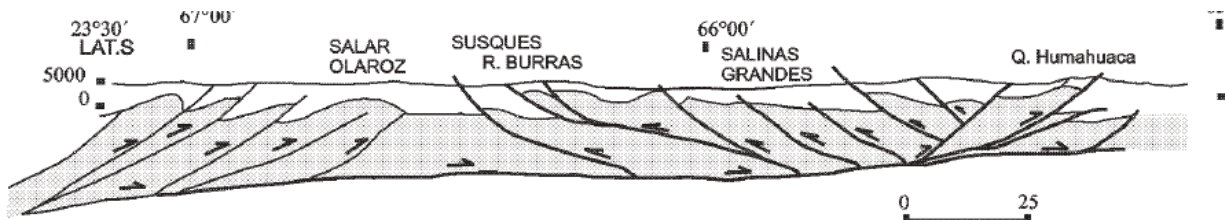
Late Cretaceous - Eocene (70-30Ma)

initial emergence of Andes from sea
extension - grabens & basin formation

9.1.3 Neogene

By the late Oligocene to early Miocene (20-25 Ma), the volcanic arc switched to its current location in the Western Cordillera. At the same time, significant shortening across the Puna on reverse faults led to the initiation of separated depocenters (figure 9.2). Major uplift of the Altiplano-Puna plateau began during the middle to late Miocene (10-15 Ma), perhaps reaching 2500 m by 10 Ma, and 3500 m by 6 Ma (Garziona et al., 2006). Coutand et. al. (2001) interpret the reverse faults as being responsible for increasing the accommodation space in the basins by uplift of mountain ranges marginal to the Puna salar basins.

Figure 9.2 Structural cross section from the Chilean border through the Olaroz and Salinas Grandes salars. Note the development of a mid-crustal decollement with an east vergent, thrust fault and associated back thrusts creating the ranges bordering the salars, with Paleogene to Neogene deposits in the salar basins bordered by uplifted Ordovician to Cretaceous bedrock (from Mon, 2005)



West of Salar de Olaroz and the Salar de Cauchari, Marreti et. al. (1994) note that the north-south striking reverse faults are covered by continental clastic and pyroclastic strata dated at 9.5 Ma, with the faults cutting lower-middle Miocene strata (Schwab and Lippolt, 1976; Schwab, 1980). The approximate kinematics of late Tertiary deformation in this area involve subhorizontal east-west shortening. Kay et. al., (2008) also note that Ordovician sedimentary rocks overthrust late Miocene Pastos Chicos Formation sediments on the west the flank of the Salars de Olaroz-Cauchari.

The late Miocene volcanic flare-up (5-10 Ma) centered on the Altiplano-Puna Volcanic Complex (APVC) between 21°-24° S (de Silva, 1989), produced a high density of both caldera subsidence and associated extensive ignimbrite sheets, as well as andesitic-dacitic stratovolcanoes. In the Puna volcanic activity was frequently constrained by major NW-SE crustal megafractures (Chernicoff et al., 2002), that are especially well displayed along the Calama-Olocapato-El Toro lineament to the south of Cauchari (Salfity, 1985).

During the early to middle Miocene, red bed sedimentation is found throughout the Puna, Altiplano and Chilean Pre-Andean Depression (Jordan & Alonso, 1987). As thrust faulting, uplift and volcanism intensified during the middle to late Miocene, the sedimentary basins became isolated by the mountain ranges, developing internal drainages, with major watersheds (the Cordilleras) bounding the Puna to the west and east. Sedimentation in these basins initiated with alluvial fans being shed from the uplifted ranges and continued with playa sandflat and mudflat facies.

Northern Argentina has experienced a semi-arid to arid climate since at least 150 Ma as a result of its stable location relative to the Hadley circulation (Hartley et al., 2005), but as a result of Andean uplift almost all flow of moisture from Amazonia to the northeast has been blocked, leading to increased aridity since at least 10-15 Ma. Consequently, given the zonally high radiation and evaporation levels, the reduction in precipitation has led to the development of increased aridity in the Puna. The combination of internal drainage and arid climate led to the deposition of evaporite precipitates in many of the Puna basins.

9.1.4 Late Neogene-Quaternary

During the Pliocene-Pleistocene deformation as a result of shortening moved out of the Puna into the Santa Barbara system. At the same time orbital influences led to a fluctuating climate regime with short periods of wetter conditions alternating with drier. As a result of both reduced tectonic activity and frequent aridity, a reduction in erosion and accommodation space means that sediment accumulation in the isolated basins has been limited. Nevertheless, ongoing runoff, both surface and underground continues solute dissolution from the basins and concentration in their centers where evaporation is the only outlet.

Evaporite minerals occur both disseminated within clastic sequence and as discrete beds. The earliest record of evaporite formation is for the middle Miocene, but their frequency and magnitude tends to increase during the Late Neogene-Quaternary (Alonso et al., 1991; Vandervoort et al., 1995; Kraemer et al., 1999). Dating of the thick halite sequences in the Salars de Hombre Muerto and Atacama suggest that they have mostly formed since 100 Ka (Lowenstein, 2000; Lowenstein et al., 2001).

9.2 The Olaroz Basin

The oldest rocks that outcrop in the area consist of Ordovician turbidites of the Puna Turbidite Basement in the mountains on the western margin of the salar, with minor north-south trending outcrops of Ordovician sediments in the range to the east of the salar. Ordovician granitoids are mapped locally east of the salar, in contact with Ordovician sediments. Minor outcrops of the conglomerates/sandstones and sandstones of the Cretaceous Pirgua Subgroup and Lecho Groups respectively strike north-south and outcrop with Ordovician units.

Fluvial sandstones and argillite of the Paleocene-Eocene Santa Barbara Subgroup are restricted in outcrop to the mountain range east of the salar, but may also underly the salar. Conglomerates and sandstones of the lower Eocene Río Grande Formation outcrops as a north-south belt in the mountain ranges both east and west of the salar, together with sandstones of the Oligocene-Miocene Vizcachera Formation, and are thus expected to also underly the salar. The Miocene upper Vizcachera Formation (sandstones, conglomerates, tuffs and ignimbrites) outcrops in both ranges, with greater exposure in the lower flanks of the eastern range, and is also expected to underly the salar.

The Miocene Yungara Dacite occurs in the eastern range adjacent to the southern portion of the salar. Clastic, evaporitic, and pyroclastic sequences of the Miocene Pastos Chicos Formation occur as outliers around the salar basin, together with the Miocene Pastos Grandes Group. A tuff in the Pastos Chicos Formation has been dated at 9.5 ± 0.3 Ma (Schwab, 1973).

These units are surrounded by Holocene fluvial deposits which enclose the salt crust of the salar itself. Alluvial fans and piedmont deposits are developed on the margins of the salar basin, with fine debris of sandstone clasts in the topographically lower areas on the margins of the salar. In the north of the salar basin the Rosario River has developed a delta with transitions from sandy clastic to evaporite units.

Pleistocene basalts are locally present at the southern end of the salar, in the divide separating the salars of Olaroz and Cauchari. The Coyahuaima Volcanic Complex, a typical andesite stratovolcano, is located north of the salar.

The salar itself is composed of a central chloride/halite zone, surrounded by sulfate and carbonate zones overlying clastic sediments of Plio-Pleistocene and late Cretaceous to Miocene age considered equivalent to those outcropping around the salar. Six different types of surface crusts have been identified in the salar.

Figure 9.3 Polygonal expansion cracks developed in the halite crust of the salar nucleus.



Figure 9.4 Stratigraphic table for the Olaroz basin (numbers refer to map units).

	Age period	Ma	Rock types	Geological environment	Tectonic events	1:250,000 Map Sheet	
						Susques (2366-III)	San Martín (23664)
Quaternary	Holocene	0.01	Alluvial deposits, salars	Closed basins, salars	Post Quechua deformation	Salar deposits, lacustine, colluvial and alluvial sediments (40-44)	Salar deposits, lacustine, colluvial and alluvial sediments (25c-30)
	Pleistocene	2.6	Alluvial, colluvial, lacustrine, ignimbrites	Closed basins, fan deposits, volcanic centres	NE-SW shortening (from 0.2 Ma) due to strike-slip faulting continuing to present day	Tuzgle ignimbrite (38-39)	Alluvial and glacial deposits (5a, 25b, 26)
Neogene	Pliocene	5.3	Continental sediments +/- ignimbrites	Some volcanic complexes developed in continental sediments	Major volcanic centres and calderas 8-6 Ma	Jama volcanic rocks (36-37). Andesite, dacite lavas, ignimbrites; Atana ignimbrite	Malmar, Uquia and Jujuy Formations. Continental sediments - sandstone, conglomerate +/- mudstone (19, 22-24)
			Andesitic to dacitic volcanics	Volcanic complexes in continental sediments		Volcanic complexes (35)	Formations Oran (16 Ma - 0.25 Ma), Callegua, Formation Agua Negra. Continental sandstones, with clay interbeds (19, 20-21)
	Miocene		Ignimbrites			Coyaguayma & Casabindo dacite ignimbrites (33 & 34)	
			Continental sediments & tuffs		Start of thrusting, with WNW-ESE directed thrusting from 13-4 Ma	Sijes Formation (32) ~7-6.5 Ma sandstones, mudstones and tuffs	
			Continental sediments, tuffs, volcanic breccias		End of Quechua phase event finished by 9-15 Ma, with associated folding	Chimpa volcanic complex (31) andesites & dacites, lavas/ignimbrites. Pastos Chicos Fm ~10-7 Ma with unnamed tuff 9.5.	
			Dacite domes, pyroclastics, intrusives			Yungara dacite domes (30) & subvolcanics (SE side Olaroz)	
			Rhyolitic, dacitic volcanic complexes, continental sediments			Volcanic complexes (23-29), Cerro Morado, San Pedro, Pairique, Cerro Bayo and Aguiliri, Pucara Formation. Andesite to dacite lavas, domes and ignimbrites. Susques Ignimbrite ~10 Ma	
			Continental sediments			Vichacera Superior (22b). Sandstones and conglomerates, with tuffs & ignimbrites	
		23.8				Vichacera Inferior (22a). Sandstones and interbedded claystones	
Paleogene	Oligocene	33.9	Continental sediments	Red bed sequences	Incaic Phase II - Compression, resulting in folding	Rio Grande Fm Superior (21b). Red aeolian sandstones	Casa Grande and Rio Grande Formations (18). Continental sandstones, conglomerates, siltstones and claystones
	Eocene					Rio Grande Fm Inferior (21a). Alternating coarse conglomerates and red sandstones	
		55.8	Continental sediments, locally marine and limey	Local limestone development, local marine sequences		Santa Barbara subgroup (20). Fluvial and aeolian alternating conglomerates and red sandstones	Santa Barbara subgroup. (17) continental limy sandstones, siltstones, claystones
	Paleocene						Balbuena subgroup (16). - see below
BASEMENT - PRE TERTIARY UNITS (MARINE)							
Mesozoic	Cretaceous		Continental sediments, locally marine and limey		Peruvian phase - extension and deposition of marine sediments	Balbuena Subgroup (19). Sandstones, calcareous sandstones, limestones, mudstones (Marine).	Balbuena subgroup (16). Continental/marine calcareous sandstones
			Continental sediments			Piruga Subgroup (16). Alluvial and fluvial sandstone & conglomerate	Piruga subgroup (15). Red sandstones, silty claystones and conglomerates
						Granites, syenites, granodiorite (15, 17, 18)	Granites, monzogranite (11-14)
Paleozoic	Carboniferous - Silurian		Marine sediments	Marine platform and turbidite deposits	Isoclinal folding on NW/SE trending axes, extending to early Cretaceous	Upper Paleozoic marine sediments (14)	Machareti and Mandiyuti Groups (10). Sandstones, conglomeratic sandstones, siltstones and diamictites. Silurian Lipeon & Barite Formations (9). claystones and diamictites
	Ordovician		Marine sediments	Marine delta and volcanic deposits/domes		Multiple Paleozoic intrusive suites (6-13)	El Moreno Formation (8). Porphyritic dacite
	Cambrian	540		Marine sediments		Ordovician sandstones (3-5), volcanoclastic sediments & Ordovician turbidites	Guayoc Chico Group (7) & Santa Victoria Groups (6). Marine sandstones, mudstones and limey units
	PreCambrian		Schists, slate, phyllite	Metamorphosed turbidites		Meson Group (2). sandstones and mudstones	Meson Group (5). Marine sandstones
						Puncoviscana Formation (1) turbidites	Puncoviscana Formation (1) turbidites - metamorphosed and intruded by plutons

This geological map displays the Olaroz and Cauchari tenements in the Susques region. The map is overlaid with a grid with coordinates ranging from 3410000 to 3450000 Easting and 7400000 to 7440000 Northing. Key features include:

- Geological Units:** Various units are color-coded, including dark green (likely Precambrian or Paleoproterozoic), orange/brown (Proterozoic), yellow (Quaternary), and red (volcanic units).
- Topography:** Contour lines and spot elevations (e.g., 3794, 3818, 4010) are shown.
- Water Features:** The Salina de Olaroz salt flat is a prominent feature in the center, along with several rivers and streams.
- Structural Features:** Fault lines are indicated by dashed lines with arrows showing movement.
- Infrastructure:** Roads and a railway line are visible.
- Scale and Orientation:** A scale bar indicates distances up to 10 kilometers. A north arrow is located in the upper right corner.
- Labels:** The map includes labels for "Olaroz tenements", "Cauchari tenements", and "SUSQUES 1:250,000 SHEET".

10. DEPOSIT TYPE

As stated in the Introduction, brine prospects differ from solid phase industrial mineral prospects by virtue of their fluid nature. Therefore, the term ‘deposit type’ is not strictly relevant to a brine play, so that here the host aquifer is considered, together with its geometry and physical properties, especially porosity.

Previous investigations and analyses have been carried out by the Company, AGEC, and Geos Mining. This work has been described in Section 8 History, and will not be repeated here. In addition, as part of the ongoing current Bankable Feasibility Study, surface geophysical studies have been undertaken, and the results are described in Section 12 Exploration, and will not be repeated here.

The hosting aquifer(s) occurs in the upper sedimentary sequences of the Olaroz basin and are probably of Pleistocene to Recent age. These sequences are structurally bounded by reverse faulting, and probably reach maximum depths of 600 m. Lithologically, the aquifers are composed of fine to medium grained arenaceous clastic deposits, interbedded with both granular and crystalline halite. The halite beds thicken to a maximum of 11.6 m in the center of the nucleus.

Geophysical studies suggest that in addition to the relatively near-surface aquifer(s), there is a possibility of a coarser-grained clastic sequence at greater depths. This unit may potentially form an additional brine prospect, and will be the subject of exploration drilling during the current program.

Porosity determinations made by the Company have been described in Section 8.3, and suggest that the total porosity for sandy material may be around 38%. Ongoing test work is aimed at providing more detailed data on both the effective porosity and specific yield of the different lithologies. A summary of the aquifer physical properties, as determined by AGEC from pumping tests carried out by the Company, is presented in Table 10.2 below.

Table 10.1 Summary of aquifer physical properties determined from pumping tests (see Table 8.6 for the full data.

	Permeability m d ⁻¹	Specific Yield
Mean	2.0	0.18
Max	5.02	0.26
Min	0.44	0.02

A fully detailed analysis of the “deposit type(s)” will be provided in the Definitive Feasibility Study when the ongoing current investigation program has been completed.

11. MINERALISATION

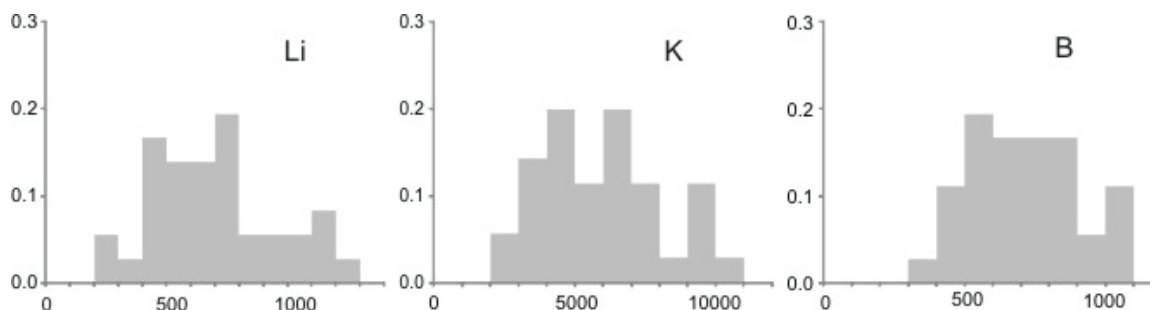
As stated in the Introduction, brine prospects differ from solid phase industrial mineral prospects by virtue of their fluid nature. Therefore, the term ‘mineralization’ is not strictly relevant to a brine resource, so that here the brine is considered; its flow regime, and its physical and chemical properties.

Previous investigations and analyses have been carried out by the Company, AGECE, and Geos Mining. This work has been described in Section 8 History, and will not be repeated here.

Table 11.1 Basic statistics for the historical well brine samples (from Table 8.5) for the Salar Olaroz (all values given in mg l⁻¹).

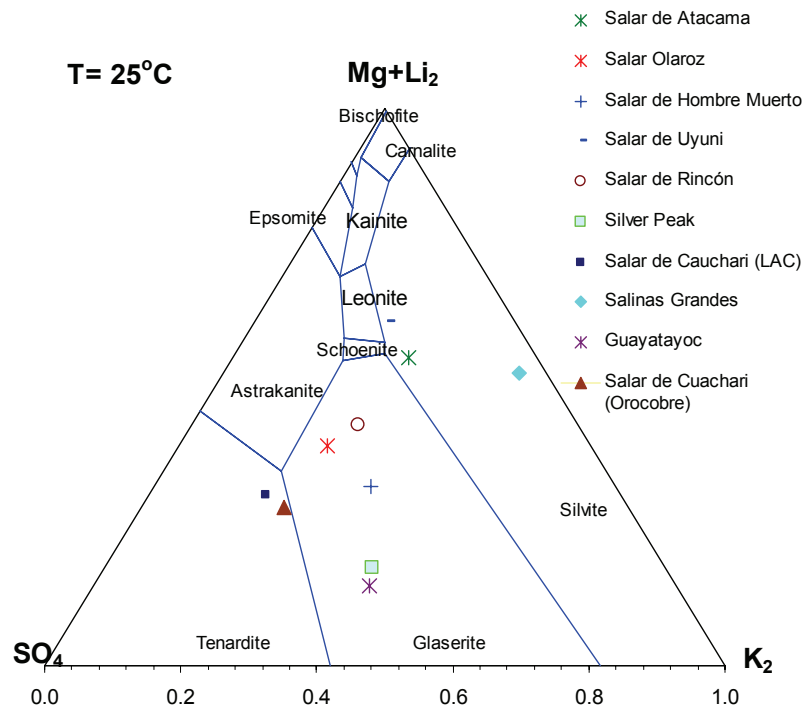
	Li	K	Mg	Na	Ca	B	Mg/Li
N	36	35	36	35	36	36	36
Mean	697	5,957	1,929	112,998	646	711	2.7
Standard deviation	254	2,041	851	2,687	200	198	0.3
Max	1,267	10,037	4,293	119,167	1,172	1,085	3.4
Min	273	2,773	725	107,836	279	316	2.1

Figure 11.1 Frequency histograms for Li, K and B for the historical well brine samples (from Table 8.5) for the Salar Olaroz (values in mg l⁻¹).



