TECHNICAL REPORT ON THE

SALINAS GRANDES-GUAYATAYOC PROJECT

JUJUY-SALTA PROVINCES, ARGENTINA

REPORT FOR NI 43-101
PREPARED ON BEHALF OF OROCOBRE LTD.
Level 1, 349 Coronation Drive, Milton, Queensland 4064, Australia.

BY

JOHN HOUSTON
CONSULTING HYDROGEOLOGIST
BSc., MSc., C.Geol., FGS, FCIWEM

April 30, 2010

CONTENTS OF THE TECHNICAL REPORT

FIGURES

TABLES

3. SUMMARY

Orocobre Ltd through its 85% beneficially owned subsidiary South American Salars SA (collectively "the Company") holds directly or indirectly over 1,200 km^2 of mining tenements in the area of the Salar de Salinas Grandes and Lugana de Guayatayoc (the "Project") in northwestern Argentina. These properties cover aquifer(s) that host brine bodies with elevated levels of lithium, potassium and boron.

This Technical Report details the reconnaissance studies undertaken to date, the initial results and provides recommendations for further investigations aimed initially at establishing an Inferred Resource and later, if the results warrant, a Measured Resource and/or Probable Reserve. 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, who is a Qualified Persons under NI 43-101, and is independent of the Company.

The Project 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 extraction, 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 – surface and groundwater inflows, and outputs – evaporation).

The reconnaissance investigations carried out to date are not adequate to establish a resource estimate. Nevertheless, the data suggest that the Project is underlain by a structurally-controlled sedimentary basin that forms an aquifer probably over 2,500 km^2 in area, and over 400 m deep. No effective porosity determinations have yet been made on the aquifer matrix, but by analogy with similar aquifers may be in the region of 10-20%. Surface pitting and sampling suggest that the nucleus of Salinas Grandes, covering an area of approximately 60 km^2 has lithium concentrations over 2000 mg l^{-1}, reaching a maximum of 3117 mg l^{-1}. In addition potassium values of >20,000 mg l^{-1} occur over and area of approximately 40 km^2, and boron values >500 mg l^{-1} occur over more than 50 km^2.

No data is yet available to assess the recoverable reserves.

The data collected to date suggest that the Salinas Grandes-Guayatayoc property may have significant potential as a source of lithium, potassium and boron. It is therefore recommended that an investigation program be mounted in order to establish initially the in-situ resources, and if warranted, later the recoverable resources. The scope and timing of such investigations is detailed in the Technical Report, and their cost is provisionally estimated at USD 10.4 million.

4. INTRODUCTION

4.1. Authorship and Terms of Reference

The author was contracted by Orocobre Ltd. for the purpose of authoring this 43-101 Technical Report. The author is also contracted as an expert hydrogeological consultant by Orocobre to advise on the methodology for the assessment of its brine projects, including the Olaroz and Cauchari Projects, and is responsible in this role for provision of technical advice including the hydrogeological and resource aspects. The author has visited the Project on a number of occasions.

Reconnaissance exploration and evaluation data has been made available by the Company to the author for the Project, consisting of surface pitting results, and sample data. Subsequently, the author provided detailed technical specifications for investigations that will lead initially to an Inferred Resource and later an Indicated or Measured Resource and/or a Probable Reserve. As of the date of this report the first phase investigation to evaluate an Inferred Resource is planned to start during the second half of 2010 and last approximately 2 years. Numerous sources of geologic and climatic data have been compiled for the project area, as indicated in the bibliography. The author has also reviewed published reports and have undertaken the analysis of data collected through the end of 2009.

The author's experience with similar brine resource projects in the area is highly relevant to the current Orocobre prospects. The scope of the personal involvement by the author is planned to include ongoing technical oversight of the investigation and evaluation programs.

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 extraction 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 Project, section 8 (Deposit Types) deals with the host aquifer, and section 9 (Mineralization) deals with the brine, whilst section 16 (Mineral Processing and Metallurgical Testing) will include aspects relating to the water balance and brine extraction.

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, and permits.

6. PROPERTY LOCATION AND DESCRIPTION

6.1. Location

The Salinas Grandes-Guayatayoc project is located in the Puna regions of the provinces of Jujuy and Salta (Figure 6.1), at an altitude of 3550 m above sea level, 150 km northwest of the capital city of Jujuy.

The project sites sit astride the paved highway passing through the international border with Chile, approximately 170 km by road to the west (Paso de Jama), continuing on to the major mining center of Calama and the port of Mejillones in northern Chile.

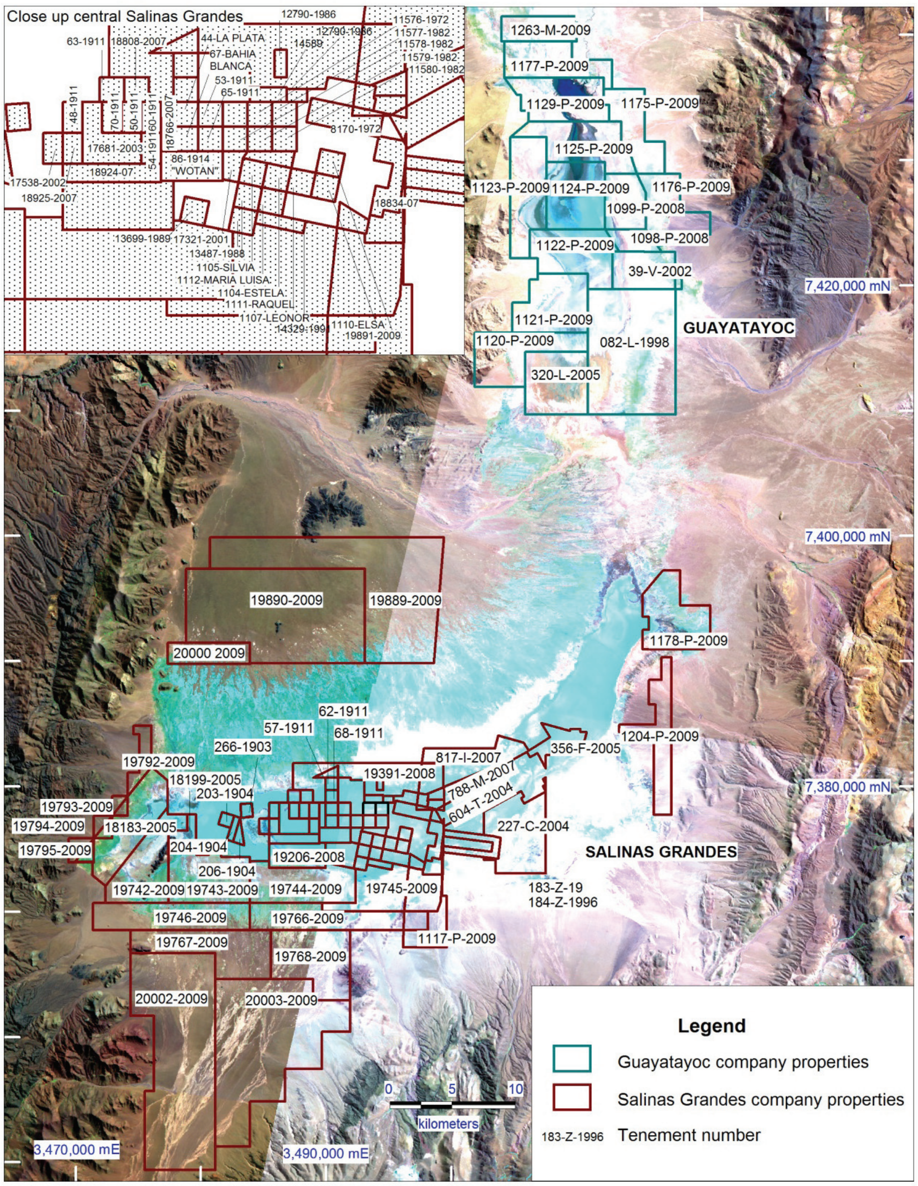
Figure 6.1 Location of the Company's principal tenements in Northern Argentina. Small squares indicate villages in the area. The Company's Salinas Grandes- Guayatayoc properties are shown with a blue outline.

6.2. Exploration and exploitation licences

6.2.1. *Types of licences and co-ordinate system*

The location of the Orocobre licences is shown in Figure 6.2, with tenement information presented in Table 6.1. Tenement co-ordinates (and all other co-ordinates used in this report) are given in the Argentine coordinate system, which uses the Gauss Krueger Universal Transverse Mercator (UTM) projection, and the Argentine Posgar 94 datum. Claims “In process” refers to those that have been submitted to the regulatory authorities and are awaiting approval. This is standard procedure and no problems are anticipated with the granting of such claims.

Figure 6.2 Tenements held by the Company.



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 50days. The largest Permit is 20 units (10,000 hectares) and has a period of 1,100 days. The period commences 30 days after the grant of the permit. The canon payable is ARG$400 per 500 hectares upon 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.

6.2.2. *Standing of licences*

Details on the status of the properties is provided in Table 6.1 provided by lawyers, Vargas Galindez of Mendoza. The properties are all in good standing with the exception of 4 cateos which are under a purchase contract with Borax Argentina S.A. (part of Rio Tinto PLC). It is unknown whether this contract will be completed.

6.2.3. *The Salinas Grandes-Guayatayoc tenement package*

The Salinas Grandes-Guayatayoc properties cover over 120,000 hectares.

These property interests are held directly or via contractual rights by South American Salars SA (an Argentinean registered company) which is a 100% subsidiary of South American Salar Minerals Pty Ltd (an Australian Registered company), which was established with Argentine interests as a joint venture company in 2008 to explore for salar hosted minerals. Orocobre Ltd has an 85% interest in the joint venture company, South American Salar Minerals Pty Ltd.