Further analysis of the brine using historical data (Section 8) may be made by plotting the average composition on a Janecke projection (**Error! Reference source not found.1.2**). Although this plot does not indicate concentrations, it allows an indication of the types of salt that can be expected to crystallize during the solar evaporation process. The Salar de Olaroz brine is located in almost the center of glaserite ($\text{Na}_2\text{SO}_4 \cdot 3\text{K}_2\text{SO}_4$) field. Low ambient temperatures at the Salar will cause the crystallization of sulfate as glauber salt ($\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$) in the evaporation ponds, which is stable at low temperatures. The low Mg/Li ratio of the brine opens the feasibility of magnesium removal with slaked lime. The Olaroz brine has high sulfate content (high SO_4/Mg); hence sodium and potassium sulfate salts are likely to crystallize. As it has a SO_4/Mg ratio higher than four, there is enough sulfate available in the brine to precipitate the calcium liberated during magnesium removal process.

Figure 11.2 Salar de Olaroz average brine composition plotted on a Janecke Phase Diagram and compared with other known brine compositions.



A fully detailed analysis of the “mineralization” will be provided in the Bankable Feasibility Study as soon as the ongoing current investigation program has been completed.

12. EXPLORATION

12.1 General

Orocobre Ltd contracted with Wellfield Service Ltd to undertake both gravity and audio-magnetotelluric (AMT) surveys at various sections across the Salar de Olaroz. The objective of the gravity survey was to obtain first order estimates of the geometry and depth of the basin, and if possible, to establish the main sedimentary sequences within the basin. The objective for the AMT surveys was to define the limits of the brine body hosted in the basin sediments, and to define the brine-fresh water interface.

A total of 26 km of gravity profiling and 34 km of AMT were conducted between October 5 and November 2, 2009. The location of the sections carried out is shown in Figure 12.1 on the next page. All coordinates and elevations are referred to the Gauss Krueger Projection, Zone 3, and the reference system Posgar 94.

Gravity techniques measure the local value of the acceleration, which after correction, can be used to detect variations of the gravitational field on the earth's surface that may then be attributed to the density distribution in the subsurface. Since different rock types have different densities, it is possible to infer the likely subsurface structure and lithology, although various combinations of thickness and density can result in the same measured density; a problem known as non-uniqueness.

AMT measures temporary variations in the electromagnetic field caused by electrical storms (high frequencies >1 Hz), and the interaction between the solar wind and the terrestrial magnetic field (low frequencies <1 Hz), which allows variations in the electrical subsurface to depths of 2 km or more. The electrical properties of the subsurface depend on Archie's Law:

$$R_t = a R_w / P^m$$

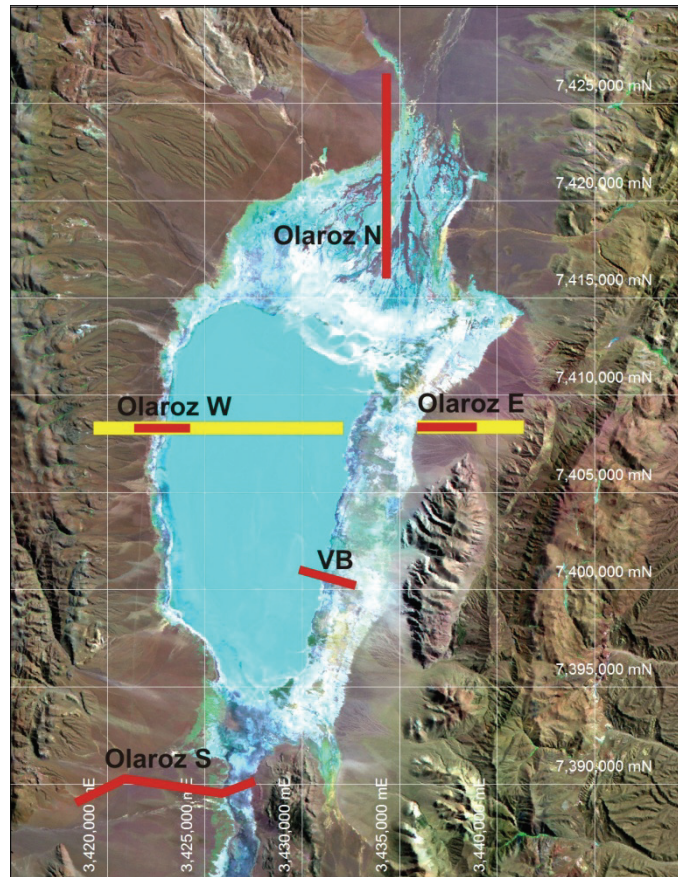
where R_t is the measured total resistivity, R_w is the resistivity of the fluid in the rock pores and P is the rock porosity, a and m are constants. Hence, it is possible to infer the subsurface variations in fluid resistivity and porosity, although it is important to note that once again the problem of a non-unique solution always exists.

12.2 Gravity

12.2.1 Data acquisition

Data was acquired at a total of 130 gravity stations spaced at 200 m, coupled with high precision GPS survey data. A Scintrex CG-5 gravimeter (the most up-to-date equipment available) was used, and measurements taken over an average 15 minute period in order to minimise seismic noise. A base station was established with readings taken at the beginning and end of each day's activities in order to establish and subsequently eliminate from the data the effects of instrument drift and barometric pressure changes. The daily base stations were referred to the absolute gravity point PF-90N, close to Salta where a relative gravity of 2149.136 mGal was obtained. Since this point is distant from the Salar de Olaroz, intermediate stations were used to transfer the absolute gravity to Pastos Chicos where a relative gravity base station was established with a value of 1425.313 mGal.

Figure 12.1 Location of gravity (yellow) and AMT (red) sections

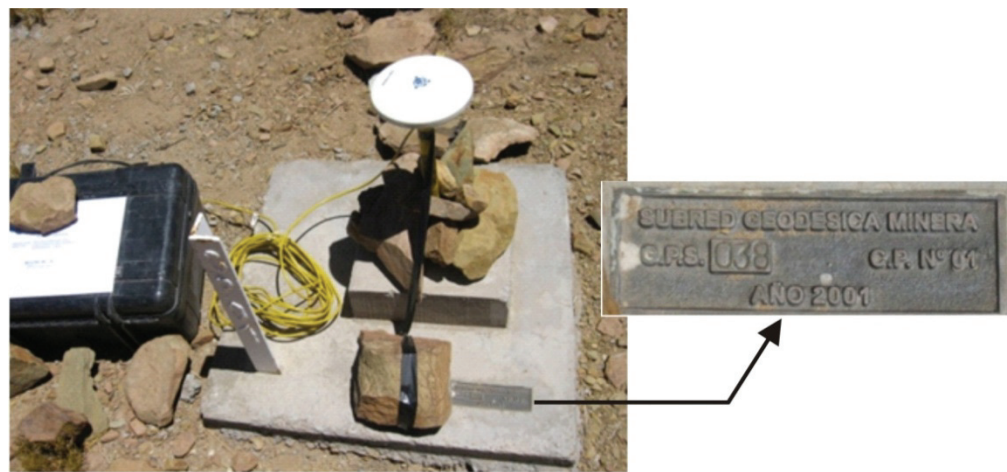


To measure the position and elevation of the stations, a GPS in differential mode was used with post-processing (Trimble 5700). This methodology allows centimeter accuracies, with observation times comparable to or less than the gravity observation. Using a mobile GPS (Rover) the gravity station position data is recorded. Simultaneously, another GPS (Fixed) records variation at a base station located within a radius of 10 to 20 km, to correct the Rover GPS. Both data sets are post-processed to obtain a vertical accuracy of 1 cm.

Figure 12.2 Gravimeter base station



Figure 12.3 GPS base station



12.2.2 Data processing

In order to arrive at the complete Bouguer anomaly which can be used to interpret the subsurface the following corrections to the acquired data must be made:

- Tidal correction.
- Drift, instrumental height and ellipsoid corrections.
- Free air, latitude, Bouguer and topographic corrections.

Tidal correction compensates for variations in gravity caused by the sun and moon. Using TIDES software, the acceleration due to gravity for these effects can be determined corresponding to the location and time of measurements. The data acquired in the survey were translated to UTC time to facilitate data handling. The exported data were converted from μGal to mGal and used to correct the acquired data.

Instrument drift was calculated from the difference in gravity measured at the base station. This difference is then linearly distributed with respect to time of each reading and used to correct the acquired data.

Each reading was corrected for the height of the instrument using the following formula:

$$r_h = r_t + 0.308596 h_i$$

where r_h is the corrected instrument height, r_t is the tidal correction, and h_i is the observed instrument height.

The formula employed to correct variations in gravity associated with the ellipsoidal shape of the earth corresponds to the 1980 model:

$$gl = 978032.7 [1 + 0.0053024 \sin^2(l) - 0.0000058 \sin^2(2l)]$$

where gl is the theoretical gravity in milligals and l is latitude

The free air anomaly is calculated as:

$$g_{\text{free air}} = -0.3086 (\Delta h)$$

where $g_{\text{free air}}$ is the correction factor and Δh refers to the difference in altitude of the station with respect to the base.

To eliminate the effect of the rock masses between the reference level and observation station, the Bouguer correction was employed.

$$g_{\text{CB}} = 0.04191(\Delta h) \rho$$

where g_{CB} is the correction factor, the value Δh refers to the difference in altitude between the observation point and the base station, and ρ is the mean rock mass density in the area calculated using the graphical Nettleton method to be 2.07 gm cm^{-3} .

The topographic correction is used to compensate the effects of the relief in the gravity measurements. It takes into account the topography at different levels of accuracy and importance, according to its distance from the gravimetric station to correct. Centered areas are considered at the station with radii of 100 m, 2.5 km and 150 km respectively.

The result of applying all corrections is the Bouguer anomaly.

12.2.3 Gravity data modeling and interpretation

The Bouguer anomaly can be modeled to represent the subsurface geology. However any model is non-unique and it is essential to take into account the known geology and rock density. The following table provides some representative values for the rock types in the Olaroz basin.

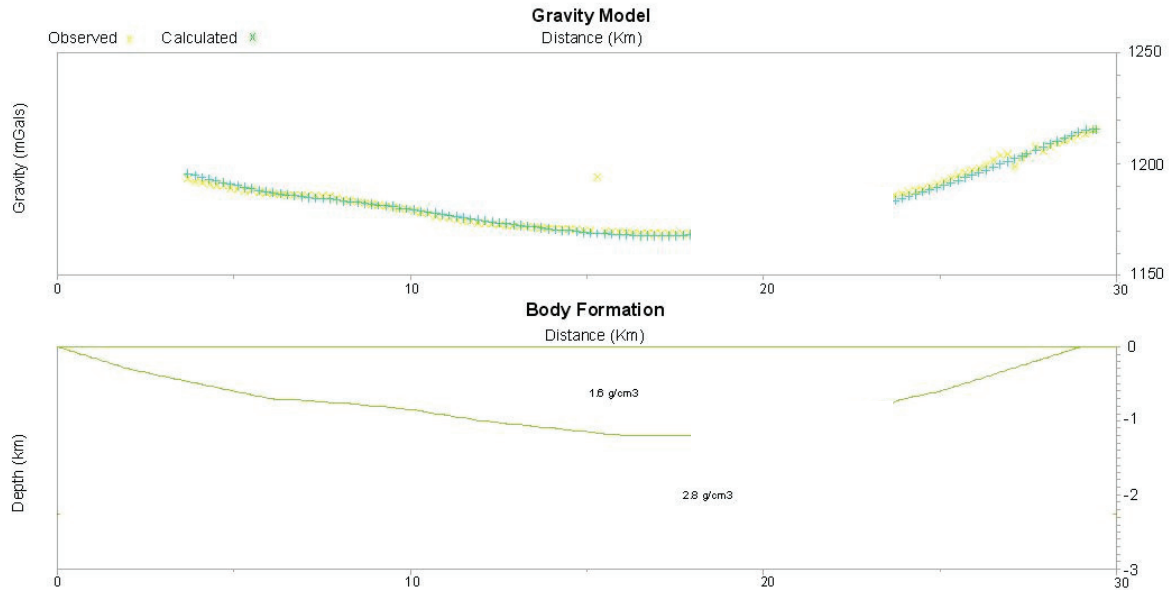
Table 12.1 Density values measured on rock samples taken from the Olaroz basin

Sample	Weight (gm)	Volume (cm ³)	Density (gm cm ⁻³)
Pastos Chicos Formation – Late Miocene	751.49	440.00	1.71
Sijes Formation - Miocene	389.84	214.00	1.82
Sta.Barbara, Subgroup – Late Cretaceous	336.93	163.00	2.07
Ordovician metasediment	349.42	160.00	2.18
Intrusive dacite	72.43	37.45	1.93

The Bouguer anomaly was inverted using Talwari software to produce a series of possible 2D stratified models. The results for a simple two-layer system (see figure 12.4 below) show a good fit within the basin, although the boundary conditions are not well defined. For the two-layer

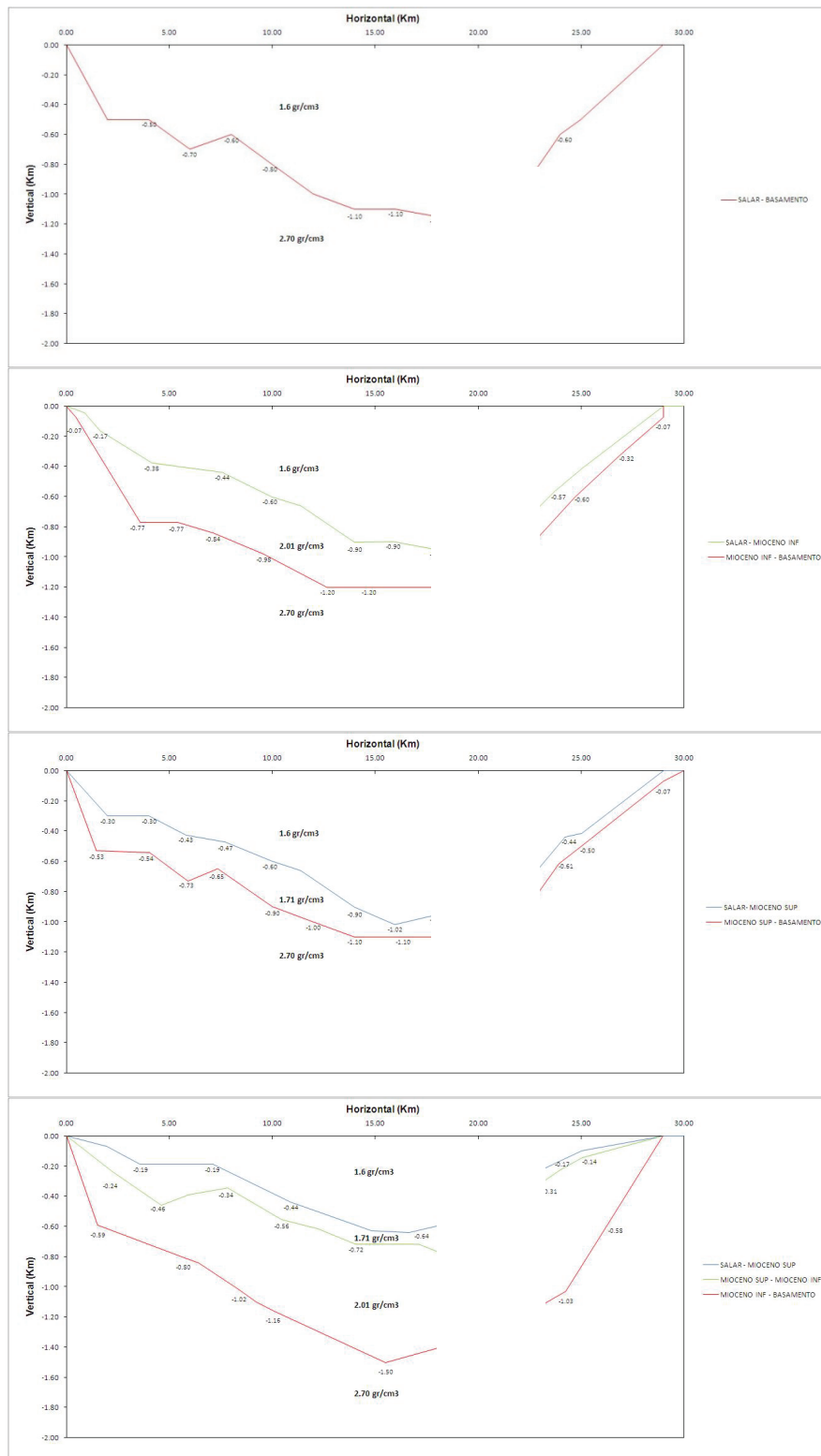
model the salar deposit density is modeled as 1.6 gm cm^{-3} , which although light is not exceptional given the considerable quantity of carbonaceous material it contains. Bedrock was assumed to be 2.8 gm cm^{-3} . This simple representation suggests that the salar deposits are 1.25 km deep in the centre of the basin. However, no model is unique and further, increasingly complex interpretations were undertaken.