The properties have been acquired either through application for vacant ground or via purchase contracts many of which have been completed. Remaining expenditure obligations total US$1.052 million with US$4.478 million already spent.

Table 6.1 Individual tenements of the Salinas Grandes-Guayatayoc project showing the areas in hectares. Co-ordinates in Gauss Krueger Zone 3, POSGAR94 datum.

Property Name	Title Holder	Property Right By	Permit ID	Area (Ha)	Status
Jujuy Tenements					
Aguadita	O Ceballos	Contract	148-Z-1996	300	In process
Atenea	Importadora Exportadora Avanti SRL	Contract	817-I-2007	1,150	In process
Colorada II	South American Salars S.A	Title	1178-P-2009	2,500	In process
Guayatayoc	Luis Losi S.A.	Contract	082-L-1998	7,000	In process
Guayatayoc III	Luis Losi S.A.	Contract	320-L-2005	2,500	In process
Huayata II	South American Salars S.A	Title	1098 P 2008	1,299	In process
Huayata III	South American Salars S.A	Title	1099 P 2008	1,393	In process
Huayata IV	South American Salars S.A	Title	1.120 P-2009	2,499	In process
Huayata IX	South American Salars S.A	Title	1.124 -P-2009	2,500	In process
Huayata V	South American Salars S.A	Title	1.121-P-2009	2,498	In process
Huayata VI	South American Salars S.A	Title	1.122 -P-2009	2,499	In process
Huayata VII	South American Salars S.A	Title	1.123 -P-2009	2,500	In process
Huayata VIII	South American Salars S.A	Title	1.124-P-2009	2,500	In process
Huayata X	South American Salars S.A	Title	1129_P- 2009	2,500	In process
Jorge Enrique	Tramo SRL	Contract	604-T-2006	500	In process
Jose Y Hernan	M Casimiro	Contract	788-M-2007	1,170	In process
La Aguada I	South American Salars S.A	Title	1.117-P-2009	2,189	In process
Lama I	South American Salars S.A	Title	1204-P-2009	1,868	In process
Mahoma	O Ceballos	Contract	183-Z-2004	494	In process
Teresa	D Cesar	Contract	227-C-2004	2,600	In process
Wuallar II	South American Salars S.A	Title	1176-P-2009	2,483	In process
Wuallar III	South American Salars S.A	Title	1175-P-2009	1,800	In process
Wuallar IV	South American Salars S.A	Title	1177-P-2009	2,100	In process
Total Salinas Grandes/Guayatayoc in Jujuy				**48,843**	

Property Name	Title Holder	Property Right By	Permit ID	Area (Ha)	Status
Salta Tenements					
Property_Name			**Tenement_ID**	**Area _ha**	**Status**
Cateo	South American Salars S.A	Title	19890	9,942	In process
Cateo	South American Salars S.A	Title	19889	8,995	In process
Cateo	South American Salars S.A	Title	20002	9,895	In process
Cateo	South American Salars S.A	Title	20003	8,977	In process
Alcalina Grande	South American Salars S.A	Title	19,391	2,412	In process
Aldo	Euroboro S.A.	Contract	18199	500	In process
Bahia Blanca	South American Salars S.A	Title	67	100	Granted
Canaria II	South American Salars S.A	Title	19792	528	In process
Canaria III	South American Salars S.A	Title	19793	98	In process
Canaria IV	South American Salars S.A	Title	19794	134	In process
Canaria V	South American Salars S.A	Title	19795	154	In process
Carina Zulma	South American Salars S.A	Title	18834	500	In process
Cordoba	South American Salars S.A	Title	60	100	Granted
Elsa	South American Salars S.A	Title	1110	100	Granted
Estela	South American Salars S.A	Title	1104	100	Granted
Flavio II	South American Salars S.A	Title	13699	100	Granted
Joaquina	South American Salars S.A	Title	18808	100	Granted
La Americana	South American Salars S.A	Title	266/1903	100	Granted
La Canaria	South American Salars S.A	Title	18183	2,778	In process
La Cordillerana	South American Salars S.A	Title	12970	100	Granted
La Martana I	South American Salars S.A	Title	19891	300	Granted
La Pampa	South American Salars S.A	Title	62	100	Granted
La Paya	Euroboro S.A.	Contract	17681	400	In process
La Plata	South American Salars S.A	Title	44	100	Granted
La Promesa	J Sola	Contract	8170	300	In process
Leonor	South American Salars S.A	Title	1107	100	Granted
Lucia	South American Salars S.A	Title	18481	97	In process
Mar Del Plata Nueva	M Moncholi	Contract	18766	100	Granted
Maria Luisa	A Krause	Contract	1112	100	Granted
Mateo	South American Salars S.A	Title	13487	100	Granted
Mine Hilda I	South American Salars S.A	Title	14329/91	100	Granted
Mine Misiones	South American Salars S.A	Title	57	100	Granted
Neuquen	South American Salars S.A	Title	68/1911	100	Granted
Nina Bonita	South American Salars S.A	Title	17538	96	Granted

Property Name	Title Holder	Property Right By	Permit ID	Area (Ha)	Status
		Salta Tenements			
Paola	S Canizares	Contract	14589	100	Granted
Parana	M Moncholi	Contract	18924/07	300	In process
Parana I	South American Salars S.A	Title	18925/07	100	In process
Parana II	Ionchholi,R Edgardo,P & H Pela	Contract	19206	869	In process
Prode III	South American Salars S.A	Title	11577	100	
Prode IV	South American Salars S.A	Title	11578	100	Granted
Prode V	South American Salars S.A	Title	11579	100	Granted
Prode VI	E Cozzi	Contract	11580	100	Granted
Raquel	South American Salars S.A	Title	1111	100	Granted
Roberto Matias	South American Salars S.A	Title	18833	200	In process
Romina I	South American Salars S.A	Title	17321	186	In process
Rosario	South American Salars S.A	Title	53	100	Granted
Salinita I	South American Salars S.A	Title	19742	2,491	In process
Salinita II	South American Salars S.A	Title	19743	2,500	In process
Salinita III	South American Salars S.A	Title	19744	2,500	In process
Salinita IV	South American Salars S.A	Title	19745	2,499	In process
Salinita V	South American Salars S.A	Title	19746	2,648	In process
Salinita VI	South American Salars S.A	Title	19766	2,488	In process
Salinita VII	South American Salars S.A	Title	19767	2,983	In process
Salinita VIII	South American Salars S.A	Title	19768	2,987	In process
Salinita X	South American Salars S.A	Title	19980	1,123	In process
Salta	South American Salars S.A	Title	48/1911	100	Granted
San Esteban	South American Salars S.A	Title	203/1904	100	Granted
San Francisco	South American Salars S.A	Title	204/1904	100	Granted
San Juan	South American Salars S.A	Title	54/1911	100	Granted
Santa Fe	South American Salars S.A	Title	63	100	Granted
Santiago Del Estero	South American Salars S.A	Title	50	100	Granted
Silvia	M Sola	Contract	1105	100	Granted
Tres Arroyos	South American Salars S.A	Title	65	100	Granted
Tucuman	South American Salars S.A	Title	70	100	Granted
Walterio	South American Salars S.A	Title	206/1904	100	Granted
Wotan	South American Salars S.A	Title	86	300	Granted
Total Salinas Grandes/Guayatayoc in Salta				**73,681**	
Total Salinas Grandes/Guayatayoc Jujuy & Salta				**122,524**	

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).

6.3. Environmental Liabilities

The Salinas Grandes-Guayatayoc properties are not subject to any known environmental liabilities. There has been active ulexite/borax mining within the boundaries of the tenement package, but the operations have been limited to within five meters of the surface and it is assumed that they will naturally reclaim now mining has been halted. There is no current extraction.

6.4. Permits

Exploration and mining activities on *cateos* and *minas* are subject to regulatory approval, of an environmental impact report ("EIR"). EIR's have been submitted for many of the properties in the Salinas Grandes-Guayatayoc located in Salta province and approvals have been received from the regulatory authorities for these. These cover the west end of Salinas Grandes.

The company has also obtained approvals for its activities through prior approvals on properties it has acquired or on which it has contractual rights in both Jujuy and Salta provinces. EIR updates will be presented to reflect the ongoing activities

The company is waiting for regulatory authority approval of the EIR's for the properties which lie in Jujuy province.

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.

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

7.1. Accessibility, Local Resources and Infrastructure

The Salinas Grandes-Guayatayoc project is located in the Puna area of northwest Argentina, within the province of Jujuy (Figure 7.1). The project site is reached by paved and unpaved roads from Salta or Jujuy which connect with the highway Route 52 that passes through Salinas Grandes to the international border with Chile, to the northwest (Jama Pass). This highway continues on to the major mining center of Calama and the port of Mejillones, near Antofagasta in northern Chile. Approximately 80kms 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.

A gas pipeline running from northern Argentina to Chile passes between the salars. This could provide a potential gas supply for onsite power generation for a potential project development.

There are a number of local villages within 50 kms of the project site and the regional administrative center of Susques (population 2000) is within a one and a half hour's drive.

Access to the area is 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 for a further 50 km leads to the eastern side of Salinas Grandes. From this point the route previously known as Route 40 provides access north up the eastern side of Guayatayoc Salar and south along southern side of Salinas Grandes. Route 11 provides access along the western side of the Guayatayoc Salar. The total drive distance between the city of San Salvadore de Jujuy and the project areas is approximately 100 km, and takes approximately 2 hours. . A potential project development could draw on local labour from local villages and Susques and more skilled and other contract services from San Salvadore de Jujuy.