Figure 12.4 A simple two-layer interpretation of the Bouguer anomaly



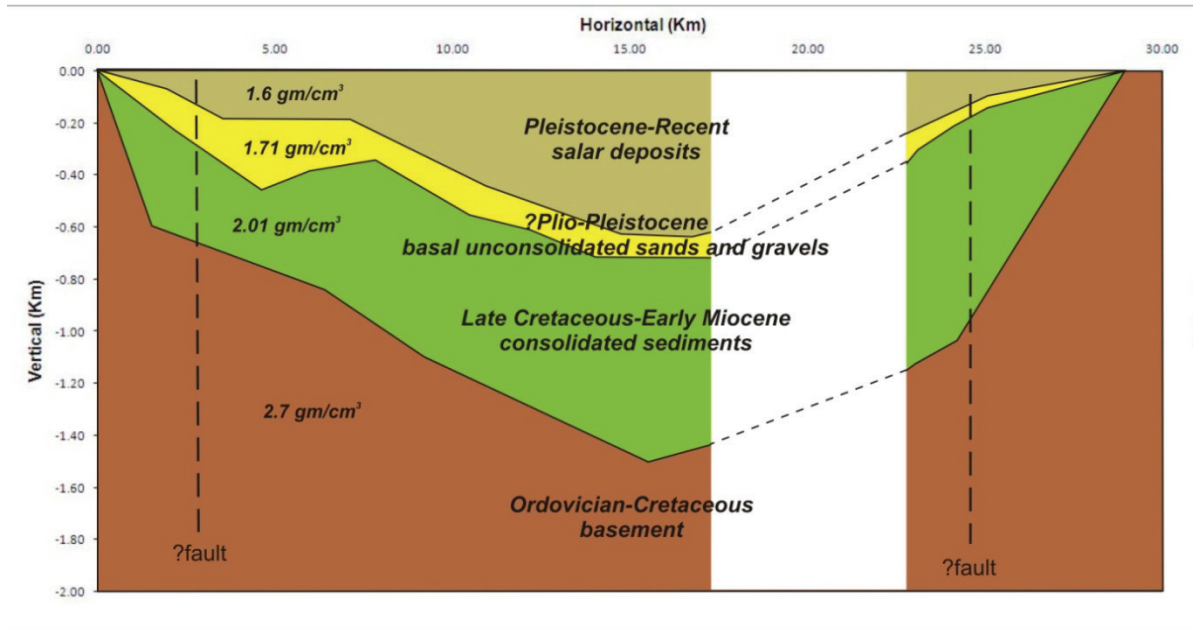
Additional models were based on 1) a two-layer system with salar deposits over bedrock; 2) a three-layer system with salar deposits overlying ?Plio-Pleistocene unconsolidated gravels, over bedrock; 3) a three-layer system with salar deposits overlying Late Cretaceous-Early Miocene consolidated sediments, over bedrock; and 4) salar deposits overlying ?Plio-Pleistocene, overlying Cretaceous-Miocene, over bedrock. The results of these interpretations are shown in Figure 12.5 below.

Figure 12.5 Possible Bouguer anomaly interpretations of increasing complexity and representing alternative interpretations of the known geology.



The four layer model is considered to be the best representation of the known geology and suggests that the salar deposits may be around 600 m deep, with underlying unconsolidated gravel occupying deeper channels on the west (approximately 400 m thick) and possibly the eastern side of the salar. The salar margins are not well defined in the present model and may be fault-bounded as indicated. This requires further work to better define the boundary geometries.

Figure 12.6 Preferred interpretation of the subsurface sedimentary sequence at Olaroz (subject to calibration with deep well data as soon as available).



12.3 Audio magnetotelluric

12.3.1 Data acquisition

Data at a total of 136 AMT stations, spaced at 250 m intervals was acquired using Phoenix Geophysics equipment within a range of 10,000-1 Hz, using up to 7 GPS synchronized receptors. The equipment includes a V8 receptor with 3 electrical channels and 3 magnetic channels, that serves also as a radio controller of auxiliary RXU-3E acquisition units. Three magnetic coils of different size and hence frequency are used at each station, and non-polarizable electrodes that improve signal to noise ratios. The natural geomagnetic signal during the acquisition period remained low (the Planetary A Index was ≤ 6 for 90% of the acquisition time) requiring 15-18 hours of recording at each station.

All stations were surveyed in using differential GPS to allow for subsequent topographic corrections.

Figure 12.7 Schematic of AMT equipment arrangement



AMT requires a Remote Station, far from the surveyed area, in a low level noise location to act as a baseline for the acquired data. In Olaroz the remote station had two different locations during the project depending on the sub sector where work was being undertaken.

12.3.2 Data Processing and Modelling

Processing of the AMT data requires the following stages:

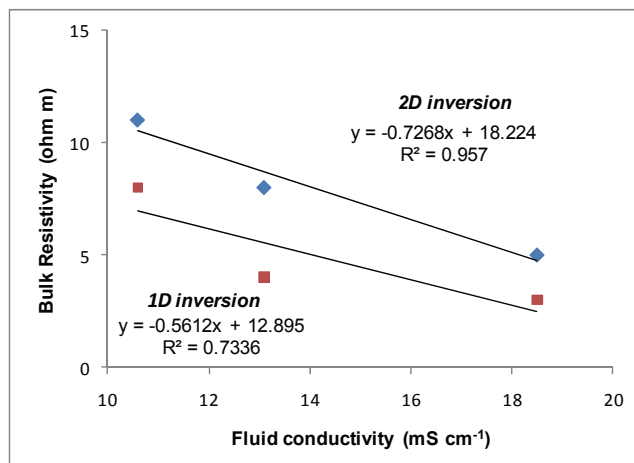
- Filtering and impedance inversion of each station
- 1D inversion for each station
- Development of a resistivity pseudosection
- 2D profile inversion (including topographic 3D net)

The WinGlink software package was used for filtering, inversion and development of the pseudosection and eventually the 2D model output.

12.3.3 Model output and interpretation

The 2D model results for the five sections at Olaroz are presented below (figures 12.9 through 12.13). Assuming that the major controlling factor is the fluid resistivity (or conductivity) it is possible to establish a provisional calibration in terms of the brine to freshwater interface. The calibration is based on a series of surface samples of the electrical conductivity (the reciprocal of resistivity) of the fluid in the northern part of the salar across the Rio Rosario delta. As can be seen the calibration for the 2D inversion particularly is significant, suggesting that the main control on bulk AMT resistivity is indeed the fluid resistivity.

Figure 12.8 Plot of AMT resistivity against fluid conductivity used to calibrate the AMT profiles.



Where other factors (changes in rock matrix resistivity or porosity) are thought to come into play, based on geological survey and well data, they are indicated on the sections.

Figure 12.9. Resistivity profile N (see figure 12.1 for location).

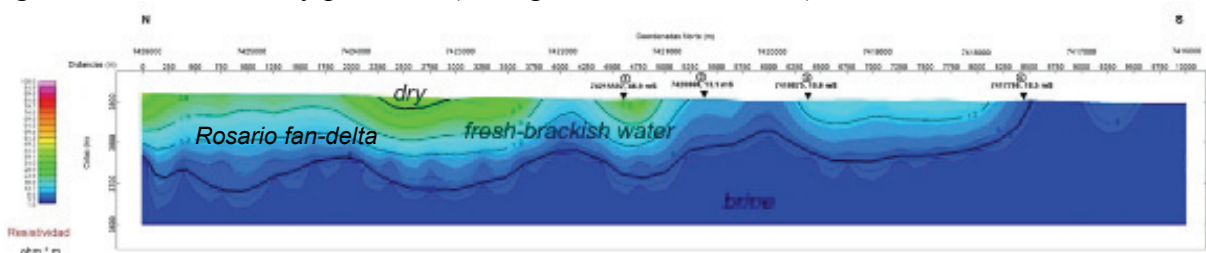


Figure 12.10 Resistivity profile E (see figure 12.1 for location).

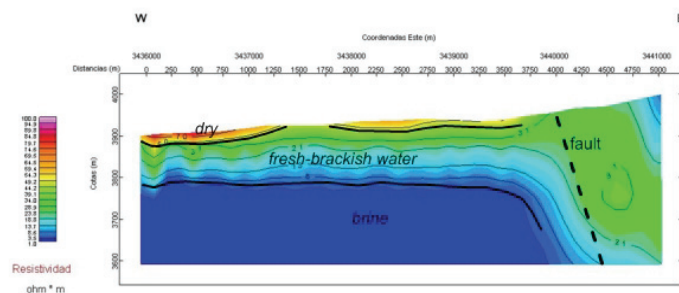


Figure 12.11 Resistivity profile VB (see figure 12.1 for location).

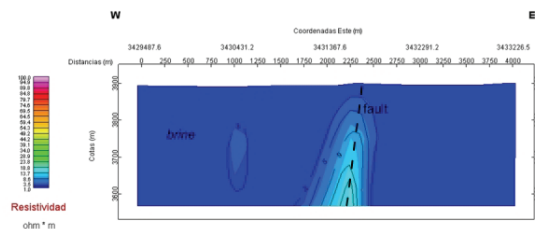


Figure 12.12 Resistivity profile S (see figure 12.1 for location).

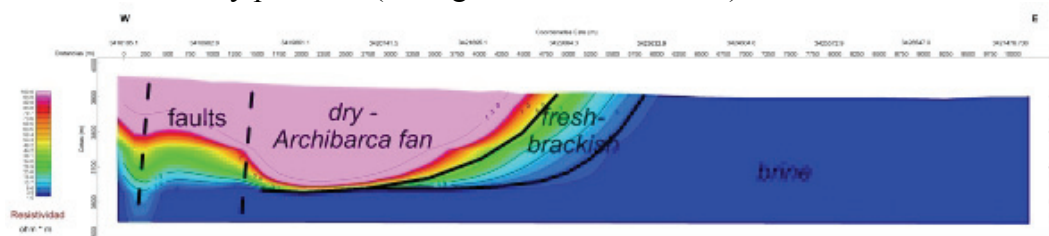
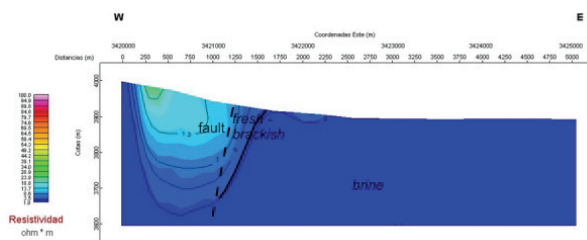
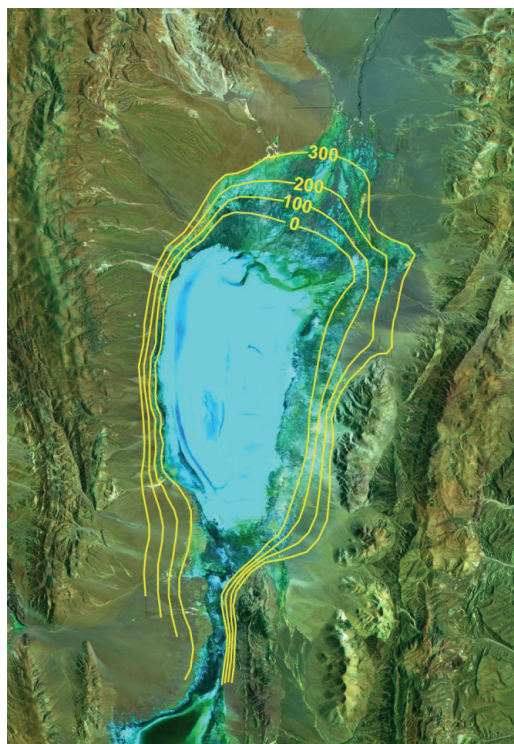


Figure 12.13 Resistivity profile W (see figure 12.1 for location).



Finally, using the assumed brine-freshwater interface determined from these sections, it is possible to develop a model of the brine body hosted in the basin sediments. The shape of the brine body conforms with a typical Ghyben-Hertzberg relationship, the brine expanding at depth into adjacent sediments, where the lithology permits. Note the expansion particularly in the north and northeast, compared with the contraction (probably fault controlled) along the western and southeastern sections.

Figure 12.14 Interpreted Olaroz brine body showing depth (m) to brine-brackish water interface.



13. DRILLING AND RELATED ACTIVITIES

The results of the previous drilling programs are provided in Section 8, History

13.1 Current drilling programs

13.1.1 Core drilling

Core drilling has recently started as of the date of this Technical Report. Boart Longyear, a drilling company of international repute, has been contracted to undertake this work using sonic drilling techniques. This method will minimize core disturbance and formation contamination, thus enabling reliable sampling of the formations and their contained brines. The detailed methodology for the core sample extraction and for discrete depth sampling of the brines has been developed especially for this project and is at the cutting edge of new technology. All holes will be logged with down-hole geophysical logging. The methodology involves sampling of undisturbed samples using split spoon methods for laboratory testwork including specific yield tests and point brine sampling from isolated zones.

Two holes have been drilled and await logging. Very high recoveries, including in fine sands, are being achieved (+95%) with little disturbance of the cores. Physical and brine sampling methods appear effective.

13.1.2 Pumping test wells and boundary condition wells

An Argentine drilling company, Valle, was contracted to drill the test production wells for the pumping tests, together with the associated observation wells. These wells were all completed by January 2010 and the geological logs and construction details are provided on the following

pages, Figures 13.1 to 13.3. Monitoring bores have also been drilled for hydrogeological test work being undertaken as part of the current field programs.

Two of the boundary condition wells have been completed. Water of a quality suitable for a supply of process water has been intersected in potentially sufficient quantities in both of these. Water of a quality suitable for a supply of process water has been intersected in potentially sufficient quantities in a number of locations by drilling.

13.1.3 Preliminary Indications

Whilst it is premature to draw any conclusions from the work so far, the logging of Pumping Test Wells confirms the presence of sandy aquifers within the sequence and the general applicability of the previous geological model.

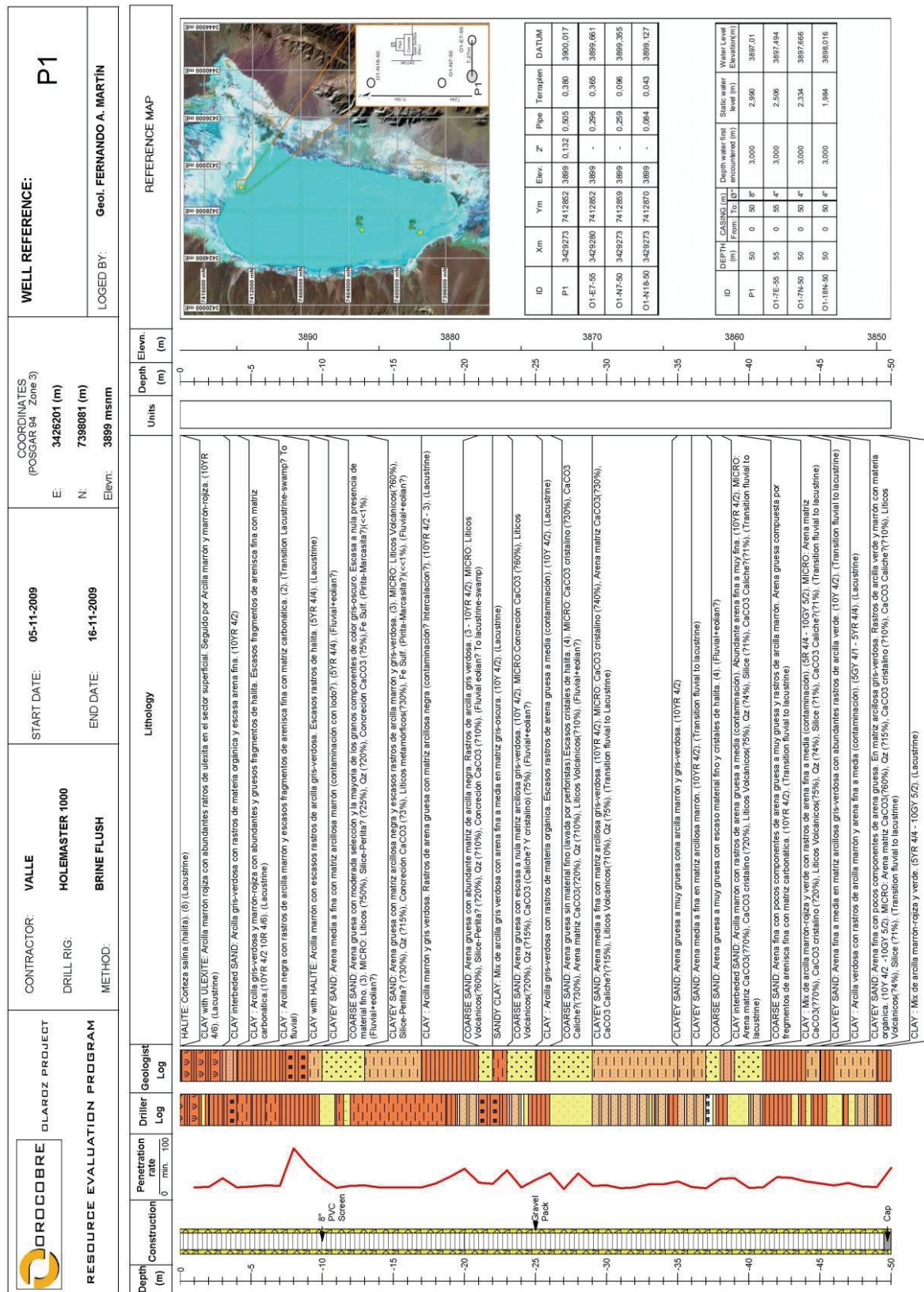


Fig ure 13. 1 Ge olog ical log for pu mping test wel l P1.

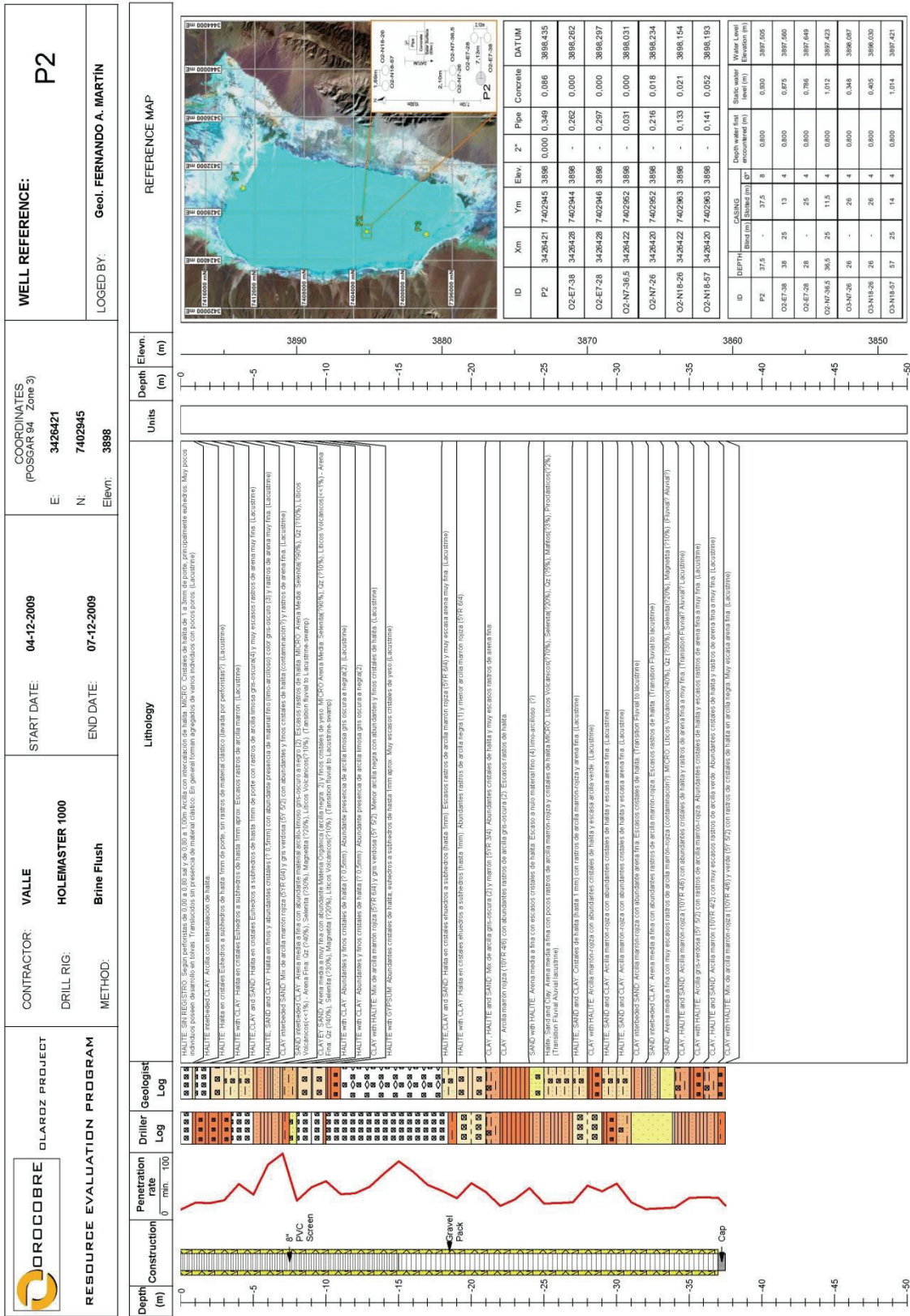
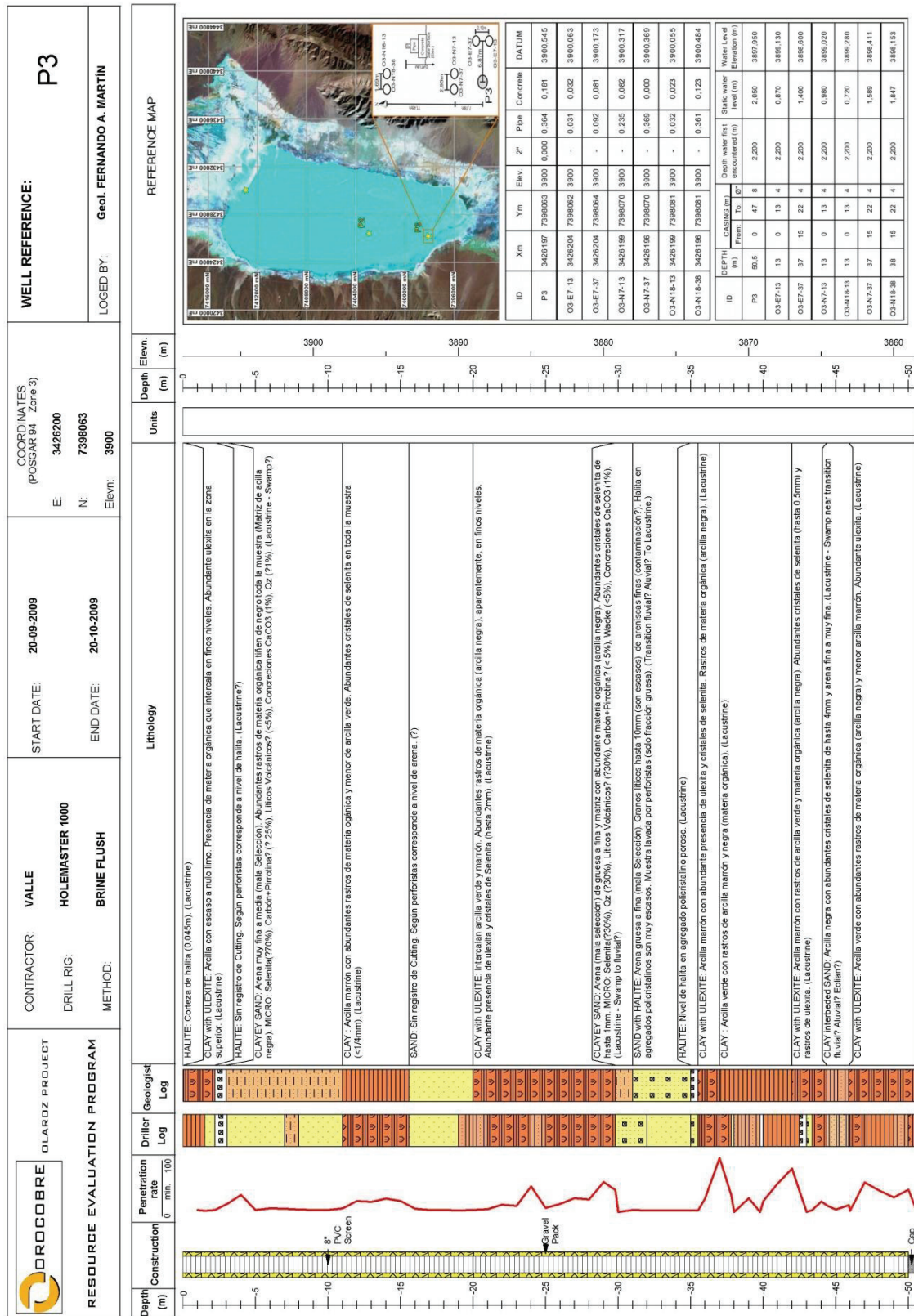


Figure 13.2 Geological log for pumping test well P2.



14. SAMPLING METHOD AND APPROACH

14.1 Brine Sample Program Design

14.1.1 Olaroz pit sampling

Prior to drilling on the Olaroz project a total of 62 pits were excavated through the surface halite crust to obtain brine samples. The pitting program was carried out from March 2008, with brine samples collected from March 16th through to August 5th.

This sampling was undertaken by employees of the Company under the supervision of a an experienced consultant geologist who was retained by the Company to manage the sampling and now works for the Company. The sampling was on an approximate grid spacing of 1 km by 1 km (aligned with grid north), within the project area of approximately 70 km². The distance between pits ranges between 500 m and 2 kms meters, with sample density lower in the periphery of the tenements.

Samples were taken from pits dug specifically to collect brine samples. The main objectives of the pitting/sampling program were to obtain data on:

- The distribution of lithium concentrations in the near surface aquifers throughout the properties sampled
- Brine chemistry parameters,
- Near-surface geology
- Water levels in the subsurface

14.2 Brine Sampling Protocol

14.2.1 Olaroz pit sampling

The pitting program at Olaroz involved hand digging pits to approximately 1.50 m depth, with the pits generally filling with brine almost instantaneously. Pits were allowed an hour to fill with brine from the upper aquifer level and for sediment to settle out, before a sample was taken. Before sampling the sample bottles were rinsed with brine, then filled, labeled and sealed for transportation to the laboratories.

Brine samples were collected from the base of the pits using a hand held, unpreserved 100 ml plastic bottle. The bottle was held in the brine solution to expel air and fill the bottle, with additional brine added to bring the brine level to the top of the bottle and remove any airspace. Samples were sent to Alex Stewart (Assayers) Argentina (ASA), while samples from 26 of the pits were also sent to the National University of Salta (UNSA) – results are presented in Table 8.1.

During the pit sampling two replicate samples were taken. This consisted of re-sampling the pits P-7 and P-27 on a separate date up to two weeks after the original sample was taken. The objective of this was to evaluate whether any variation in brine concentration occurred over the time between sampling. As such these replicate samples cannot be considered duplicates and do

not constitute valid quality control samples. A comparison of these replicate samples is provided in section 15.

Figure 14.1 Exploration pits dug to take shallow brine samples. Pits were hand dug and geologically logged, with the depth to the standing water level recorded



14.2.2 Olaroz bore sampling

Brines from selected drill holes were initially sampled in December 2008, with additional samples taken from a larger number of holes, including some repeats, in February 2009. Sampling was undertaken by the Company geologists.

Two different sampling methods were employed during the program. In December 2008, the brine samples were retrieved using air-lifting, to push the water column up and out of the hole, in order to reduce contamination of the samples with surficial brines. Holes were pumped out for between 5 and 24 hours, at pump rates peaking at 7.2 l s^{-1} , before sampling. Approximately 5 L of the brines were sampled during the final half hour of pumping and split to 100mL sub-samples.

The February 2009 samples were collected using a small submersible pump, capable of a much lower pump rate of 0.7 l s^{-1} , combined with a shorter 30 minute pump out prior to sampling. Between 5 and 10 liters of the brines were sampled during the final half hour of pumping and split to 100 ml sub-samples.

As done for the pit sampling brine samples of 100 ml were dispatched to two laboratories for assay: Alex Stewart Assayers (ASA) and the National University of Salta (UNSA). Thirty-six samples were analyzed by both laboratories for Lithium, Potassium, Magnesium, Sodium, Calcium and Boron concentrations.

14.3 Brine Sampling Supervision

Sample collection at Olaroz was conducted by personnel from Orocobre, under the supervision of the geologist conducting geological logging of the sample pits and drill holes. The geologist was responsible for geological logging and overseeing sample collection and pit/drill hole location.

14.4 Process Brine Sampling

Well and pit samples were not subjected to any preparation prior to shipment to the participating laboratories. The samples are sealed on site and stored in a cool location, then shipped in sealed coolers to the laboratory for analysis.

Process development samples have regularly been diluted approximately 5 to 10 times in order to avoid the potential for crystallization of salts as brines tend to over saturate.

14.5 Sample Security

All Olaroz samples were labeled with permanent marker pen, and transported from the field site to the Salta office of Orocobre in wooden crates. Samples were received at the Salta office and re-packaged into labeled cardboard cartons. The cartons were dispatched to the laboratory in Mendoza, with a sample list and analytical instructions, which were also sent to the laboratory by email. Samples were hand delivered to the laboratory of the University of Salta, with instructions regarding the required analyses.

15. SAMPLE PREPARATION, ANALYSES AND SECURITY

15.1 Geochemical and Resource Brine Samples

15.1.1 Sample Preparation

Samples from pits or bore sampling were not field filtered and were not subjected to any preparation prior to shipment to the laboratory. The 100 ml samples were prepared by decanting brine from the bulk sample collected from the pits and drill holes.

15.2 Sample Analyses

In general, most analytical laboratories do not have sufficient expertise for chemical analysis of brines. These analyses are complicated since the solutions have high concentration of ions generating interference in the measurements with the analytical equipment. Only a selected amount of laboratories have the experience to analyze brines and those laboratories have been selected to do Orocobre's quality control.

The samples from the Project were analyzed by two laboratories, with Alex Stewart Assayers (ASA) of Mendoza, Argentina, and the National University of Salta (UNSA) used during pit sampling and bore sampling.

The ASA laboratories have extensive experience analyzing lithium bearing brines. They are ISO 9001 accredited, and operate according to Alex Stewart Group standards consistent with ISO 17025 methods at other laboratories. Samples were analyzed at ASA laboratories using the Inducted Coupled Plasma spectrometry (ICP) method. The UNSA laboratory used Atomic Absorption spectrometry (AA) for analysis of both the Orocobre samples and standards produced at the laboratory.

The analytical techniques used by ASA Laboratories are based upon American Public Health Association (APHA), Standard Methods for Examination of Water and Wastewater, Environmental Protection Agency (EPA), and American Society for Testing Materials (ASTM) protocols. Determination of lithium, potassium, calcium, sodium and magnesium is achieved by fixed dilution of filtered samples and direct aspiration into an ICP instrument. The suite of parameters and the laboratory method are provided in Table 15.1 below.

Table 15.1 List of the basic suite of analyses requested from Alex Stewart laboratories.

Analysis	Alex Stewart Primary laboratory		University of Salta
	Code	Method	Check lab Method
Sample preparation			
Filtration	SM 2540-C	0.45 um filter	-
Physical Parameters			
Total dissolved solids	SM 2540-C	Total Dissolved Solids Dried at 180°C	-
pH	SM 4500-H+-B	Electrometric Method	-
Conductivity	SM 2510-B	Meter	-
Density	IM A-28	Gravimetric Method Pycnometer	Gravimetric Method
Alkalinity	SM 2320-B	Titration Method.	Titration Method.
Alkalinity (carbonates)	SM 2320-B	Titration Method.	Titration Method.
Alkalinity (bicarbonates)	SM 2320-B	Titration Method.	Titration Method.
Inorganic Parameters			
Boron (B)	ICP-10: EPA 200-7 Modified	Emission Spectrometry	Volumetric Acid Base
Chloride (Cl)	SM 4500-Cl-B	Titration Method.	Argentometric Method
Sulfates (SO ₄)	SM 4500-SO ₄ -C	Gravimetric Method	Gravimetric Method with drying of residue
Dissolved metals			
Lithium (Li)	ICP-10	Emission Spectrometry	Atomic Absorption Spectrophotometry
Potassium (K)	ICP-10	Emission Spectrometry	Atomic Absorption Spectrophotometry
Sodium (Na)	ICP-10	Emission Spectrometry	Atomic Absorption Spectrophotometry
Calcium (Ca)	ICP-10	Emission Spectrometry	Atomic Absorption Spectrophotometry
Magnesium (Mg)	ICP-10	Emission Spectrometry	Atomic Absorption Spectrophotometry
Manganese (Mn)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-
Nickel (Ni)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-
Iron (Fe)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-
Copper (Cu)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-
Chromium (Cr)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-
Nickel (Ni)	ICP-13 Brines and samples TDS > 0.05%	Emission Spectrometry	-

15.3 Quality Control

A quality control assessment was carried out by Geos Mining (2009) as part of their geological modelling and resource estimation. The analysis that follows is taken from their report.

15.3.1 Standards Analyses

Three standard solutions were prepared by the University of Salta of differing concentrations of Lithium, Magnesium, Sodium and Calcium detailed in the table below.

Table 15.2 Standard specifications

Standard	Li (ppm)	Mg (ppm)	K (ppm)	Na (ppm)
Li_300	300	600	3000	90000
Li_500	500	1000	5000	90000
Li_800	800	1600	8000	90000

These standards were provided to UNSA and ASA assayers for quality control purposes and to reveal any nuances in each laboratory's analytical method. The results of the standards analysis are provided in Tables 15.2 – 15.4, below.

Using assay results for each standard, it was possible to quantify the deviation of each laboratory's testing methodology from the standard concentration, shown graphically in Figure

15.1. From the graphs, it is clear that ASA laboratories analyses produce less variance for each element and only exceed a 10% deviation on two occasions for all tests.

UNSA laboratories results exhibit considerably greater variance in all tests. Magnesium concentrations perform worst of all, consistently falling up to 35% below the standard concentrations and averaging ~19% deviation. Potassium detection varies between over and under estimation up to 20% of the total and Lithium concentrations demonstrate greater volatility overall.

On the performance of analysis of the standards, Geos Mining would recommend ASA Laboratories for the majority of future assay work.

Table 15.3 Results of the Li 300 standard analysis.

Lab	Standard	Li (ppm)	Mg (ppm)	K (ppm)	Na (ppm)
ASA	Li_300	305	615	2872	85852
ASA	Li_300	299	586	2898	95012
ASA	Li_300	295	555	2976	91320
UNSA	Li_300	330	390	3300	89000
UNSA	Li_300	300	520	3000	89000

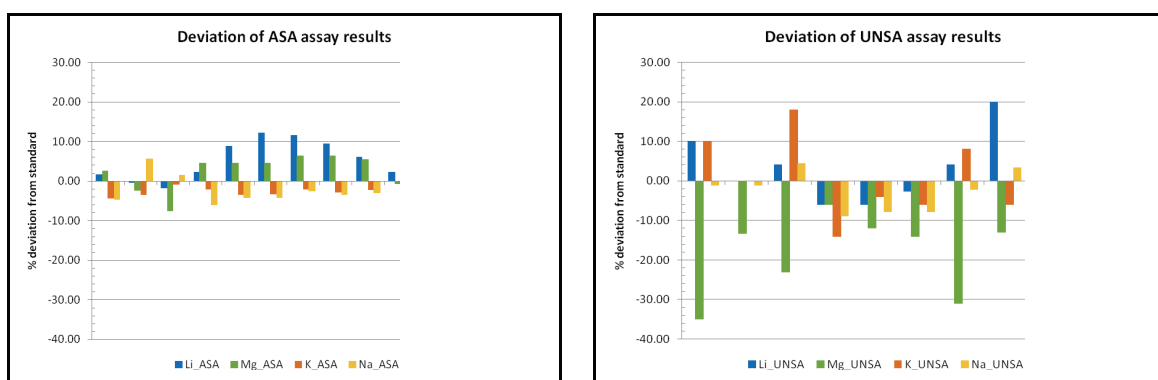
Table 15.4 Results of the Li 500 standard analysis.

Lab	Standard	Li (ppm)	Mg (ppm)	K (ppm)	Na (ppm)
ASA	Li_500	511	1045	4901	84591
ASA	Li_500	544	1045	4833	86198
ASA	Li_500	561	1046	4835	86237
ASA	Li_500	558	1064	4899	87810
ASA	Li_500	547	1064	4863	87009
ASA	Li_500	530	1054	4889	87341
ASA	Li_500	511	993	5182	95012
ASA	Li_500	489	904	4895	88934
UNSA	Li_500	520	770	5900	94000
UNSA	Li_500	470	940	4300	82000
UNSA	Li_500	470	880	4800	83000
UNSA	Li_500	487	860	4700	83000
UNSA	Li_500	520	690	5400	88000
UNSA	Li_500	600	870	4700	93000

Table 15.5 Results of the Li 800 standard analysis.

Lab	Standard	Li (ppm)	Mg (ppm)	K (ppm)	Na (ppm)
ASA	Li_800	829	1701	7862	87995
ASA	Li_800	821	1588	8123	95796
ASA	Li_800	780	1524	7844	93179
UNSA	Li_800	820	1240	9600	95000
UNSA	Li_800	840	1200	8600	90000
UNSA	Li_800	780	1410	7400	94000

Figure 15.1 Standards analysis results for ASA and UNSA Laboratories.



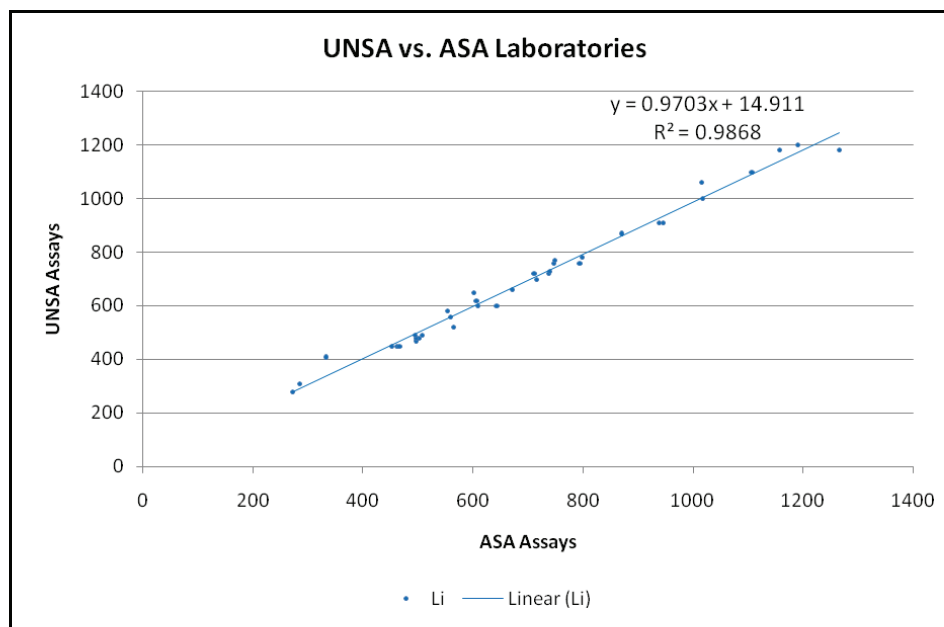
15.3.2 UNSA vs. ASA

Descriptive statistics were obtained for the sample population for all tests conducted. Histograms were produced for the key tests, although the limited size of the population does not allow for accurate commentary on population trends and distributions.