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

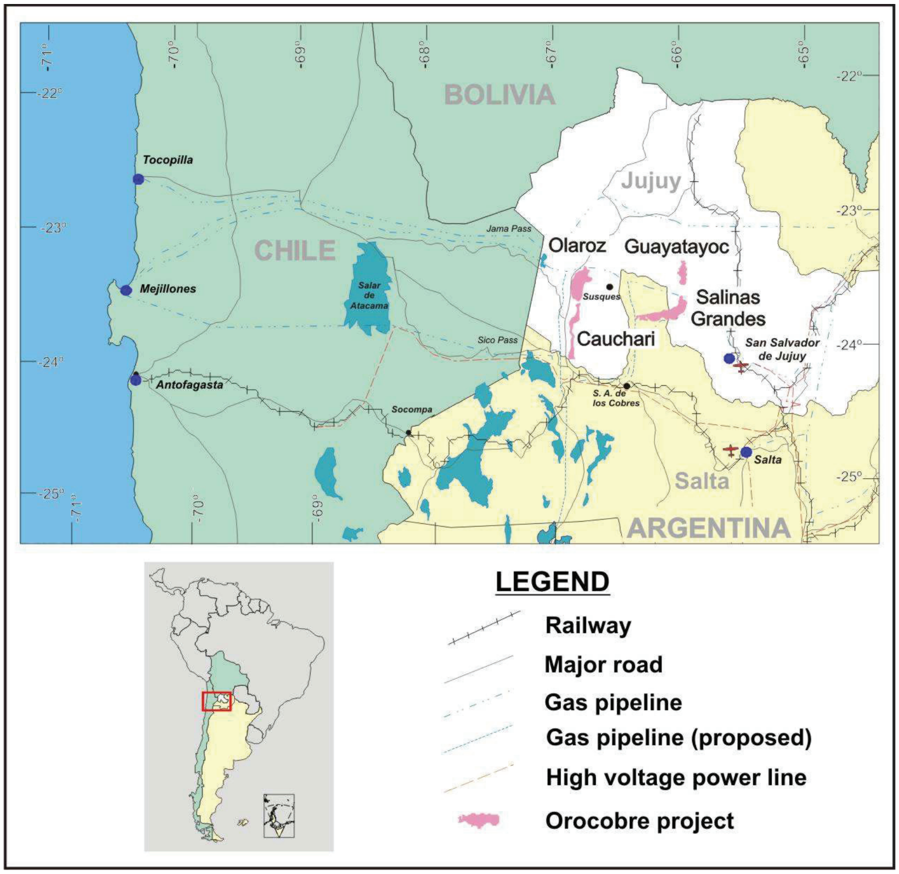
7.2. Physiography

The Altiplano-Puna is a high elevated plateau within the central Andes (see Figure 7.2 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 3,900 m asl.

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 (salars) fill many basins (see Figure 7.3 below).

The Salinas Grandes-Guayatayoc project is located in the salars of the same names. (see Figure 7.3). The elevation at the surface of the salars is approximately 3400 m asl. The salars are a flat area and form a composite closed basin, with internal (endorheic) drainage, where discharge occurs by evaporation. The water inflow into the salar is produced by precipitation, superficial and groundwater inflows. Guayatayoc receives surface drainage inflows from the River Miraflores into the north of the basin and the River Burras into the south. Deltaic fans are formed in the area where the drainages enter into the salar. The total area of the basin is ~20,000 km^2, with the salars occupying ~2,500 km^2. The drainage basin of the salars in the Orocobre tenement package are shown in Figure 7.4.

Figure 7.1 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

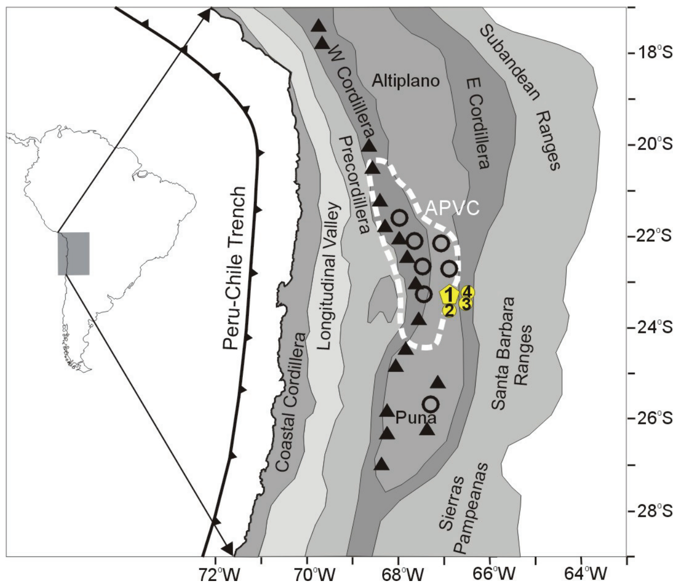


Figure 7.2 Digital elevation model of the Puna showing the location of various salars.

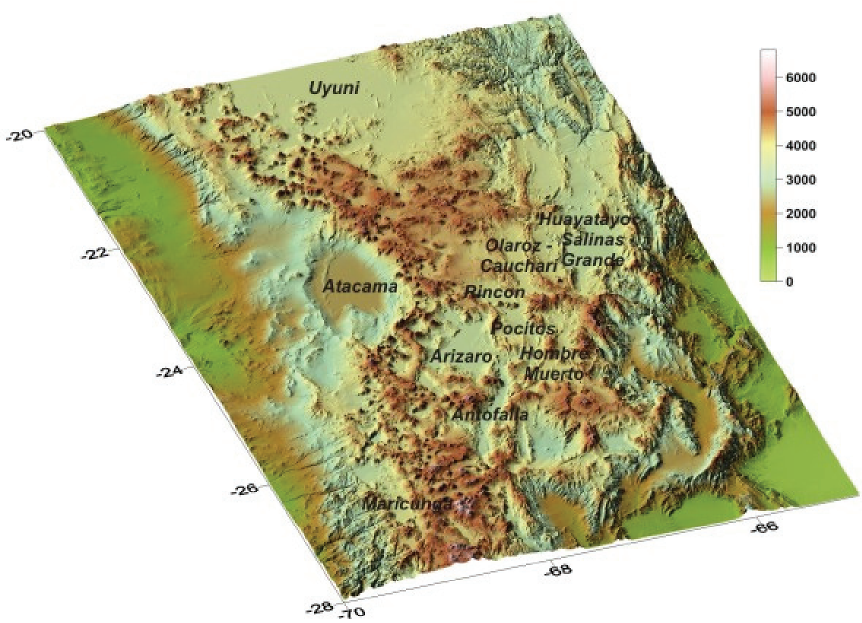
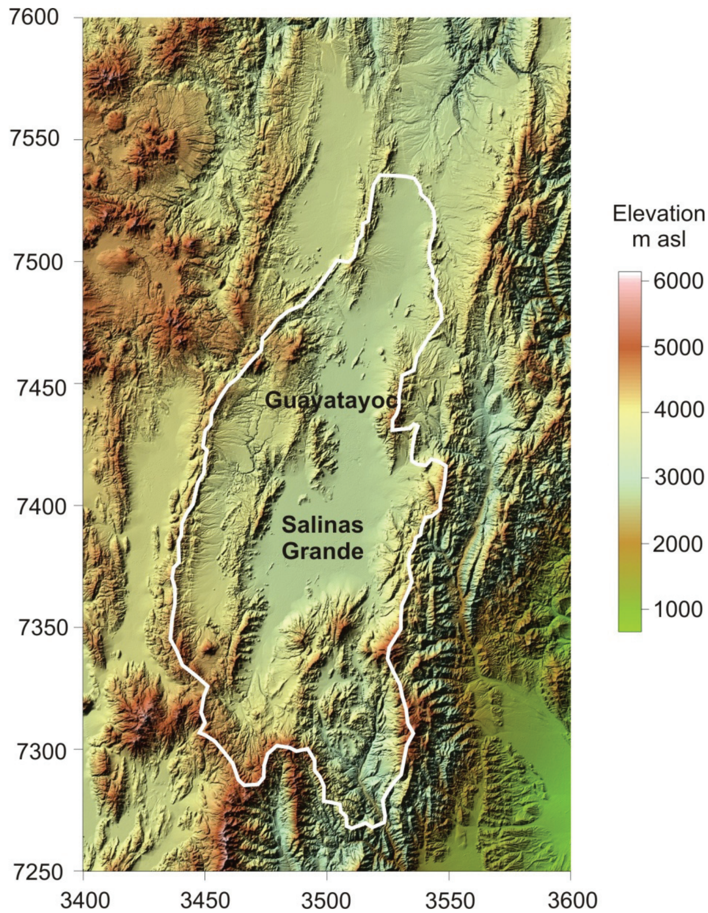


Figure 7.3 Catchment area draining to the Salinas Grandes-Guayatayoc salars.



7.3. Climate

The climate in the project area is relatively severe, with daily temperature variations up to 35^{o}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. However, the climatic conditions are not so severe as to restrict exploration activity to any particular part of the year and work can be conducted all year.

The climatic conditions are considered attractive for solar evaporation processes. Although not as high as the evaporation rate at Salar de Atacama, the conditions are expected to be very similar to Hombre Muerto (in the Salar Hombre Muerto) which has been producing lithium for over 10 years and is located 250 km south-southwest of Salinas Grandes-Guayatayoc.