The statistics imply good agreement between analyses performed at ASA and UNSA Laboratories in all tests except Magnesium, which has been noted to perform badly at UNSA Laboratories in the standards testing.

Lithium concentrations are in strong agreement at both laboratories and correlate linearly, reflecting the low deviation between the assay results (see Figure 15.2). Slope for the curve of UNSA vs. ASA lies at 0.97, with a Y intercept of 14.9 and correlation coefficient of 0.99 indicating a near 1:1 relationship.

Figure 15.2 UNSA vs. ASA Laboratories for Lithium assay (ppm)



ASA Laboratories show slightly elevated mean concentrations of Calcium relative to UNSA (~10%), whereas Sodium, Potassium and Boron assay results returned lower mean concentrations at ASA Laboratories than their UNSA counterparts; however none exceeded 6% deviation.

Mean Magnesium results returned ~35% lower from ASA Laboratories, at the upper scale of observations from the standards analyses. Whether this discrepancy reflects the difference between the analytical methods used (ICP vs. AA mass spectrometry) or indicates deeper analytical error on the part of UNSA Laboratories is harder to determine and requires clarification.

In spite of the small population of samples, statistical analysis implies good agreement between ASA and UNSA for all elements except Mg (Table 15.6).

Table 15.6 Correlation Parameters of ASA vs UNSA pairs

Element	Trendline Slope	Correlation Coefficient
Li	0.97	0.99
K	1.00	0.85
Ca	0.76	0.84
Mg	0.66	0.96
B	0.90	0.85

Magnesium concentration is important when considering the extraction potential of Lithium from brines, due to the similar ionic radii and charges. If accurate measurement of Magnesium is a priority, then ASA Laboratories would be favoured over UNSA.

15.3.3 Batch Effects

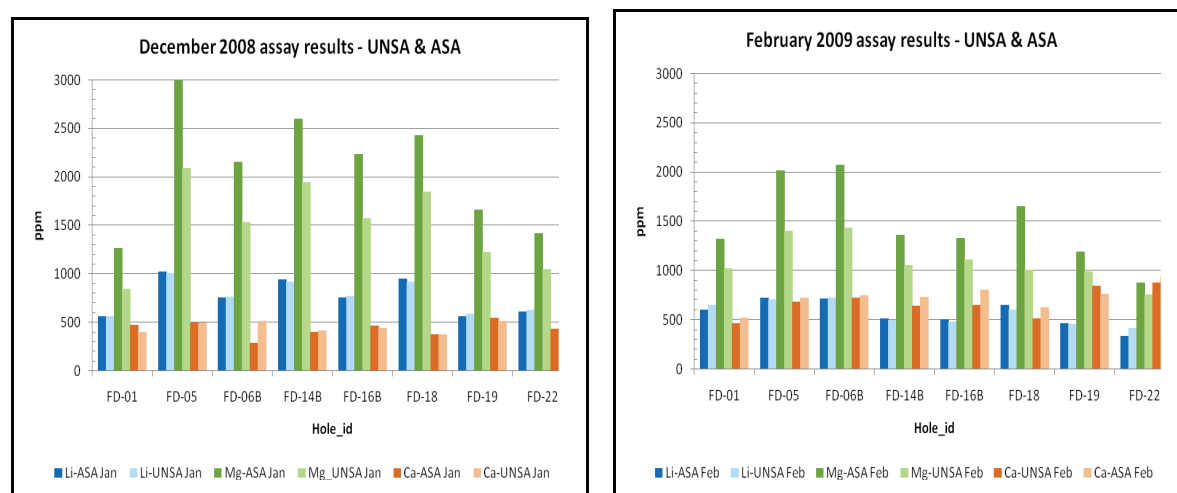
Variations between the two batches (December samples vs February samples) were highly significant (Table 15.7).

Table 15.7 Average variations between batches (Variation = (Feb–Dec) / Dec)

Element	Variation %
Li	-22.5%
K	-23.5%
Mg	-23.6%
Na	-1.8%
Ca	+48.5%
B	-28.1%

The differences between the December and February sampling methods are reflected in the assay results, as shown in Figure 15.3. Relative to December levels, Lithium concentrations are, on average, 22.5% lower in February, while Magnesium concentrations are depressed 23.6%, depending on laboratory. Opposing this trend, Calcium levels are 48.5% elevated in February.

Figure 15.3 Comparison of December 2008 and February 2009 assay results.



Orocobre Ltd. have indicated that elevated calcium levels indicate contamination of the deeper brines with surficial fluids, which has been identified as a problem associated with the use of a submersible pump in the February 2009 sampling when compared with the air-lifting technique used in December 2008. Pumping out a hole from below would depress water levels from the top of the hole downwards, resulting in greater recharge from aquifers nearer to the surface, hence more vulnerable to contamination or dilution. Whether this would also serve to dilute the

15.3.4 Depth analyses

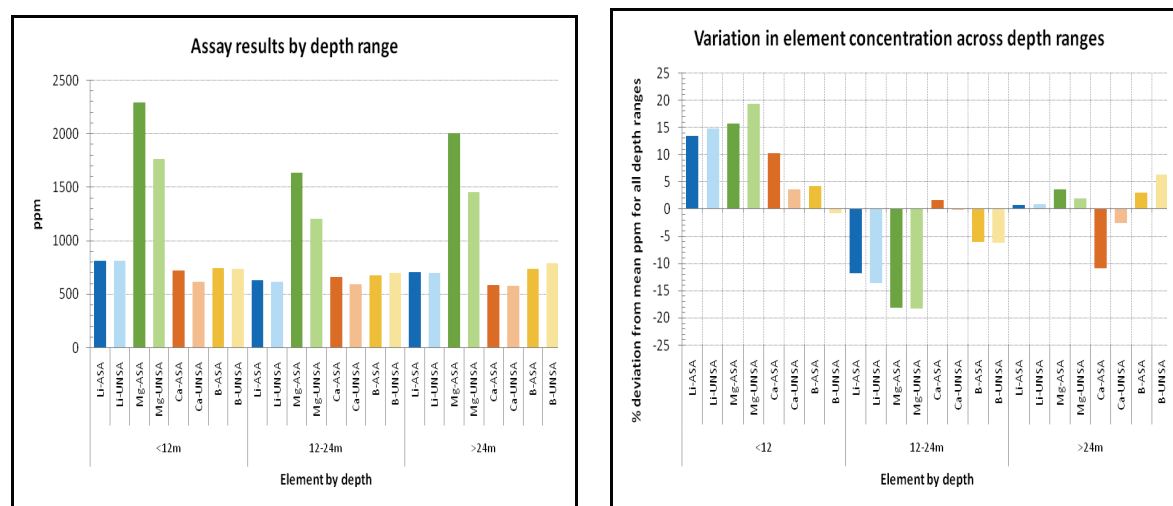
It was recognised that the number of samples could be divided almost equally into three 12 m deep zones, which seemed most appropriate given the small sample population. Examination of the depth profile of the various analytes reveals down-hole variations in concentrations relevant to potential resource calculation.

Analysis shows that the upper 12 m zones experiences the greatest overall variation in analyte concentrations, with a distinctly positive bias. Nearest to the surface, this upper zone would be most prone to contamination by rainwater/river flow and this is illustrated by increased Calcium (~10%) relative to the mean for all depth zones. Magnesium levels tend also to be elevated (~16); likewise Lithium (13%) which is noteworthy.

The 12-24 m zone shows a negative bias in most analyte concentrations, particularly Magnesium (~17%) and Lithium (~12%). This may reflect the dominance of the negatively-biased February samples coupled the lack of analyte-enriching dynamics apparent in the upper zone.

The >24 m zone appear the most stable of all zones, demonstrating the least deviation from the mean values.

Figure 15.4 Down-hole depth variations in analyte concentration in 12 m zones.



It should be noted that the use of different sampling methodologies over the December 2008 and February 2009 periods has potentially biased the depth analysis as most shallow samples were collected in February 2009; the <12 m zone is exclusively populated with February 2009 samples; the 12-24m zone is dominated by February samples (12 out of 14 in total) and the >24 m zone contains mostly December 2008 samples. The influence of the different sampling methodologies was detailed earlier (see December vs. February sampling) and it is likely that the <12 m and 12-24 m zones (dominated by February 2009 samples) could contain more Lithium and Magnesium than evident here.

15.3.5 Pit Sampling

Surface samples were taken from 62 shallow pits, excavated by shovel through the crust of the *Salar*. Once the water table was intersected, the pit was left to stand until most of the disturbed sediment had settled out before sampling the brine.

Brine samples were dispatched to two laboratories for assay; Alex Stewart Assayers (ASA) and Cátedra de Química Analítica at the Universidad Nacional de Salta (UNSA). Of the 62 samples analysed, 26 were sent to both UNSA and ASA for duplicate analysis. The remaining 36 samples were analysed by ASA solely. ASA used an ICP (Induced Coupled Plasma) technique and UNSA used AAS (Atomic Absorption Spectroscopy).

Results from UNSA laboratories show ~15% greater mean Lithium concentrations relative to their ASA counterparts. UNSA Mean Magnesium concentrations are ~10% lower than ASA, while mean Potassium are ~30% lower.

15.3.6 Summary

In summary, ASA analyses show acceptable accuracy and precision for the resource estimate. Check samples analyzed at University of Salta display acceptable accuracy and precision, with a high degree of correlation with ASA analyses for K and Li. Quality control procedures were acceptable to monitor laboratory performance.

15.4 Processing Testwork Samples

15.4.1 Sample Preparation

The samples are sealed on site and stored in a cool location, then shipped in sealed coolers to the laboratory for analysis. Process development samples have regular been diluted approximately 5 to 10 in order to avoid crystallization of salts as brines tend to over saturate.

15.4.2 Sample Analyses

The process test work samples from Salar de Olaroz were analyzed by Alex Stewart Assayers (ASA) of Mendoza, Argentina. Details about ASA are given in section 15.2 together with the analyses undertaken.

Duplicate samples were sent to the University of Antofagasta (UA), Chile, and ALS-Environment (ALS) laboratory located in Antofagasta, Chile, which is ISO 17025 and ISO 9001:2000 accredited. Both UA and the ALS laboratory have a long history in brine analysis; however these universities are not certified.

Table 15.8 lists the basic suite of analyses requested from the analytical labs. Physical parameters, such as pH, conductivity, density, total dissolved solids are determined directly upon brine subsamples. Determination of lithium, potassium, calcium, sodium and magnesium is achieved by fixed dilution of filtered samples and direct aspiration into atomic absorption or inductively coupled plasma instrument.

Table 15.8 List of the basic suite of analyses requested from Alex Stewart and ALS Environmental, University of Salta and University of Antofagasta.

Analysis	Alex Stewart		ALS-Antofagasta		Univ. Antofagasta	Univ. Salta
	Code	Descripción	Code	Descripción	Descripción	Descripción
<i>Sample preparation</i>						
Filtration	SM 2540-C	0.45 um filter	APHA 3030-B	0.45 um filter	-	-
<i>Physical Parameters</i>						
Total dissolved solids	SM 2540-C	Total Dissolved Solids Dried at 180°C	APHA 2540-C	Total Solids Dried at 103-105°C.	-	-
pH	SM 4500-H+-B	Electrometric Method	APHA 4500-H+-B	Electrometric Method	-	-
Conductivity	SM 2510-B	Meter	APHA 2510-B	Meter		
Density	IMA-28	Gravimetric Method Pycnometer	Without Code	Gravimetric Method	Gravimetric Method	Gravimetric Method
Alkalinity	SM 2320-B	Titration Method.	APHA 2320-B	Titration Method.	Titration Method.	Titration Method.
Alkalinity (carbonates)	SM 2320-B	Titration Method.	APHA 2320-B	Titration Method.	Titration Method.	Titration Method.
Alkalinity (bicarbonates)	SM 2320-B	Titration Method.	APHA 2320-B	Titration Method.	Titration Method.	Titration Method.
<i>Inorganic Parameters</i>						
Boron (B)	ICP-10: EPA 200-7 Modified	EMISSION SPECTROMETRY	APHA 4500-B-C	Carminic Method	Volumetric Acid Base	Volumetric Acid Base
Chloride (Cl)	SM 4500-Cl-B	Titration Method.	APHA 4500-Cl-B	Argentometric Method	Argentometric Method	Argentometric Method
Sulfates (SO ₄)	SM 4500-SO ₄ -C	Gravimetric Method	APHA 4500-SO ₄ -D	Gravimetric Method with Drying of Residue	Gravimetric Method with Drying of Residue	Gravimetric Method with Drying of Residue
<i>Dissolved metals</i>						
Lithium (Li)	ICP-10	EMISSION SPECTROMETRY	APHA 3500-Li-B	Flame Emission Photometric	Atomic Absorption Spectrophotometry	Atomic Absorption Spectrophotometry
Potassium (K)	ICP-10	EMISSION SPECTROMETRY	APHA 3500-K-B	Flame Emission Photometric	Atomic Absorption Spectrophotometry	Atomic Absorption Spectrophotometry
Sodium (Na)	ICP-10	EMISSION SPECTROMETRY	APHA 3500-Na-B	Flame Emission Photometric	Atomic Absorption Spectrophotometry	Atomic Absorption Spectrophotometry
Calcium (Ca)	ICP-10	EMISSION SPECTROMETRY	APHA 3111-B-D	Direct Air-Acetylene Flame Method - Direct Nitrous Oxide-Acetylene Flame Method.	Atomic Absorption Spectrophotometry	Atomic Absorption Spectrophotometry
Magnesium (Mg)	ICP-10	EMISSION SPECTROMETRY	APHA 3111-B-D	Direct Air-Acetylene Flame Method - Direct Nitrous Oxide-Acetylene Flame Method.	Atomic Absorption Spectrophotometry	Atomic Absorption Spectrophotometry

15.4.3 Quality Control

Analytical quality was monitored through the use of quality control samples which were inserted into the sample stream and blinded to the analytical laboratories. The quality control samples included standards and duplicates. In addition, check assays were conducted at the other mentioned independent laboratories. Approximately 10 % of the samples submitted for analysis

are for quality control. In this report the only the most important elements will be described, although Orocobre does it quality control for all in principal ions of its brine systems.

15.4.4 Standard Analyses

Two non-certified standards are used in the quality control. Actually three new standards are made at different laboratories, which are representative for certain stages of the process and will be used for a new quality control campaign. The results of the standards analyses during 2009 are presented in Table 15.9 and Table 15.10 for Li, K, and Mg. When the sample ID has a D as reference, the brine has been diluted. Initially this caused some analytical error.

Table 15.9 Standards analyses at Alex Stewart of STD370.

Sample ID	Mg	K	Li
299	772	3,803	360
486	765	3,470	320
1024D	770	3,098	327
1048D	725	2,834	297
663D	765	2,893	319
706D	805	3,002	288
742D	817	3,172	321
693D	623	2,943	314
340D	784	2,799	317
760D	794	2,949	314
790D	753	2,858	288
875D	841	3,040	306
Mean	768	3,072	314
Standard Deviation	55	294	19
Relative Standard Deviation	7%	10%	6%

Table 15.10 Standards analyses at Alex Stewart of STD 800.

SAMPLE	Mg	K	Li
784D	1,868	6,913	754
863D	1,715	6,371	682
1012D	1,876	7,286	818
657D	1,625	5,828	702
681D	1,780	6,443	735
724D	1,767	6,204	718
748D	1,806	6,622	726
Mean	1,777	6,524	734
Standard Deviation	88	476	44
Relative Standard Deviation	5%	7%	6%

Relative Standard deviations are used as a measure of the accuracy of a given reference material and a laboratory's ability to reproduce a known value for a given reference material. Values below five are used to indicate that a reference material is acceptable as a standard. Values of

greater than 5 to a value of 15 are considered to indicate a reference material as being provisional, and values of greater than 15 indicate that the reference material is unsuitable as a standard as the laboratory is unable to reproduce analyses of the material within acceptable limits.

RSD's of Standards 370 and 800 analyzed at Alex Stewart laboratories indicate that these brines are acceptable standards for Li and Mg and K, with RSD values of close to 5. Standard analyses at Alex Stewart Assayers in Mendoza indicate acceptable accuracy well within ± 10 % of the mean and well within ± 2 standard deviations for all of the standards analyses.

15.4.5 Sample Duplicate Analyses

Orocobre maintains a spare sample for most of the samples taking from the well field and during its process development program. The spare samples are used as duplicates. Duplicate samples are sometime sent in the same batch or in separated batches the laboratory. On several campaigns duplicates were sent to other laboratories.

In the following table (Table 15.11) the results of the duplicates sent to AS are shown and their Relative Difference was calculated. It can be observed that AS has a very good reproducibility with differences less than 3%.

Table 15.11 Sample duplicate analyses at Alex Stewart.