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 plans to establish local automated weather stations. In nearby Salar de Olaroz, partial data collection between

September 2008 and July 2009 showed the average temperature was 8ºC; the average wind speed 22 km hr^{-1}, the average relative humidity 31% and the accumulated rainfall 85 mm total.

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 salars, with some records available from 4 weather stations in the adjacent area (Table 7.1, below). These include, Susques (50 km west), La Quaica 160 km north), Mina Pan de Azucar (100 km north) and the Hombre Muerto salar (260 km south-southwest).

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.

No Project site-specific data are available.

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

7.3.2. *Temperature*

Records from the weather station at Susques (50 km west of Salinas Grandes) and the Olaroz weather station (80 km west of Salinas Grandes) 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 35º C and -30º C. The coldest months with temperatures below zero correspond to May through August. There are approximately 150 days on average without frost. This average temperature was calculated for the town of Susques (altitude 3675 m) near the project area (INTA – EEA – PROSIMA – NOA, 1993). Details are collated in the Table 7.2, below. An annual mean temperature of 8°C was registered in the locality of Catua, with 6ºC measured in the Hombre Muerto salar during the 1979 - 1995 time period.

No Project site-specific data are available.

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, 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

No Project site-specific data are available.

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).

No Project site specific evaporation data are currently available.

7.4. Vegetation

Due to the relatively 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

8.1. Pre-Orocobre

Fabricaciones Militares (an 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 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 with limited sampling of salars in the Puna for Li, K and other elements. The samples from the Salar de Salinas Grandes showed relatively high lithium and potassium values of 0.044 wt% lithium and 0.51 wt% potassium. These samples were taken from the north- east part of the Salar de Salinas Grandes and are similar to the Company's results in this area. These analyses pre-date the implementation of NI 43-101 and were carried out by an academic laboratory. No assay certificate is available for the information contained in the Igarzábal (1984) report and consequently no reliance can be placed on this data.

Exploitation of borates takes place locally in the Salinas Grandes-Guayatayoc properties as does the production of salt by solar radiation processes.

8.2. Orocobre exploration

In 2008, *cateos* were applied for around the edges of Guayatayoc, with additional applications made at Guaytayoc and Salinas Grandes in 2009. Additional properties were also purchased by the Company during 2009 and 2010 either as outright purchases or via option to purchase agreements.

Reconnaissance sampling of the Salinas Grandes and Guayatayoc properties began in March 2009 following the wet season and is reported below.

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.

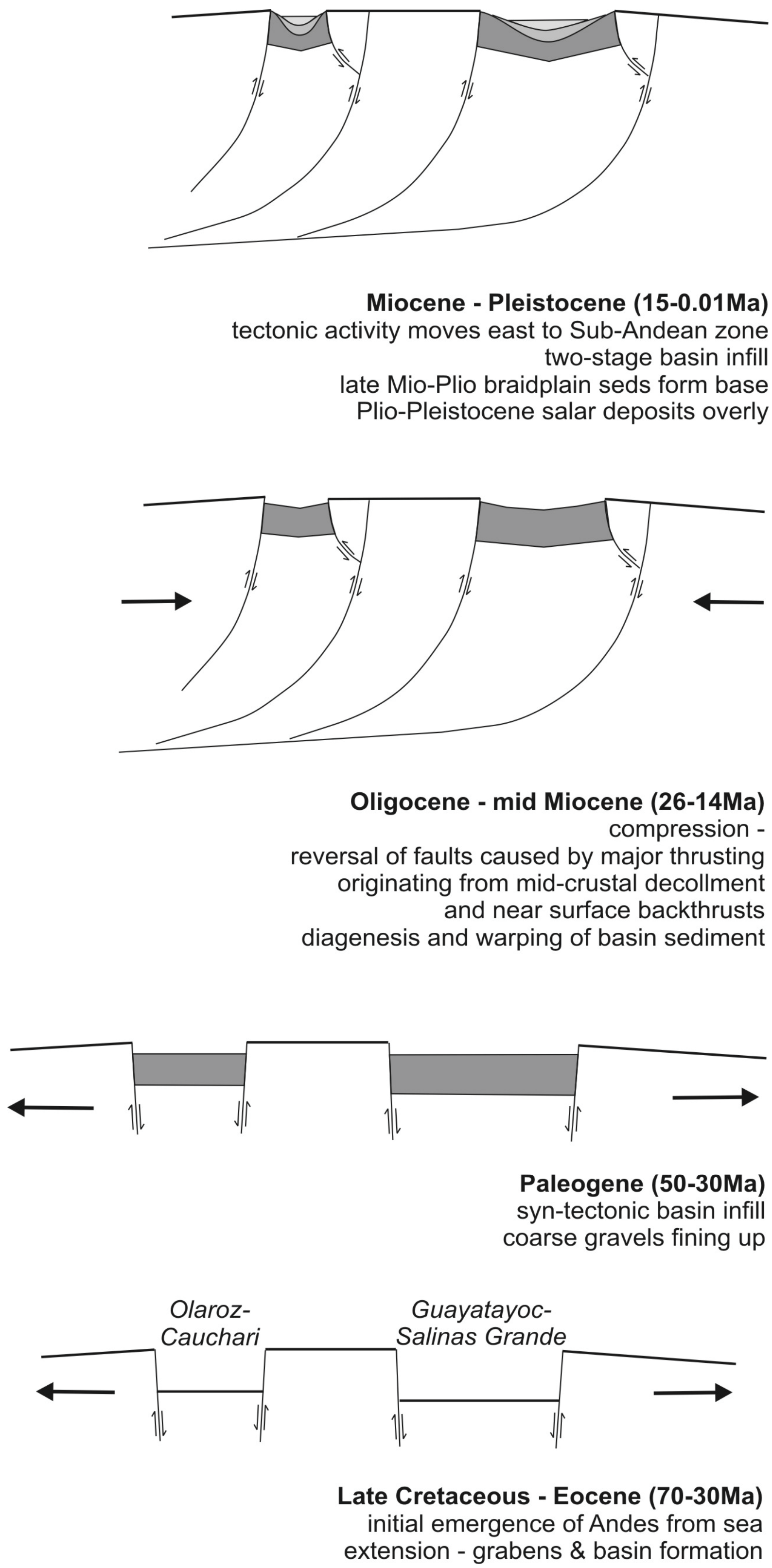
9.1.1. *Jurassic-Cretaceous*

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 Figure 9.1) 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).

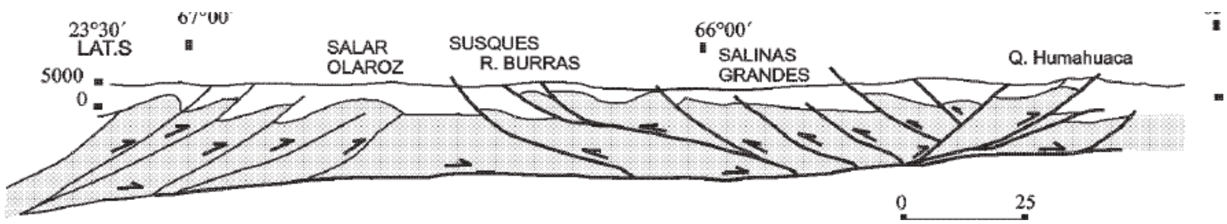
Figure 9.1 Generalized structural evolution of the Puna basins.



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 (Figures 9.2, 9.3). 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 (Garzione 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. This is confirmed by the seismic section across Salinas Grandes (Figure 9.3).

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)

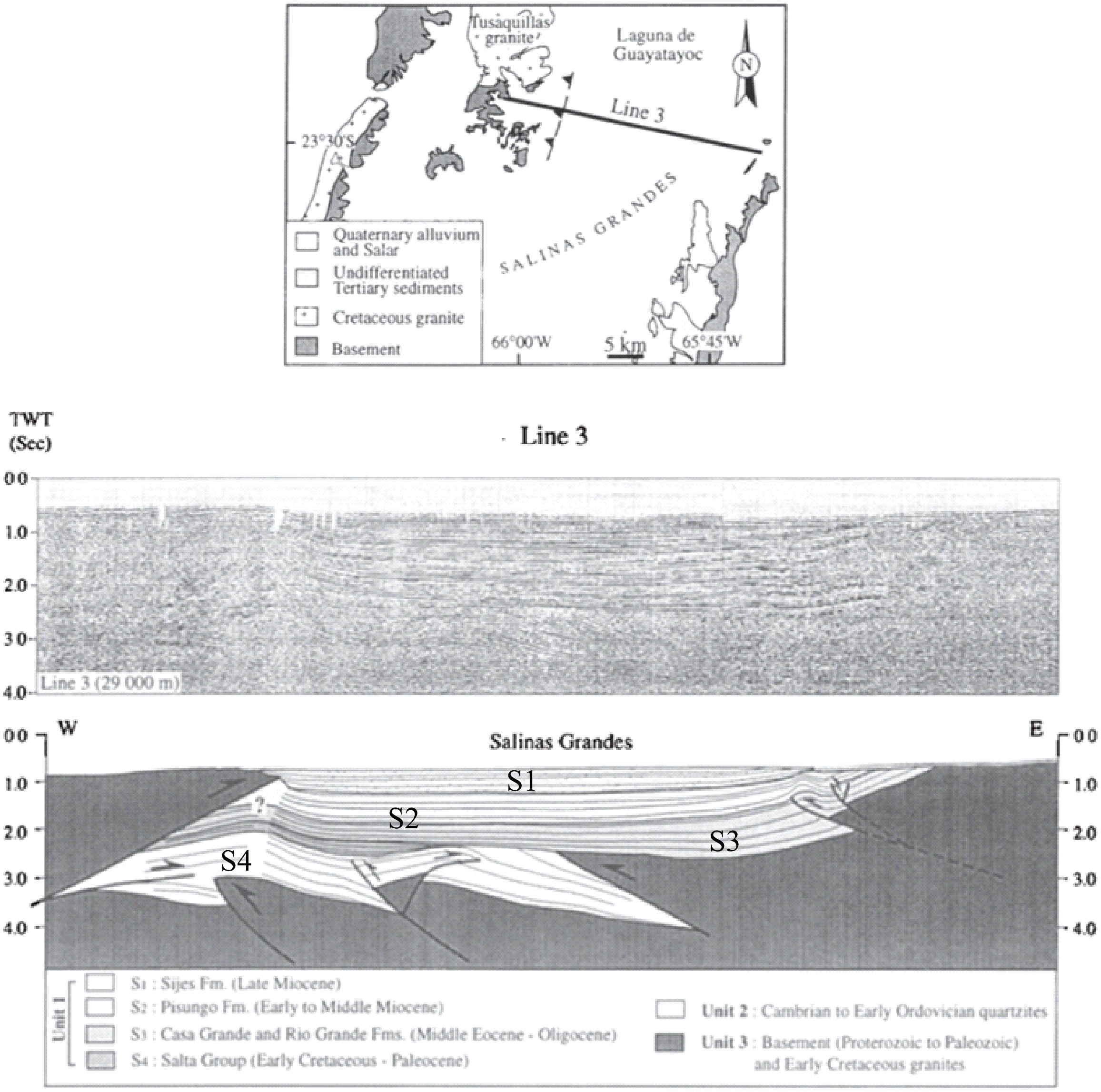


The late Miocene volcanic flare-up (5-10 Ma) centered on the Altiplano-Puna Volcanic Complex (APVC) between 21°-24° S (de Silva, 1989), produced a high density of both caldera subsidence and associated extensive ignimbrite sheets, as well as andesitic-dacitic stratovolcanoes. In the Puna, volcanic activity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

Figure 9.3 Seismic cross section through Salinas Grandes. Upper figure shows location and lower shows the time-migrated seismic profile and its interpretation. Note the development of thrust faults verging inwards to the basin and creating uplifted ranges along the borders (from Kay et. al., 2008, modified from Coutand et. al., 2001).



9.1.4. *Late Neogene-Quaternary*

During the Pliocene-Pleistocene deformation as a result of shortening moved out of the Puna, eastward 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 Salinas Grandes-Guayatayoc Basins

9.2.1. *The Salinas Grandes Basin*

The oldest rocks in the Salinas Grandes basin consist of Precambrian to Cambrian metamorphosed sediments of the Puncoviscana Formation, siliciclastics sandstones of the Meson Group, and sandstones and mudstones of the Santa Victoria Group. Cambrian intrusives of the Formation Queseara intrude these sediments. These units are exposed in the mountain ranges to the south and east of the salar, where a series of reverse fault bounded blocks generally have up-to-the-east movement against Holocene sediments of the salar basin.

Continental sandstones, siltstones, marls and carbonates of Cretaceous to Paleocene age (Pirgua, Balbuena, and Santa Barbara Subgroups and Oran Group) are in fault contact with the older Cambrian to Pre-Cambrian units in the mountains east of the salar.

Cambrian to Ordovician marine sediments, lavas and subvolcanic units outcrop in the mountain ranges to the west of the salar. These units are overlain by the sandstones of the Oligocene-Miocene Vizcachera Formation and clastic, evaporitic, and pyroclastic sequences of the Miocene Pastos Chicos Formation.

Holocene clastic pediment sediments – sands, gravels and siltstones – fill the topographic low of the salar basin, with the salar occupying the central part of the basin.

9.2.2. *The Guayatayoc Basin*

The basement units surrounding the salar are younger than those at Salinas Grandes, consisting of Ordovician Santa Victoria Group sandstones, mudstones and marly mudstones. These are intruded by the Jurassic-Cretaceous Tusuquillas composite batholiths, composed of muscovite granite, porphyritic granite and monzogranite; and the Aguilar-Abra Laite Formation, composed of calcalkaline granite.

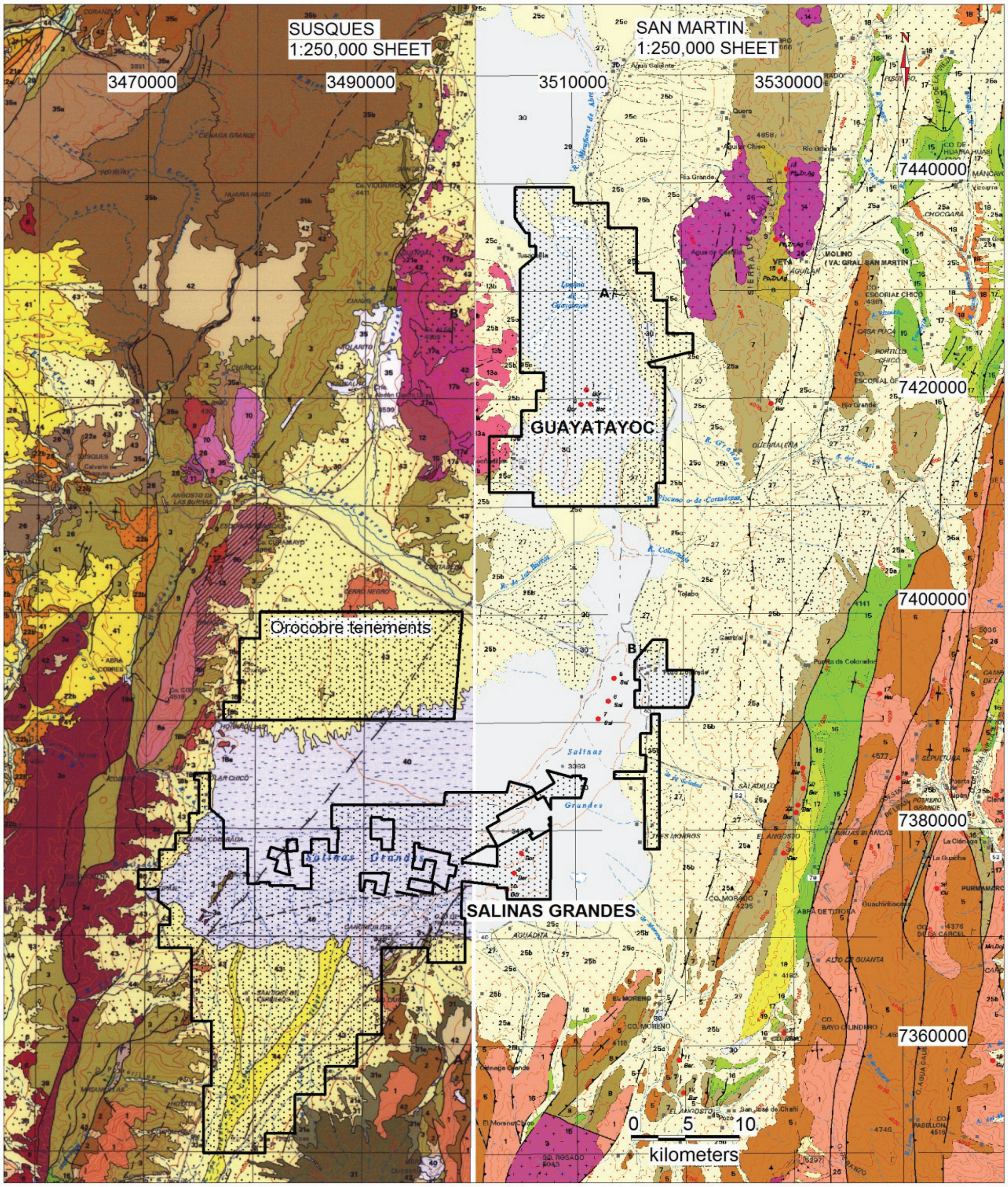
Holocene clastic pediment sediments – sands, gravels and siltstones – occupy the topographic low of the salar basin, with the salar and its associated deposits occupying the central part of the basin.

A summary of the stratigraphy and geological history of the basin is provided in Figure 9.5, and the geological map in Figure 9.6.

Figure 9.4 Summary of the stratigraphy and geological history of the Salinas Grandes-Guayatayoc basins (numbers refer to map units).

	Age period	Ma	Rock types	Geological environment	Tectonic events	1:250,000 Map Sheet: Susques (2366-III)	1:250,000 Map Sheet: San Martin (23664)
Quaternary	Holocene	0.01	Alluvial deposits, salars	Closed basins, salars	Post Quechua deformation	Salar deposits, lacustrine, colluvial and alluvial sediments (40-44)	Salar deposits, lacustrine, colluvial and alluvial sediments (25c-30)
Quaternary	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)
Neogene	Miocene		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)
			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 Fmn Superior (21b). Red aeolian sandstones	Casa Grande and Rio Grande Formations (18). Continental sandstones, conglomerates, siltstones and claystones
	Eocene					Rio Grande Fmn 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
							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	Carbonifer ous - 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, siltsones and diamictites. Silurian Lipeon & Barite Formations (9). claystones and diamicties
						Multiple Paleozoic intrusive suites (6-13)	El Moreno Formation (8). Porphyritic dacite
	Ordovician		Marine sediments	Marine delta and volcanic deposits/domes		Ordovician sandstones (3-5) , volcaniclastic sediments & Ordovician turbidites	Guayoc Chico Group (7) & Santa Victoria Groups (6). Marine sandtones, mudstones and limey units
	Cambrian	540		Marine sediments		Meson Group (2). sandstones and mudstones	Meson Group (5). Marine sandstones
	PreCambrian		Schists, slate, phyllite	Metamorphosed turbidites		Puncoviscana Formation (1) tubidites	Puncoviscana Formation (1) tubidites - metamorphosed and intruded by plutons

Figure 9.5 Geological map of the Salinas Grandes-Guayatayoc basins (from SEGEMAR 2008a, 2008b).