Sample ID	Mg	K	Li
Unidades	mg/L	mg/L	mg/L
280	2,020.52	7,501	733
277	1,999.08	7,657	709
Relative Difference	1%	2%	3%
300	3417	11495	1417
296	3376	11101	1400
Relative Difference	1%	3%	1%
487	3540	12304	1330
483	3494	12360	1300
Relative Difference	1%	0%	2%
489	1566	6115	625
568	1533	5820	694
Relative Difference	2%	5%	11%
490	4360	13096	1972
578	4236	13379	1705
Relative Difference	3%	2%	15%
492	1340	5657	586
583	1497	6183	652
Relative Difference	11%	9%	11%
302	6082	18513	2064
597D	5954	18399	2065
Relative Difference	2%	1%	0%
303	2136	7570	822
609D	2007	7104	772
Relative Difference	6%	6%	6%
889D	12060	35303	4416
1010D	12228	35444	4467
Relative Difference	1%	0%	1%
1042D	12358	34444	4399
1058D	11721	32548	4147
Relative Difference	5%	6%	6%
625D	1556	5067	544
614D	1614	5238	564
Relative Difference	4%	3%	4%
631D	1645	5596	612
641D	1634	5582	603
Relative Difference	1%	0%	2%
675D	8140	23588	3051
661D	8075	24319	3052
Relative Difference	1%	3%	0%
712D	10337	29902	3324
710D	10445	30084	3355
Relative Difference	1%	1%	1%
736D	11175	32130	3607
734D	11268	32407	3628
Relative Difference	1%	1%	1%
1018D	10893	33868	4071
1016D	10949	34526	4069

Relative Difference	1%	2%	0%
305D	2199	6699	838
645D	2142	6527	817
Relative Difference	3%	3%	2%
306D	1603	4913	604
646D	1575	4833	596
Relative Difference	2%	2%	1%
669D	2823	8128	982
667D	2771	8174	985
Relative Difference	2%	1%	0%
687D	2022	6213	697
692D	2027	6214	701
Relative Difference	0%	0%	1%
718D	1728	5128	607
717D	1755	5152	612
Relative Difference	0.02	0	0
341D	1723	5085	607
741D	1707	4954	581
Relative Difference	1%	3%	4%
754D	4396	13067	1525
757D	4447	13191	1548
Relative Difference	1%	1%	1%
772D	7790	22908	2718
782D	7497	22123	2637
Relative Difference	4%	3%	3%
852D	8326	24659	2982
867D	8516	25229	3047
Relative Difference	2%	2%	2%
883D	1937	5908	634
882D	1908	5847	628
Relative Difference	1%	1%	1%
Average Relative Difference	2%	2%	3%

15.4.6 Check Analyses

Check analyses were conducted with different batches and different stages during the year 2009 with the laboratories referred to in section 15.4.2.

The duplicates sent to ALS laboratory were principally process samples and they were not diluted. It can be observed in table 15.12 and table 15.13 and figure 15.5 that precision of these duplicate analyses for K is acceptable at lower grades, but there is an analytical bias between the laboratories is higher for higher concentration resulting in lower K values in ALS analysis. ALS analyses are biased 12% for K, which is considered as being provisional. However, the analyses for magnesium corresponding to Alex Stewart analyses is significantly higher (24%) than for the ALS results.

This bias is observed throughout the range of grades analyzed, and most likely reflects instrumental calibration bias between the laboratories and/or the difference between ICP and AAS. ALS analyses are biased 8% for Li, which is within analytical still acceptability

Table 15.12 Sample duplicate analyses at Alex Stewart and ALS Environment.

Sample ID	Mg			K			Li		
	AS	ALS	Relative Difference	UNSA	ALS	Relative Difference	UNSA	ALS	Relative Difference
1054	12,304	9,877	22%	39,955	34,211	15%	4,393	3,922	11%
1070	12,919	10,058	25%	39,707	32,913	19%	4,384	4,145	6%
1067	2,387	1,650	36%	8,589	7,762	10%	814	727	11%
1068	2,821	2,560	10%	9,902	9,857	0%	973	913	6%
1069	4,485	3,673	20%	15,376	13,717	11%	1,499	1,447	4%
1070	12,919	10,058	25%	39,707	32,913	19%	4,384	4,145	6%
1071	1,943	1,429	30%	7,004	6,413	9%	660	603	9%
Bias			24%			12%			8%

The duplicates sent to UA laboratory were principally process samples and they were accurately diluted to between 9-11 times.

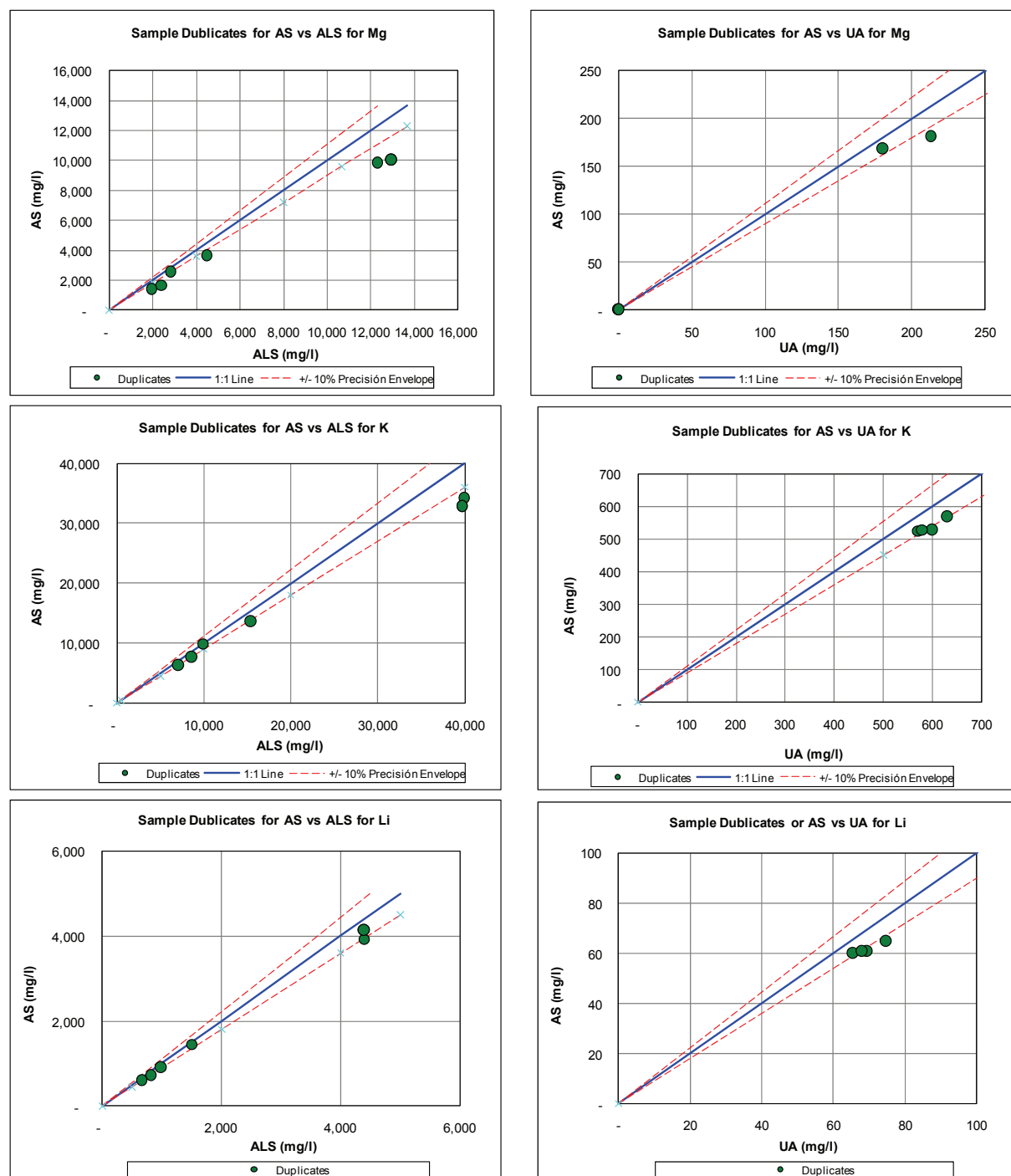
It can be observed in table 15.13 and figure 15.5 that precision of these duplicate analyses for Mg, K and Li is acceptable and are biased about 10-11% higher at UA laboratory for all ions. The grades analyzed at laboratory were lower than the other laboratories. This could indicate that most likely reflects instrumental calibration bias between the laboratories.

This bias is observed throughout the range of grades analyzed, and most likely reflects instrumental calibration bias between the laboratories and the difference between ICP and AAS is not affecting on the independent analysis..

Table 15.13 Sample duplicate analyses at Alex Stewart and University of Antofagasta.

Sample ID		Mg			K			Li		
		AS	UA	Relative Difference	AS	UA	Relative Difference	AS	UA	Relative Difference
W16	1260D	169.16	180.00	6%	528.49	598.75	12%	61.07	69.25	13%
W16	1261D	181.42	213.00	16%	568.39	628.75	10%	64.87	74.75	14%
W16-Mg	1262D	1.00	0.07		524.27	570.00	8%	60.24	65.50	8%
W16-Mg	1263D	1.00	0.18		527.40	577.50	9%	61.05	68.00	11%
	Bias			11%			10%			11%

Figure 15.5 Check sample analyses of Li, K and Mg at Alex Stewart and ALS Environment and University of Antofagasta.



15.4.7 Anion-Cation Balance

Another measure of accuracy of water analyses involves determining the anion-cation balance of the samples. The accuracy of water analyses may be readily checked because the solution must

be electrically neutral. Thus, the sum of cations in meq l⁻¹ should equal the sum of anions in meq l⁻¹. The term meq l⁻¹ is defined as:

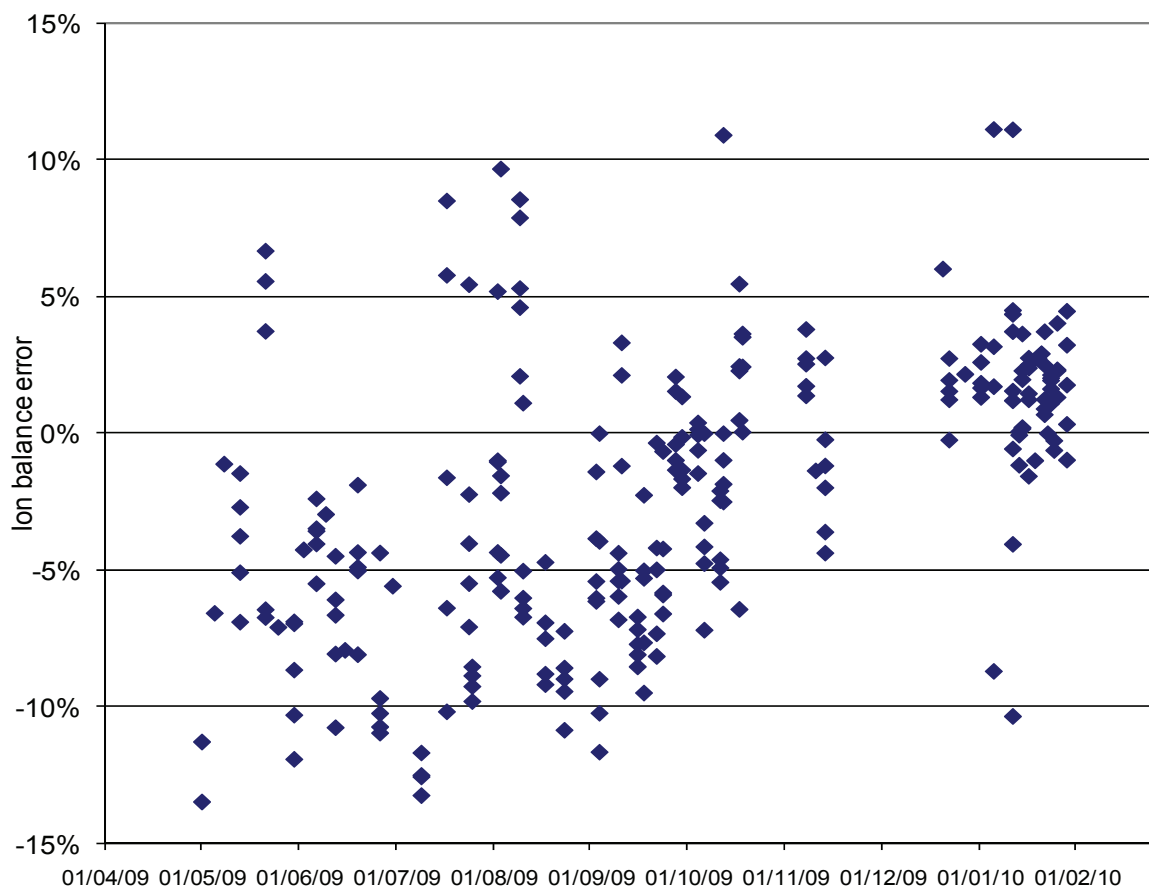
$$\text{meq l}^{-1} = \text{mg l}^{-1} * \text{valency} / \text{formula weight}.$$

The charge balance is usually expressed as a percentage, where:

$$\text{Balance} = ((\sum C - \sum A) / (\sum C + \sum A)) * 100 \text{ ,}$$

where $\sum C$ is the sum of cations and $\sum A$ is the sum of anions. If the balance calculated by this formula is less than 5 %, the analysis is assumed to be acceptable. The anion-cation balance has been calculated for each sample and plotted in Figure 15.6. It can be observed that until about November 2009 many samples analyzed at Alex Stewart had a balance that exceeds the value of -5.0 %. This was caused principally caused by a bias in Na analysis. Due to the quality control of Orocobre and the good relationship with AS this has been corrected and since December 2009 most of the sample balance have a bias in the ionic balance less than 5 %.

Figure 15.6 Anion-Cation balance for brine samples analyzed at Alex Stewart.



15.4.8 Summary

In summary, ASA analyses show acceptable accuracy and precision with an acceptable anion-cation balance.

Check samples analyzed at University of Salta display acceptable accuracy and precision, with a high degree of correlation with ASA analyses for K and Li. Mg is biased lower than corresponding analyses at ASA

Check samples analyzed at ALS Environment display acceptable accuracy and precision, with a high degree of correlation with ASA analyses, but the inorganic analytes (Li, K and Mg) are biased higher than corresponding analyses at ASA.

Check samples analyzed at University of Antofagasta display acceptable accuracy and precision, with a high degree of correlation with ASA analyses, but the inorganic analytes (Li, K and Mg) are also biased higher than corresponding analyses at ASA.

The lower bias observed in the ALS and UA data is most likely due to calibration differences between the ICP and AA instruments used to analyze the samples.

The quality control systems are well designed and under continuous improvement in order to achieve adequate performance of the laboratories. Data analysis of the QA results produced by the laboratories is considered to have sufficient accuracy for the purposes for process design. The improved performance of the principal laboratory ASA, as shown by the improvement in ionic balance over time and the reproducibility of the analytical results is noteworthy and shows the benefit of a close working constructive relationship between Company and laboratory.

Future refined quality control with newly designed standards has the objective to even improve the accuracy of certain elements for the samples related with lithium carbonate production at pilot scale.

16. DATA VERIFICATION

16.1 General

The Author is retained as an independent consultant to provide on-going advice in his field of expertise. As such, there is regular and open interaction between the Author and the Company's professional staff and technicians. The Author has observed both a high degree of professionalism amongst the Company's professional staff and a diligent attitude towards the work being undertaken. The author has provided training as required to the Company's personnel on tasks being currently undertaken.

It is not possible to verify data that was produced in the past by obtaining new Assay, Geological or Survey data. The available data is subject to the limitations described in Sections 12 and 13 and summarized below. Within these limitations, there is good reason to have confidence in the veracity of the results.

16.2 Assay data

Orocobre and South American Salars carried out an internal validation of the available assay and location data for the pit and drill hole sample sites in the current database. The data was also reviewed by Geos Mining as part of the resources estimate. Original copies of the analytical certificates from Alex Stewart laboratories were provided to the first author and to Geos Mining. Analytical and sampling quality control measures employed by the company are discussed in Section 15 above.

16.3 Geological data

Geological data collected has not been fully verified by the author. Field note books used by geologists have been sighted and selectively checked against information in the current database.

16.4 Survey data

Hand held Garmin GPS units were used to collect the location of sample pits. In the salar setting the GPS signal is typically strong and a minimum horizontal precision is expected to be ± 15 m. Data was collected in the Argentine co-ordinate system with the Gauss Krueger UTM projection, Zone 3, and the Posgar 94 datum.

17. ADJACENT PROPERTIES

17.1 General comments

Two salars in the region have been producing Li, K and B products from brines for more than ten years: the Salars de Atacama in Chile, and Hombre Muerto in Argentina. Both salars are mature, inasmuch as the host aquifer is a large halite body in both cases. Although the Orocobre Salinas Grande-Guayatayoc project is not located in the immediate vicinity of a current lithium producing salar, it is clear from the table below that lithium values are highly elevated in the region.

Table 17.1 Comparison of Salar de Olaroz with other salar brine chemical compositions (mg l⁻¹).

	Salar de Atacama Chile mean	Hombre Muerto Argentina FMC	Salar de Rincon, Argentina Sentient	Salar de Olaroz Argentina	Salinas Grande* Argentina Orocobre	Guayatayoc* Argentina	Cauchari* Argentina	Salar de Cauchari Argentina (LAC)	Salar de Uyuni Bolivia	Silver Peak Nevada CFC
Li	1,835	744	397	796	775	67	191	618	424	245
K	22,626	7,404	7,513	6,600	9,289	2,185	1,596	5,127	8,719	5,655
Mg	11,741	1,020	3,419	2,289	2,117	115	453	1,770	7,872	352
Ca	379	636	494	416	1,450	628	569	401	557	213
B	783	420	331	822	232	144	244	1,360	242	85
Density	1.223	1.205	1.220						1.211	1.297
Mg/Li	6.4	1.37	8.6	2.88	2.73	1.72	2.37	2.86	18.6	1.43

* mean values include all pit samples from nucleus and margins and are not necessarily representative of possible production values

Data for Salars de Atacama, Hombre Muerto, Rincón, and Uyuni as well as Silver peak, taken from "Evaluation of The Potential of Salar del Rincon Brine Deposit as a Source of Lithium, Potash, Boron And Other Mineral Resources, by Pedro Pavlovic and Jorge Fowler, 2004. Salar de Cuachari (LAC), from NI 43-101, Lithium Americas Corporations, February 15th 2010.

17.2 Adjacent properties

Orocobre holds tenements in the nearby salars of Cauchari and Salinas Grande-Guayatayoc. Both these properties contain brine with elevated levels of Li, K and B, and are currently the focus of investigations described in detail in the NI 43-101 compliant Technical Reports filed alongside this report.

Lithium Americas Corporation holds tenements in Cauchari and on the eastern side of the Salar de Olaroz. (Figure 17.1). An Inferred Resource over approximately 24 km² of their Cauchari properties has been estimated as 926,000 tonnes of lithium metal at 584 mg l⁻¹ lithium and 4,860 mg l⁻¹ potassium based on borehole depths of 176m to 249m (NI 43-101 compliant Technical Report filed on the 16 March 2010).

Lithium One owns properties in the eastern part of the Salar de Hombre Muerto. It appears that the brine in the eastern part of the salar is hosted by a clastic aquifer in contrast to that exploited by FMC in the western part of the salar. In their NI 43-101 compliant Technical Report, dated 15 February 2010, Lithium One report Li grades from a pitting program of >800 mg l⁻¹ over an area of approximately 80 km².

The Authors have been unable to verify the information in this section relating to adjacent properties and the mineralization on such adjacent properties is not necessarily indicative of the

potential of mineralization on the properties that are the subject of this Report, except insofar as the Salar de Olaroz properties lie within the Argentine Puna province which is rich in Li and K bearing brine resources.