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.

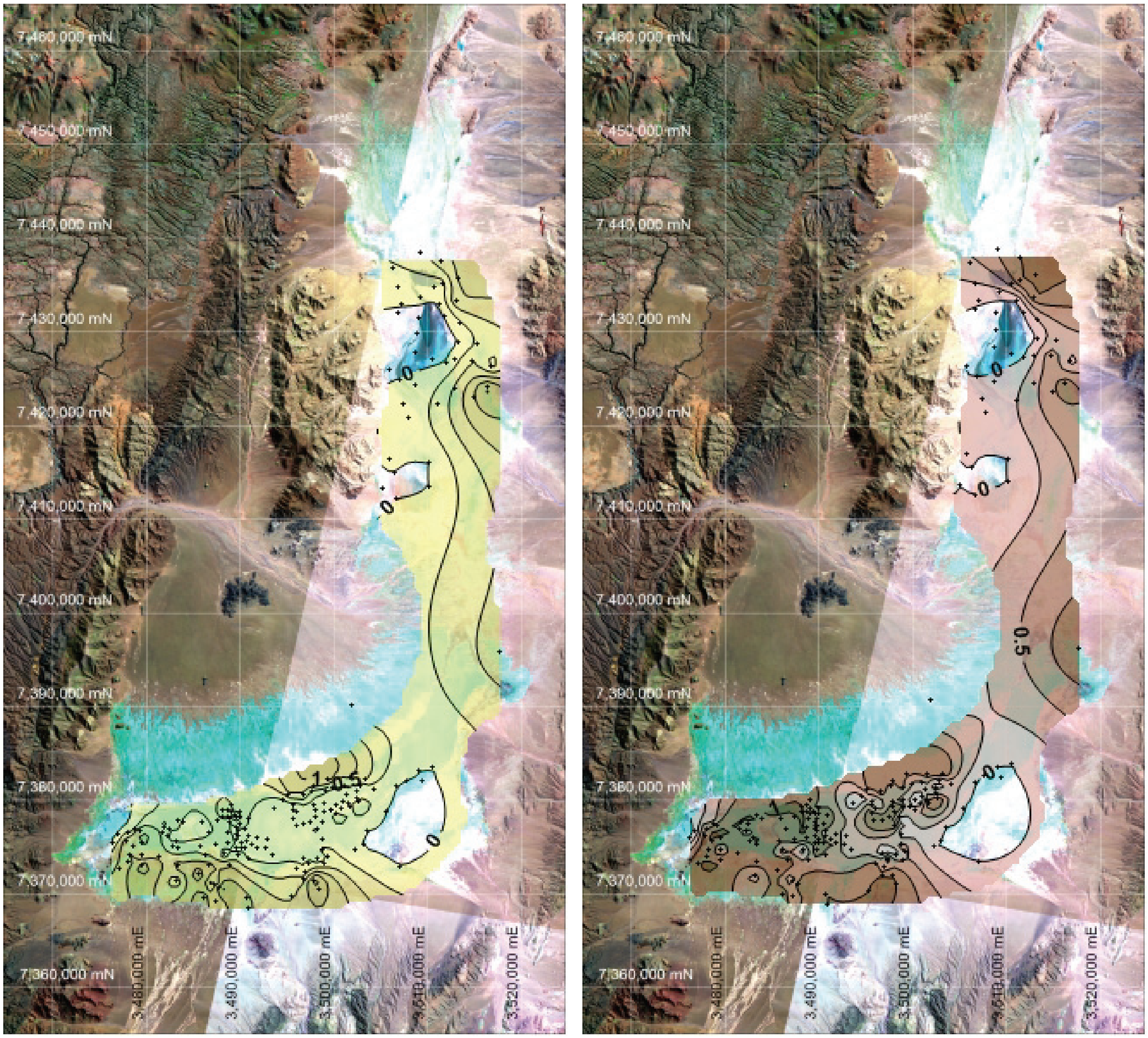
Geological and seismic surveys of the basin suggest that it is structurally controlled by bounding reverse faults (see Section 7). Gravity and ATM surveys suggest that the salar deposits and clastic infill may be as much as 400 m thick (see Section 10). These sediments form the host aquifer for the brine. At the date of this report only surface pitting results are available to infer details of the aquifer. Since these pits have a maximum depth of 2m, they can only hint at the deeper aquifer characteristics.

Nevertheless, the pitting results provide evidence that the center of the basin is generally finer grained, with sand tending to dominate in the western part of Salinas Grandes and the eastern and northern parts of Guayatayoc. This distribution conforms with the main sources of sediment originating from the River Miraflores to the north, as well as being shed from the hills to the east of Guayatayoc. For Salinas Grandes, the large fan entering from the Susques catchment to the northwest leads to a high sand fraction along the northern boundary, as well as significant amounts of coarser grained sediment from the large Burras catchment to the south.

Based on the typical architecture of the Puna intermontane basins it is likely that coarser grained sediments will be found at depth, with successive inner shells of finer grained clastics, carbonate, sulphate and finally chloride evaporites. Indeed the surface of the salar is dominated by an inner nucleus of halite surrounded by marginal deposits of mixed carbonate and sulphate evaporites with fine grained clastic sediments.

No porosity determinations were made, but it is possible to provide a guide based on values in the literature (Morris & Johnson, 1968). For total porosity the sands would likely be in the range 25-40%, whereas for effective porosity or specific yield the range for these sands would probably be in the order of 10-20%, with much lower specific yields for finer sediments..

Figure 10.1 Sand thickness on the left (contour interval 0.25 m) and sand units as a proportion of pit depth on the right (contour interval 0.25) measured in the pits.

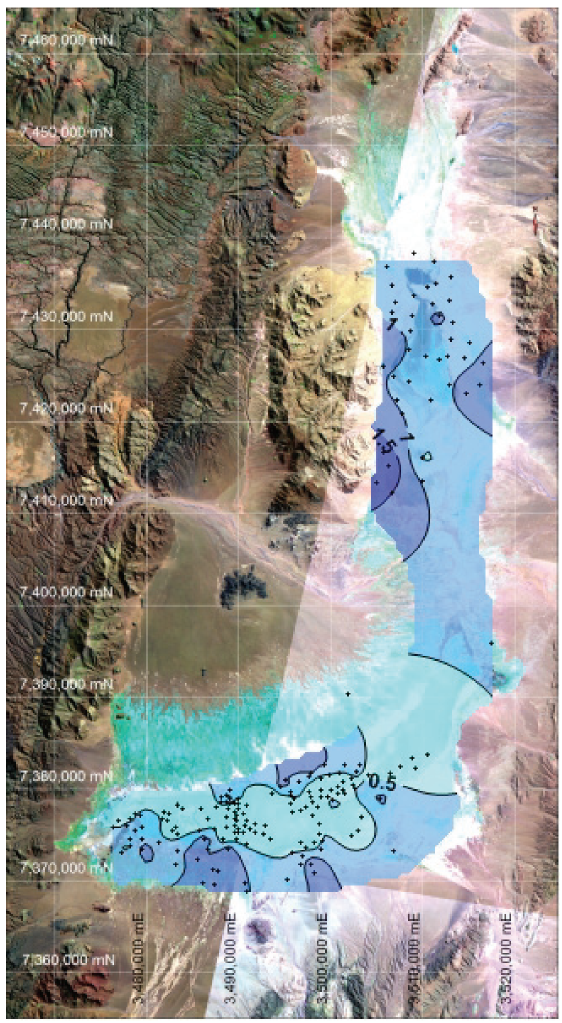


11. MINERALIZATION

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.

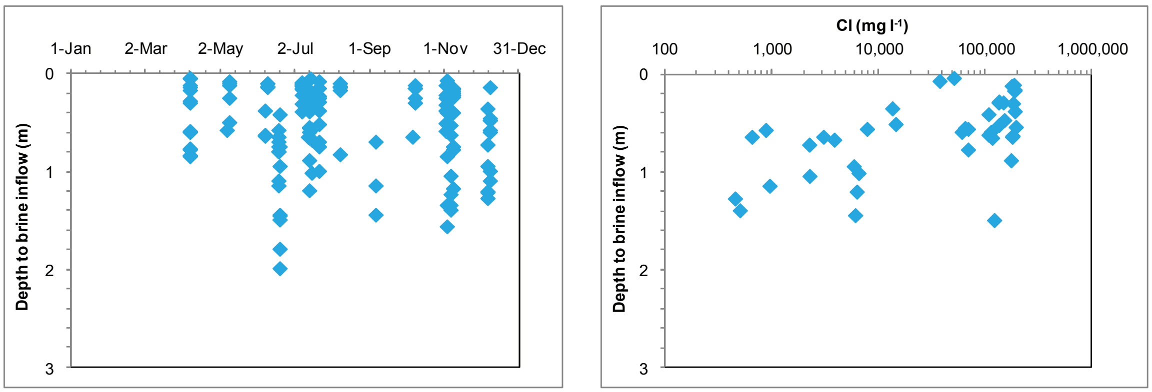
The depth to fluid inflow in the pits was recorded and is plotted in Figure 11.1 below. Since no accurate survey data is available the elevation of the fluid (phreatic) surface cannot be determined. However, the depth to brine is least in the center of the basin and greater around the margins, unsurprisingly suggesting that the salar represents the end point of inflow to the basin where discharge takes place by evaporation.