17.3 El Fenix lithim brine producer – Hombre Muerto Salar

Minera Altiplano (FMC) has been producing lithium compounds from brine at the Hombre Muerto salar since 1997. The Li-rich brine is hosted in a mature, unconfined halite aquifer located in the western sub-basin, covering an area of approximately 300 km². In-situ reserves are reported at 4.5 million tonnes lithium carbonate (approximately 850,000 tonnes of Li metal equivalent), sufficient for more than 70 years production at current production levels of 10,000 tonnes lithium carbonate and 7,600 tonnes lithium chloride per year.

17.4 Borate mineralization

Quaternary ulexite mineralization occurs throughout several areas within the salar tenements held by Orocobre. Some of these occurrences were previously mined by small borate producers.

Ulexite mineralization occurs as a precipitate just below the current surface of the salar. The ulexite forms extensive layers, with a variable thickness, and irregular geometry. Within the layers ulexite occurs as nodules or bands at the base of sandy horizons, associated with gypsum, and halite. The extraction of the mineral is conducted manually in the high grade zones, and by the use of a backhoe in zones where the ulexite beds are thicker.

17.5 Metallic mineralization

The area around the Olaroz project has a history of mining, with a number of metalliferous mineral deposits recognized.

The historic Providencia mine (now inactive) in the extreme northeast of the project area is the principal metalliferous deposit in the vicinity of the Olaroz salar. The mineralization is developed in Ordovician and Tertiary clastic units. Base metals are present in irregular quartz veins with native silver, cerussite, smithsonite, malachite and cuprite.

The Olaroz Chico deposit consists of minor patches of gold-silver-antimony mineralization exposed in pits and galleries in Ordovician sediments where it was worked historically. There are alluvial gold workings down slope near the salar.

The Yungara deposit, which consists of lead zinc tin and silver mineralization present adjacent to subvolcanic bodies with associated hydrothermal alteration. The principal vein hosts galena, sphalerite, copper oxides and pyrite.

18. MINERAL PROCESSING AND METALLURGICAL TESTING

18.1 Brine Composition Analysis

In the following table a resume is made from previous sampling results at a variety of wells sampled in 2008 and the first half of 2009.

Table 18.1 Brine composition mg l⁻¹ for accepted grades used in resource modeling

Hole	Li	Mg	K
FD-01	580	1290	4317
FD-02	1016	2835	9174
FD-04	1150	3332	9964
FD-05	900	2604	7619
FD-06	670	1400	6076
FD-06B	748	2122	6460
FD-07	1108	3461	9228
FD-08	800	2255	7418
FD-10	310	805	2839
FD-11	1200	3964	9824
FD-12	550	1365	5130
FD-14B	800	2592	5924
FD-16B	700	2230	5439
FD-18	850	2429	6482
FD-19	555	1656	4012
FD-22	600	1419	4050
Average	796	2289	6660

Based on the above data only the weight percent was calculated for the brine and compared with published average data of other brine resources. The initial resource numbers are used for the initial process design and test work. For all the experimental work well FD-16B was used.

If the average brine composition is plotted in the Janecke projection (see **Error! Reference source not found.**11.2), a quick analysis will indicate what types of salt can be expected to crystallize during solar evaporation process. This kind of graph does not give an indication of the initial concentration of the elements; however it indicates the relation between the ions. Almost all the salt lakes are saturated in sodium chloride, since they are embedded completely or contacted partly with rock salts (halite). The Salar de Olaroz brine is located in almost the center of glaserite (Na₂SO₄*3K₂SO₄) field. Low temperatures at the Salar will cause the crystallization of sulfate as glaubersalt (Na₂SO₄*10H₂O) in the evaporation ponds, which is the stable phase at low temperatures.

The low Mg/Li ratio of the brine opens the feasibility of magnesium removal with slaked lime. The Olaroz brine has high sulfate content (high SO₄/Mg); hence sodium and potassium sulfate

salts are likely to crystallize. As it has SO_4/Mg ratio higher than 4, there is enough sulfate available in the brine to precipitate the calcium liberated during magnesium removal process.

18.2 Orocobre Salar de Olaroz Process

As the Olaroz brine is a low Mg/Li brine, the best process application is to remove magnesium with lime, subsequently concentrate the brine, remove the boron and finally precipitate lithium carbonate. Initially four process alternatives were simulated in order to define the best location of the lime addition and the results gave a baseline for the process development testwork. Taking into account the initial evaporation test data and climate data the main process alternatives were reduced to the following two alternatives.

1. Lime addition directly at the well brine
2. Lime addition after initial evaporation

The estimated recovery for lithium is about 70%. The ponds will operate in sequence in order to minimize entrainment losses of the valuable elements and increase solar evaporation rates from the ponds. The Olaroz process will recover potassium and is investigating the feasibility of recovering boron. In the Silver Peak process is not beneficiated with the recovery of boron and potassium.

Figure 18.1 General Flowsheet Process Salar Olaroz Alternative I

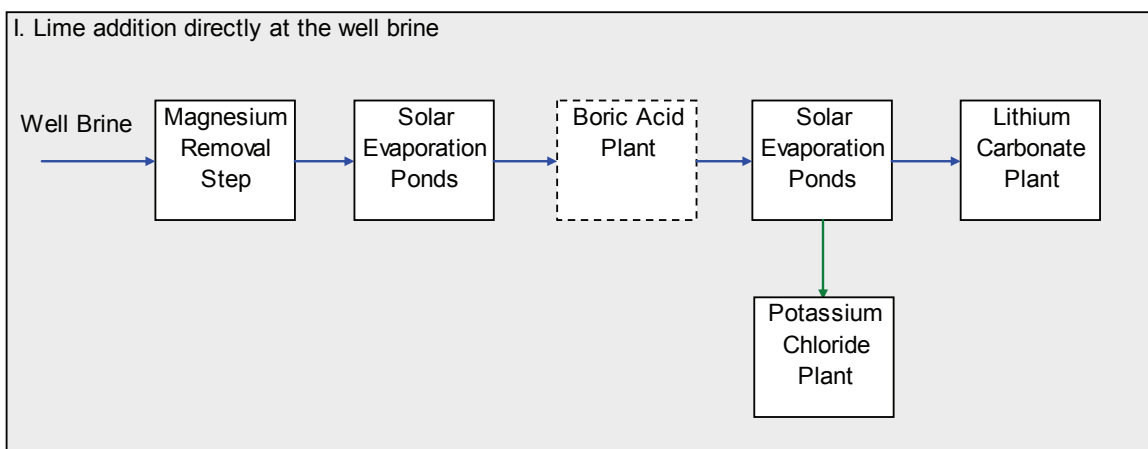
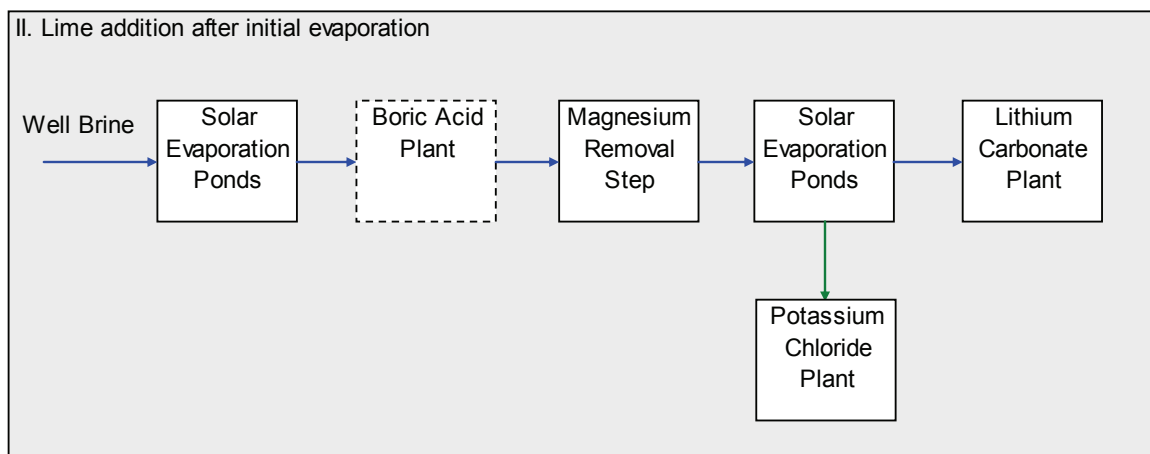


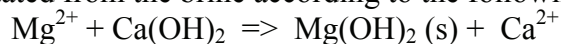
Figure 18.2 General Flowsheet Process Salar Olaroz Alternative II



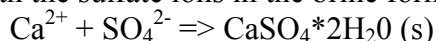
18.2.1 Liming

The brine from well will be fed to the Magnesium Removal Plant where magnesium is precipitated with slaked lime (“liming”). A high grade lime (83% CaO) will be used for this process.

The magnesium is precipitated from the brine according to the following reaction:



The calcium will precipitate with the sulfate ions in the brine forming gypsum:



The resultant magnesium hydroxide / calcium sulfate sludge is sent to decantation ponds.

This sludge is periodically dredged from the ponds and sent to a sludge-containment reservoir. After the magnesium removal step the brine is basic and has the tendency to absorb carbon dioxide from the air. The Olaroz brine contains sufficient sulfate and therefore sodium sulfate is not required to precipitate the calcium.

18.2.2 Evaporation Ponds

After the magnesium removal the brine is pumped to solar evaporation ponds, where principally halite crystallizes together with some glauber salt and gypsum. The quantity of glauber salt crystallization depends on the ambient temperature. Further concentrated and with higher ambient temperature the brine will most probably saturate in glaserite ($\text{Na}_2\text{SO}_4 \cdot 3\text{K}_2\text{SO}_4$). At some point in the concentration process boron should be recovered, however where and how is under research. Finally it will saturate in silvite (KCl). When the brine is concentrated to about 0.7-1.2% lithium it is ready for the lithium carbonate plant.

If the magnesium is eliminated after initial evaporation, the process will be very similar. However, in the first ponds more glauber salt will be precipitated and in the final ponds less glaserite will precipitate.

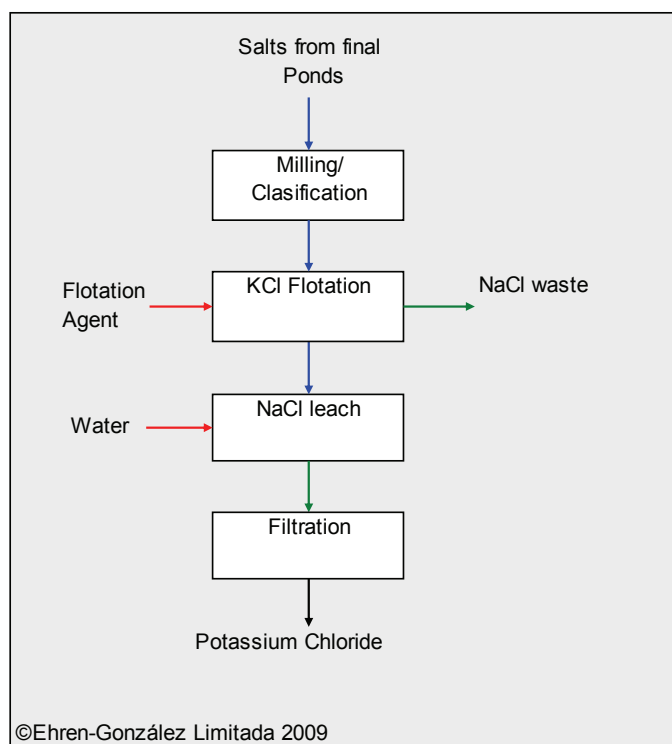
18.2.3 Boron Recovery

In order to recover the boron, its behavior in the solar ponds has to be studied. Since January 2010 the pilot ponds operate without magnesium in a basic environment. It will be important to evaluate the boron solubility in these ponds. Additionally it is suggested to do phase chemistry testwork during the year 2010.

18.2.4 Potassium Recovery

The salts from the concentrated ponds will most likely be treated in a potash plant, where silvite (KCl) is floated, washed and filtered (Figure 18.3).

Figure 18.3 Flowsheet for the Potassium Chloride Process



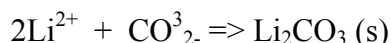
18.2.5 Lithium Carbonate Plant

The low solubility of lithium carbonate allows the precipitation of lithium carbonate from brine that is concentrated up to a suitable level of lithium in the final evaporation ponds. Nevertheless, the mother liquor or spent brine from the lithium carbonate still contains sustainable amount of lithium and therefore will be almost completely recycled to the pond system.

Even after previous boron recovery, the concentrated lithium brine will still contain boron. With the purpose of fulfilling the actual market specifications of lithium carbonate this residual boron should be eliminated.

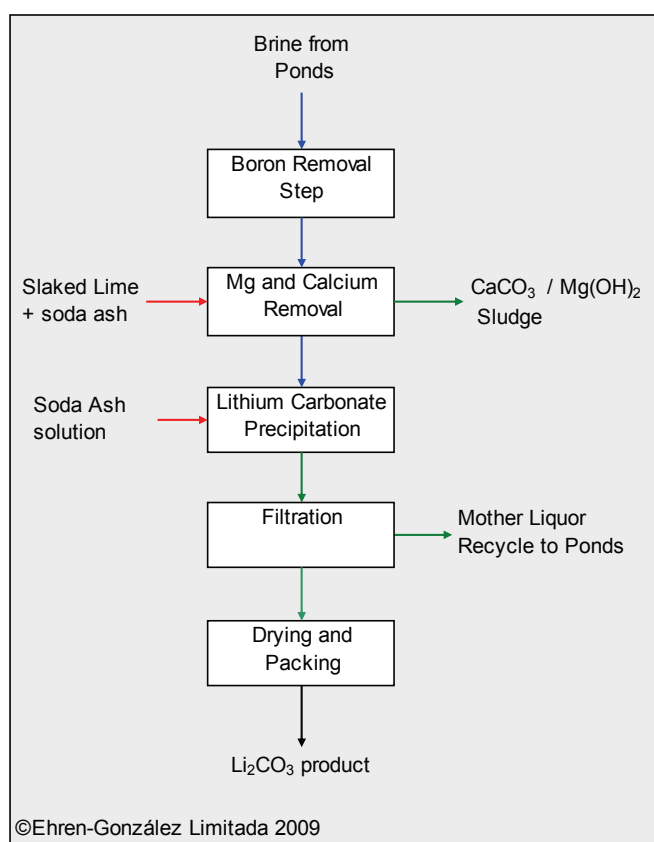
After the boron removal step in the lithium carbonate plant the solution will be treated with a mixture of slaked lime and soda ash in order to remove any residual magnesium and calcium in the boron free brine. The brine will be filtered in order to get rid of the formed magnesium hydroxide and calcium carbonate solids.

Subsequently lithium carbonate will be precipitated with the addition of soda ash at elevated temperatures.



The mother liquor of the plant will be sent back to the ponds. The lithium carbonate will be filtered and washed with purified water. Finally the product is dried, classified and packed. The process flowsheet is illustrated in 018.4.

Figure 18.4 Flowsheet Lithium Carbonate Process



18.3 Solar Evaporation Test

At the end of May 2009 a string of 4 pilot scale (25 m²) evaporation ponds were installed at the Salar de Olaroz. In mid-July 2009 a second string of 4 ponds were mounted as back-up in case of any pond leakage or brine loss. The pilot ponds have been reinforced and improved during November after a strong wind from unexpected direction caused the collapse of two ponds.

During November 2009 the liming pilot plant was constructed generating the possibility to treat the brine in the ponds with lime and remove the magnesium. At the end of the December, the first line, and at the beginning of January the second line started to operate without magnesium.

It is expected that in June 2010, the brine will be sufficiently concentrated to initiate boron recovery/removal and to test the final purification steps followed by lithium carbonate precipitation at lab and pilot scale.

18.3.1 Brine Temperatures

Temperatures in the ponds are manually registered at 09:00 and 16:00 every day. Various types of manual temperature with daily maximum and minimum temperature measurements have been tried without any success. Since January all ponds have continuous temperature registration using data loggers placed in the ponds.

For brine phase chemistry analysis the lowest daily brine temperature is a very important parameter as it will indicate which salt will precipitate.

Figure 18.5 New operational ponds L3 and L4



18.3.2 Phase Chemistry

The pilot ponds are operating continuously and therefore are representative for an industrial operation. During the winter months the evaporation rates are low and the ponds operated with a brine height of only 15 cm. In beginning of September a concentration gradient builds up in the ponds achieving a lithium concentration of about 0.4 to 0.5 % in the fourth pond. From mid September through mid November inventory was built up in the ponds generating an average of about 33 cm whilst maintaining the concentration. After this period the brines were treated in

order to remove the magnesium. During the solar evaporation period, principally sodium chloride precipitated in the ponds together with glauber salt, which was forced to crystallize during the cold winter nights. It has been observed that the sulfate concentration increased strongly since the September, which is evidently caused by the higher temperatures in the spring months.

18.3.3 Crystallized Salts

In all the ponds mainly sodium chloride ($\text{NaCl} > 94\%$) crystallized. Other salts that crystallized were glauber salt ($\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$: 2-6%) and calcium sulfate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$: 1%). In the most concentrated ponds minor concentrations of glaserite ($\text{Na}_2\text{SO}_4 \cdot 3\text{K}_2\text{SO}_4$), glauber salt, silvite (KCl) and borate salt were formed.

18.4 Liming

Initially Orocobre was using for its experiments hydrated lime ($\text{Ca}(\text{OH})_2$) from a provider located near Jujuy. This was replaced by active lime (CaO) from the same provider with the advantage of reducing product and transportation costs. The active lime is of a high grade and contains 83% of active CaO . At pilot scale the lime reacted very well and fulfilled completely the requirements.

Magnesium reacts instantaneously with the slaked lime. Subsequently the liberated calcium starts to react with the available sulfate. Some boron reacts in the beginning with calcium from the liberated lime. Chemically all the ponds could be treated with lime; however, the material handling for the concentrated brine was more difficult.

18.5 Boric Acid Process

Experimental work started in February at lab scale in the University of Salta.

18.6 Potassium Chloride

Experimental work has not been carried out. Initial work will be launched when the potassium salts are crystallized from the magnesium free brine.