Figure 11.1 Depth the brine inflow in the pits (contour interval 0.5 m).



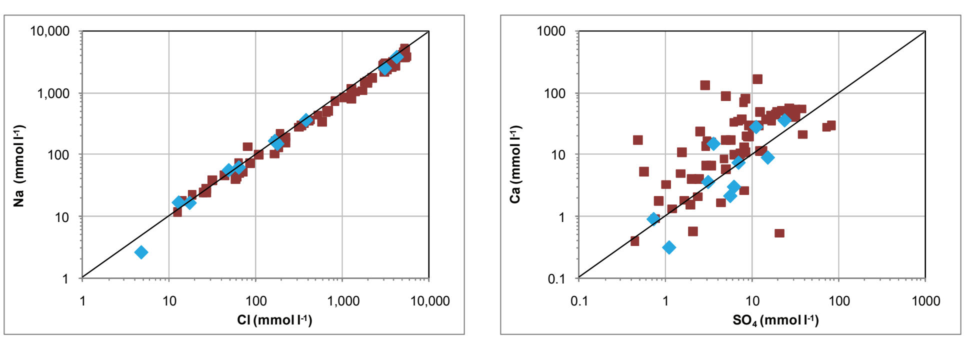
Fluid samples were taken from the pits for chemical analysis as described in Sections, 10 and 12 to14. The variation in brine inflow depth with time during 2009 suggests that there may be some annual fluctuation in the phreatic surface with levels being lower during the dry season between July and November. Surprisingly, chloride concentrations appear to increase in pits where the brine inflow is shallower. This may be a function of the limited number of chloride analyses undertaken on the pit samples.

Figure 11.2 Depth to fluid inflow in the pits from both Salinas Grandes and Guayatayoc as a function of time (left) and chloride content (right).



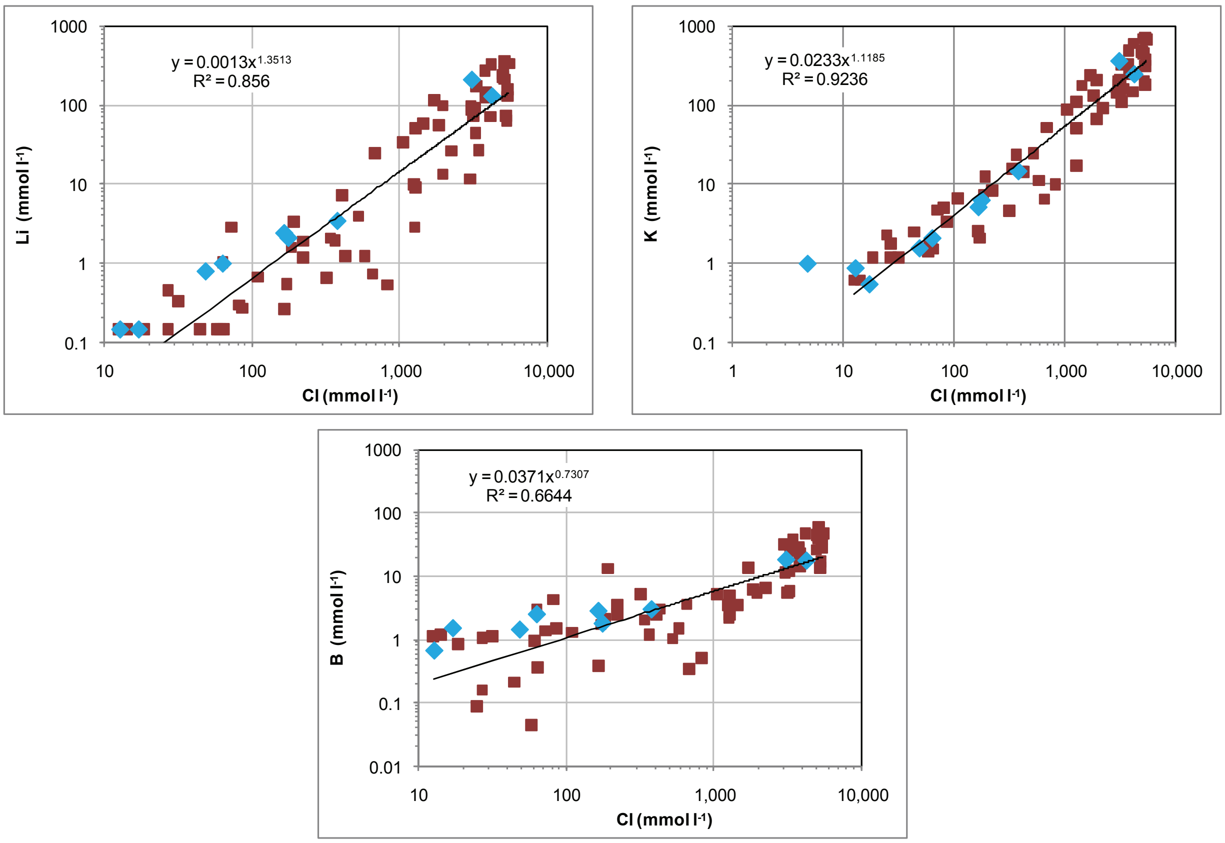
A plot of Na to Cl for all samples from both salars (Figure 11.3) shows good equivalence, with wet season samples tending to be rather more dilute as might be expected. The plot of Ca to SO_4 shows considerable scatter, but overall near equivalence. The scatter may be due to poor analytical results, but it also suggests that the chemical divide where gypsum starts to precipitate has not yet been reached. Although only ~30% of samples can be plotted on these graphs, because very few full major ion analyses were conducted (see sections 12 and 13), the data suggests a relatively immature brine of uniform character that has generally not reached saturation with either gypsum or halite.

Figure 11.3 Scatter plots of Na to Cl (left) and Ca to SO_4 (right) for the pit brine samples from both Salinas Grandes and Guayatayoc. Dry season samples are shown as brown squares and wet season as blue diamonds.



Regressions of the species of interest against Cl (as a proxy for salinity or total dissolved solids) show that whilst K and B generally co-vary with Cl (their exponents are close to 1), Li does not (its exponent is ~1.35). K tends to occur in concentration around 40x lower than Cl, compared with approximately 30x lower for B. Li occurs at concentrations around 800x lower than Cl in mid range, but its skewed relationship suggests that it is not evenly distributed through the brine body.

Figure 11.4 Scatter plots of Li, K and B against Cl for the pit brine samples from both Salinas Grandes and Guayatayoc. Dry season samples are shown as brown squares, wet season as blue diamonds.

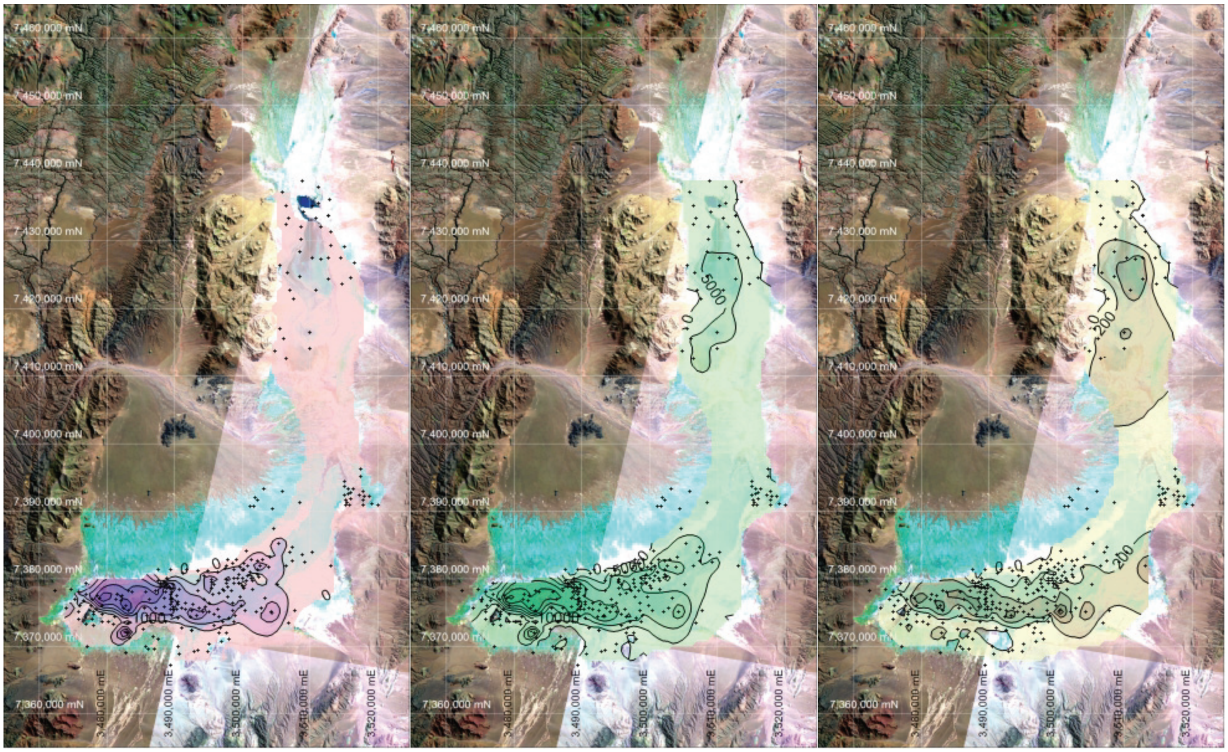


This is confirmed when the same species are plotted spatially (Figure 11.5). Lithium is highly concentrated in the central and westernmost parts of Salinas Grandes where concentrations that reach over 2000 mg l^{-1} are found over an area of ~60 km^2, with a maximum of 3117 mg l^{-1}.