18.7 Lithium Carbonate process

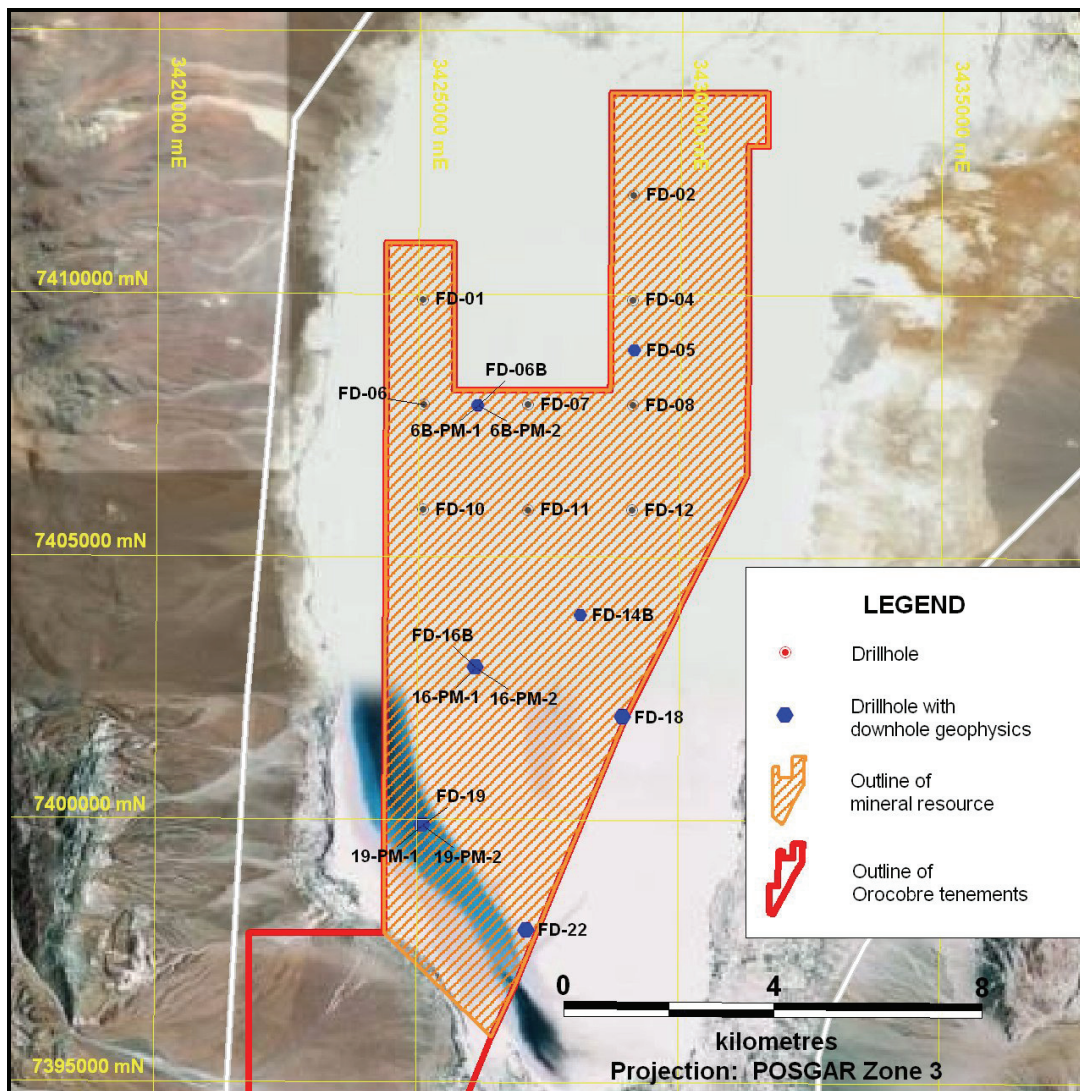
Experimental work has not been executed. Initial work will start when concentrated magnesium free brine is accomplished, which is expected to initiate in June 2010.

19. MINERAL RESOURCES AND MINERAL RESERVE ESTIMATES

Geos Mining, independent consultants of Sydney, Australia undertook a resources estimate based on drilling in 2008 of an Inferred Resource estimate of 350 million m³ of brine at 800 gm m³ Lithium and 6,600 gm m³ Potassium. This complied with the JORC Code (2004) and is equivalent to an Inferred Resource under CIM Definition Standards, 10 November 22, 2005.

This is equivalent to 1.5 million tonnes of lithium carbonate and 4.4 million tonnes of potash (potassium chloride) based on 5.32 tonnes of lithium carbonate being equivalent to 1 tonne of lithium and 1.91 tonnes of potash being equivalent to one tonne of potassium. The details of these estimates are fully described in Section 8 History and will not be repeated here. The location of the Inferred Resource is shown in Figure 19.1

Figure 19.1 Location of the Inferred Resource (Geos Mining 2009) showing the relationship to property boundaries at the time of the estimate.



The first Author has reviewed the Resource Estimate undertaken by Geos Mining and the validity of the data on which it was based and is of the opinion that the work undertaken was professionally done and that the resource estimated is reasonable.

It is the intention of the program currently underway to increase the confidence level of the resource to a category of a Measured Resource and/or a Probable Reserve.

20. OTHER RELEVANT DATA AND INFORMATION

No information – this section intentionally left blank.

21. INTERPRETATION AND CONCLUSIONS

Published geological studies show that the sedimentary basin started life in the Palaeogene as an extensional graben, converting during the early Neogene to a compressional, thrust-bounded basin. The basin has been infilled with coarse continental sediments becoming progressively finer and enriched with evaporitic precipitates as the climate became drier consequent upon Andean uplift during the late Miocene. The current salar occupies the southern part of an endorheic (internal drainage) basin of $\sim 6,000 \text{ km}^2$. Influent dilute waters evaporate around the margins of the salar and transfer concentrated solutions to the nucleus, which over thousands of years has led to a creation of a brine body hosted in the sedimentary aquifer.

The Salar de Olaroz is underlain by a structurally-controlled sedimentary basin that forms an aquifer(s) probably over 500 km^2 in area, and at depths of up to 600 m or more. The aquifer acts as a host to a brine body with elevated levels of Li, K, and B.

The current salar covers an area of $\sim 250 \text{ km}^2$. Geophysical studies suggest that the aquifer may be at least 600 m thick, hosting a brine body. Brine sampling from surface pitting, and drilling indicate a nucleus where lithium is highly concentrated, reaching over $1,000 \text{ mg l}^{-1}$ over an area of at least 20 km^2 , with a maximum of $1,207 \text{ mg l}^{-1}$. Potassium is also found in high concentrations ($>10,000 \text{ mg l}^{-1}$) throughout the nucleus.

The Company drilled twenty-two cored wells (including six hydrogeological test wells), and undertook downhole geophysical logging, core testing, and brine sampling between September and December 2008. A second brine sampling program from the wells was undertaken by the Company in January and February 2009. Using the data obtained by the Company, Geos Mining, of Sydney, Australia, acting as independent consultants undertook a review of the data and prepared a resource estimate (Geos Mining, 2009).

Geos Mining developed a conceptual geological model that divided the aquifer into three zones:

- Zone 1 - a near-surface layer, from surface to the base of a halite-rich unit, which occurs predominantly in the centre of the salar to a maximum depth of 19 m and averaging 11 m depth,
- Zone 2 - an interbedded sequence of sands, silts and clays to a maximum depth of 64 m and an average depth of 55 m.
- Zone 3 - an underlying clay layer with minor sand, silt and halite interbeds, which was assumed to be the base of the resource.

Initial tests made on drill core indicated an aquifer matrix with a range of total porosity of 30-40%. Since the in-situ resource depends on the effective porosity and the recoverable resource on specific yield, Geos Mining conservatively based their resource estimation on values of specific yield from the literature ranging between 1-22%, depending on lithology.

Mean brine grades used by Geos Mining for their resource estimate were 796 mg l^{-1} Li (with a range from $310\text{--}1,200 \text{ mg l}^{-1}$), and $6,660 \text{ mg l}^{-1}$ K (range $2,839\text{--}9,964 \text{ mg l}^{-1}$).

The report concluded that an Inferred Resource existed, amounting to 350 million kL (1 kL = 1 m³) of brine at 800 g kL⁻¹ lithium and 6,600 g kL⁻¹ potassium. This is equivalent to 1.5 million tonnes of lithium carbonate and 4.4 million tonnes of potash (potassium chloride).

The chemical composition of Salar de Olaroz brine has positive characteristics, such as a low magnesium to lithium (Mg/Li) ratio and adequate sulfate to magnesium (SO₄/Mg) ratio making it possible to apply the Silver Peak process route for the Clayton Valley brines being operated by Chemetall for over 40 years. Although in a general sense the chemistry is similar, the grades of lithium and potassium and the boron levels compared to lithium and potassium are higher significantly higher at Olaroz,. In addition, there very good climate conditions for solar evaporation at the Salar de Olaroz.-

A Preliminary Economic Assessment was carried out by the Company in May 2009, based on the Geos Mining resource estimate. This is an internal Company document using information developed by staff and consultants with experience on similar salar projects. The study summarized a potential process route for lithium carbonate and potash, with financial assumptions, including capital and operating costs. The production costs developed in the study were estimated at approximately US\$ 3,000 per tonne of lithium carbonate (without allowance for by-product credits) and US\$ 1,700 per tonne of lithium carbonate (with allowance for by-product credits).

There is significant exploration potential for additional brine volume beneath the current resource which extends only to an average depth of 55 m. Drilling in 2008 intersected sandy horizons beneath this level and Geos Mining recommended drilling to test this zone. Gravity modeling has since shown the basin may be 600 m or more deep, with the possibility of coarser clastic materials at the base of the salar deposits. In addition, the Company's property areas have increased significantly since the Inferred Resource was estimated and lateral extensions to the current resource are considered probable.

The results of the resource estimate and preliminary economic assessment were sufficiently encouraging to warrant investment in a more detailed investigation to establish the Measured Resource/Probable Reserve, and to prepare a fully detailed Bankable Feasibility Study for their development. This program is currently underway.

22. RECOMMENDATIONS

At the Olaroz Project, the Company is advancing the Resource Evaluation and Process Development programs describe in Section 4.4. These programs have been in progress since May 2009. The Resource Evaluation program was designed to provide data of sufficient integrity to allow a Measured Resource to be estimated which, assuming a positive outcome, would then allow modeling to estimate a Probable Reserve. This would supply the data on which to base a Definitive Feasibility Study. The core drilling program involving sonic drilling techniques, has commenced and the rotary drilling program to provide pump test holes and boundary condition holes is nearing completion.

The Process Development program has also been designed with the objective of developing a process route and mass balance up to a level of confidence on which a Definitive Feasibility Study can be completed, and to provide samples of product for marketing purposes. For several months the test facilities at Olaroz have been producing magnesium free brine that can be used as the feed for the boron removal stages and lithium carbonate precipitation testwork. When there is adequate potassium salts produced in the ponds, flotation tests will also be undertaken.

It is recommended these programs be continued to completion.

The authors have also been advised by the Company that the process of selecting the Consulting Engineers to undertake a) geotechnical investigations and b) plant design and the assessment of capital and operating costs is nearing completion. It is recommended that this work continues in parallel with the Resource Evaluation and Process Design studies. The authors have also been advised that the development Environmental Impact Report is well advanced.

The authors have been provided with a budget by the Company to complete the Definitive Feasibility Study. The budget total is US\$3.14m and is set out below. They have also been advised by the Company that this will be funded by the arrangements it has with Toyota Tsusho Corporation. The authors have reviewed the budget and are of the opinion that it is not an unreasonable estimate for remaining work based on the current stage in the process.

Table 22.1 Proposed budget for the remainder of the Definitive Feasibility Study

Area	US\$
Labour	411,846
Administration & General	76,410
Contracts & Consultants	434,821
Drilling	948,718
Geophysics	128,205
Geochemical	241,026
Field Support	718,974
Travel & Accommodation	16,154
Land Environment	166,667
Total	3,142,821

The Authors understand that the Company's objective is to complete the Definitive Feasibility Study before the end of 2010. Subject to completion of the Definitive Feasibility Study, finalising the operating joint venture agreement and provision of funding under the agreement with Toyota Tsusho, as well as receiving regulatory approvals it is envisaged that, assuming positive recommendations in the Definitive Feasibility Study, the Authors have been advised that the project will be developed in 2011 with potential production in 2012.

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24. DATE AND SIGNATURE PAGE

CERTIFICATE of AUTHOR

I, John Houston, MSc., C.Geol., do hereby certify that:

- 1 I am an independent consultant of:
Stuart Lodge, 273 Wells Road,
Malvern, WR14 4HH, UK.
2. I graduated with an Honours Bachelor of Science degree in Geology from Birkbeck College, London University, UK in 1970
3. I graduated with a Master of Science in Hydrogeology from University College, London University, UK in 1974.
4. I am a UK Chartered Geologist, a Fellow of the Geological Society of London, a Fellow of the Chartered Institute of Water and Environmental Management, a Member of the Geological Society of America and a Member of the American Geophysical Union.
5. I have published the following recent, relevant papers:

In preparation. The evaluation of brine prospects and the requirement for new filing standards. *Economic Geology*.
In review. Groundwater flow through the central Andean volcanic arc. *Geological Society of America Bulletin*.
2010. with Rech, Currie, Shullenberger, Dunagan, Jordan, Blanco, Tomlinson and Rowe: Evidence for the development of the Andean rain shadow from a Neogene isotopic record in the Atacama Desert, Chile. *Earth and Planetary Science Letters*.
2009 with Latorre, Gonzalez and Rojas. Estimaciones cuantitativas de precipitaciones para el Cuaternario tardío en el Desierto de Atacama a partir de paleomadrigueras de roedores. (Quantitative estimation of late Quaternary precipitation in the Atacama Desert based on data from rodent middens). *XII Congreso Geológico Chileno, Santiago*.
2009 A recharge model for high altitude, arid, Andean aquifers. *Hydrological Processes*, **23**: 2383-2393.
2008 Neogene sedimentary deformation in the Chilean forearc and implications for Andean basin development, seismicity and uplift. *Journal of the Geological Society of London*, **164**: 291-306.
2007 Recharge to groundwater in the Turi Basin, northern Chile: An evaluation based on tritium and chloride mass balance techniques. *Journal of Hydrology*, **334**: 534-544.
2006 Variability of precipitation in the Atacama Desert: its causes and hydrological impact. *International Journal of Climatology*, **2**: 2181-2189.
2006 Evaporation in the Atacama Desert: an empirical study of spatio-temporal variations and their causes. *Journal of Hydrology*, **330**: 402-412.
2005 The Great Atacama Flood of 2001 and implications for Andean Hydrology. *Hydrological Processes*, **20**: 591-610.
2005 with Hartley, Chong and Mather: 150 million years of climatic stability: evidence from the Atacama Desert, northern Chile. *Journal of the Geological Society, London*, **162**: 421-424.
2004 with Hart: Theoretical head decay in closed basin aquifers: an insight into fossil groundwater and recharge events. *Quarterly Journal of Engineering Geology and Hydrogeology*, **37**: 131-139.
2004 High-resolution sequence stratigraphy as an exploration tool in hydrogeology. *Quarterly Journal of Engineering Geology and Hydrogeology*, **37**: 7-17.
2003 with Hartley: The central Andean west-slope rainshadow and its potential contribution to the origin of hyper-aridity in the Atacama Desert. *International Journal of Climatology* **23**:1453-1464.
2003 with Reidel and Benitez: Los Privados en el Desarrollo de Suministros de Agua en el Norte de Chile: La Experiencia de Nazca. *Revista de Derecho Administrativo Económico* **IV**:289-294.
2002 Groundwater recharge through an alluvial fan in the Atacama Desert, northern Chile: mechanisms, magnitudes and causes. *Hydrological Processes* **16**:3019-3035
2001 La precipitación torrencial del año 2000 en Quebrada Chacarilla y el cálculo de recarga al acuífero Pampa Tamarugal, norte de Chile. *Revista Geológica de Chile* **28**:163-177
2001 with Jensen and Arevalo: Constitución de derechos de aprovechamiento sobre aguas subterráneas almacenadas. *Revista de Derecho Administrativo Económico* **III**:117-127
1994 Satellite imagery evaluates water resources for Chile. *Earth Observation Magazine* **May**, 38-40.
6. I have practiced my profession for forty five years.

7. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101. This report is based on my personal review of information provided by the Issuer and on discussions with the Issuer’s representatives. My relevant experience for the purpose of this report is:
- 1998-2008 Principal consultant to Nazca S.A.
 - 1990-1998 Group Chief Executive, Water Management Consultants
 - 1979-1988 Director, Hydrotechnica Ltd.
 - 1975-1979 Senior Hydrogeologist, Aspinwall and Company
 - 1970-1974 Hydrogeologist, Botswana Geological Survey
 - 1965-1970 Hydrogeologist, British Geological Survey
- And I have previously directed, managed, evaluated and participated in the following brine resource projects:
- Salar de Hombre Muerto for FMC and Minera del Altiplano, Argentina (1991-1993)
 - Salar de Atacama for Amax and Minsal, Chile (1986-1997)
 - Sua Pan Brine Project, Botswana (1995-1996)
 - Lake Natron Resource evaluation, Tanzania (1991)
 - Um as Sammin brine development, Oman (1991).
8. I am responsible for the preparation of the Olaroz Project Technical Report dated April 30, 2010. I visited the property many times between April, 2009 and April 2010.
9. I have not had prior involvement with the properties that are the subject of the Technical Report.
10. As of the date of this certificate, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
11. I am independent of the issuer applying all of the tests in section 1.4 of National Instrument 43-101.
12. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
13. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Effective date:- 30th Day of April, 2010

Date of signing:- 4th Day of May, 2010



Signature of John Houston, C.Geol.

John Houston
Printed name of John Houston, C.Geol.

CERTIFICATE of AUTHOR

I, Peter Ehren, MSc., AusIMM, do hereby certify that:

2. I am an independent consultant and owner of Ehren-González Limitada of Pedro Pablo Rubens 2969, La Serena, Chile
7. I graduated with a Master of Science Degree in Mining and Petroleum Engineering, with a specialization in Raw Materials Technology and Processing Variant at the Technical University of Delft, The Netherlands in the year 1997
8. I am an independent consultant, a Member of the Australasian Institute of Mining.
9. I have practiced my profession for thirteen years.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of my education and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101. This report is based on my personal review of information provided by the Issuer and on discussions with the Issuer’s representatives. My relevant experience for the purpose of this report is:
 - 1997 Final Thesis of MSc.degree: “Recovery of Lithium from Geothermal Brine, Salton Sea”, BHP Minerals, Reno Nevada.
 - 1998-2001 Process Engineer, Salar de Atacama, SQM
 - 2001-2006 R&D Manager, Lithium and Brine Technology, SQM.
 - 2006 Process Project Manager, SQM
 - 2007 till data Independent Lithium and Salt Processing Consultant, Ehren-González Limitada
6. I am responsible for the preparation of the sections: 7.3 Climate and 8.5 Orocobre Scoping Study 18 Mineral Processing and Metallurgical Testing and for relevant portions of sections 14. Sampling Method and Approach and 15 Sample Preparation, Analyses and Security of the Salar de Olaroz Project Technical Report dated April 30, 2010. I visited the property many times between August 2009 and April 2010.
7. I have not had prior involvement with the properties that are the subject of the Technical Report.
9. As of the date of this certificate, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
9. I am independent of the issuer applying all of the tests in section 1.4 of National Instrument 43-101.
10. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Effective Dated: April 30, 2010.
Date of Signing: May 4, 2010

A handwritten signature in cursive script, appearing to read 'Peter Ehren', written in black ink.

Signature of Peter Ehren, M.AusIMM.

Peter Ehren
Printed name of Peter Ehren, M.AusIMM.