Both K and B are also found in high concentrations in the center and western parts of Salinas Grandes. K values of >20,000 mg l^{-1} occur over and area of approximately 40 km^2, and B values > 500 mg l^{-1} occur over more than 50 km^2. Subsidiary concentrations of K and B are found in the central and northern parts of Guayatayoc.

The distribution and ion relationships suggest that there are two major sources of inflow to the salars from the north and the southwest, with somewhat different chemistry.

Figure 11.5 Distribution of Li (left), K (center), and B (right). Contour intervals are 500, 5000 and 200 mg l^{-1} respectively.



The tables below (11.1 and 11.2) give the basic statistics for all pit brine samples from both Salinas Grandes and Guayatayoc separately, and the histograms (Figures 11.6 and 11.7) show their frequency of occurrence.

Table 11.1 Basic statistics for the pit brine samples from Salinas Grandes (all values given in mg l^{-1}

	Li	K	B	Mg/Li
N	233	233	232	
Mean	775	9,289	232	2.73
Standard deviation	774	8,610	222	
Maximum	3,117	35,309	1,086	
Minimum	<1	21	0.47	

Table 11.2 Basic statistics for the pit brine samples from Guayatayoc (all values given in mg l^{-1}).

	Li	K	B	Mg/Li
N	23	38	38	
Mean	66.7	2,185	144	1.72
Standard deviation	56.3	2,661	189	
Maximum	188	7,464	534	
Minimum	2.8	14.6	0.32	

The statistics are based on all data for the respective salars, including influent waters, and consequently do not adequately reflect the likely brine concentrations within an exploitation domain, which would be significantly higher. At this stage of exploration, attempting to forecast the likely brine composition within an exploitation domain is considered to be inappropriate.

Figure 11.6 Frequency histograms for Li, K and B for all pit brine samples from Salinas Grandes (values in mg l^{-1}).

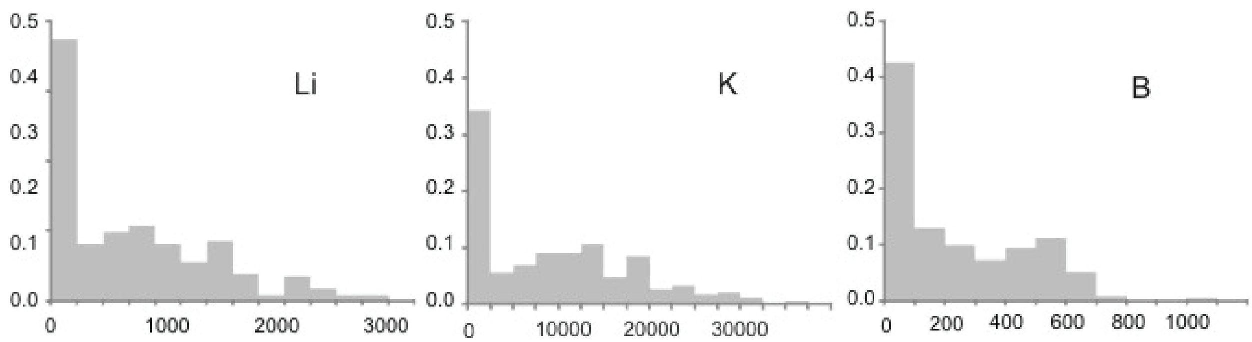
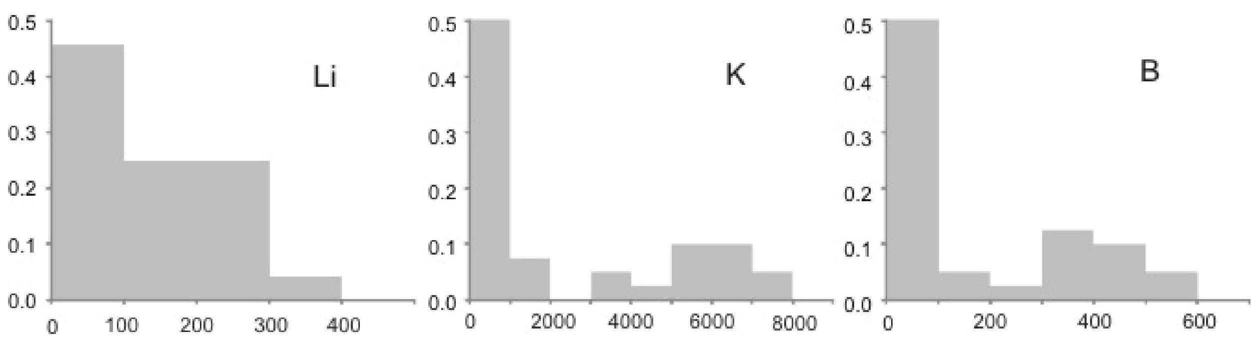


Figure 11.7 Frequency histograms for Li, K and B for all pit brine samples from Guayatayoc (values in mg l^{-1}). Note the different concentration scale from Salinas Grandes.



The histograms include all sampling results from the respective salars and reflect a strong component of low concentrations probably associated with influent waters, and a secondary peak at higher concentrations representing the nucleus brines.

12. EXPLORATION

Exploration by the Company has principally comprised reconnaissance level geochemical sampling and surface geophysical surveys

12.1. Geochemistry

Reconnaissance sampling on the Project has consisted of a total of 273 brine samples from pits excavated to an average depth of 2 m. The results are discussed in Section 9 above and the sampling method and approach are described in Section 12.

12.2. Geophysical Surveys

Orocobre Ltd contracted with Wellfield Service Ltda to undertake both gravity and audio-magnetotelluric (AMT) surveys at various sections across the Salars de Salinas Grandes and Guayatayoc. 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 18 km of gravity and AMT were conducted between November 10 and November 26, 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.

12.3. Gravity

12.3.1. *Data acquisition*

Data was acquired at a total of 90 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 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 Salinas Grandes and Salar de Guayatayoc, 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 mGall.

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

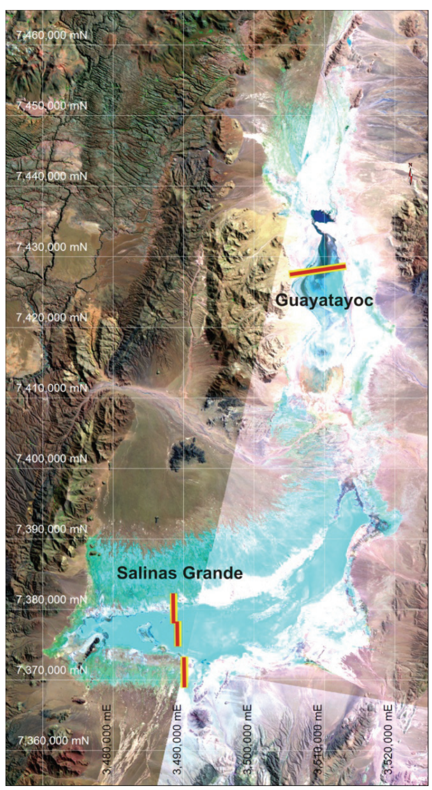
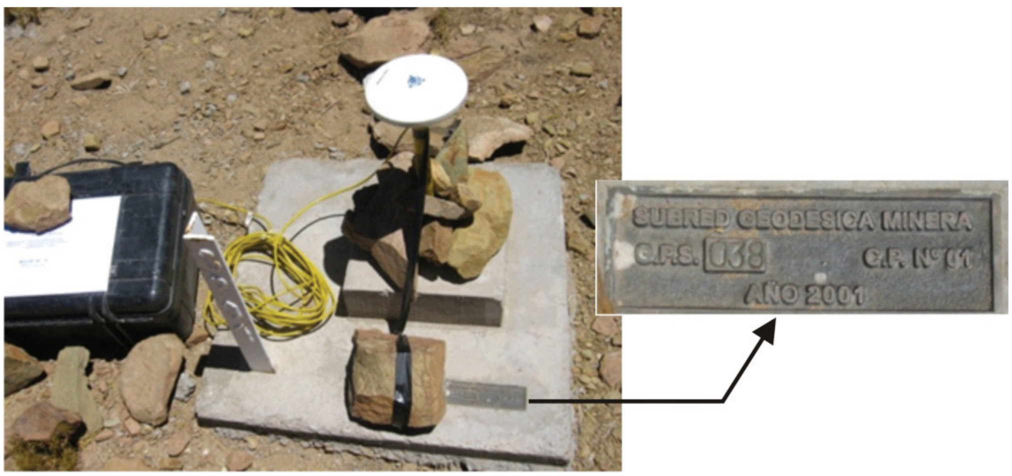


Figure 12.2 Gravimeter base station

Figure 12.3 GPS base station



12.3.2. *Data processing*

In order to arrive at the complete Bouger 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:

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

where $g_{free\ air}$ 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.

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

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 Bouger anomaly.

12.3.3. *Gravity data modelling and interpretation*

The Bouger 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. Lacking detailed geological surveys and local rock density measurements at the time of this report writing, means that only preliminary two to three layer models have been developed so far, representing salar and probable Neogene deposits overlying bedrock. The following table gives the estimated density values used for the 2D inversions. The Salar deposits and Clastic sediments may be equivalent to the seismic sequence S1 and above (see Figure 12.3).

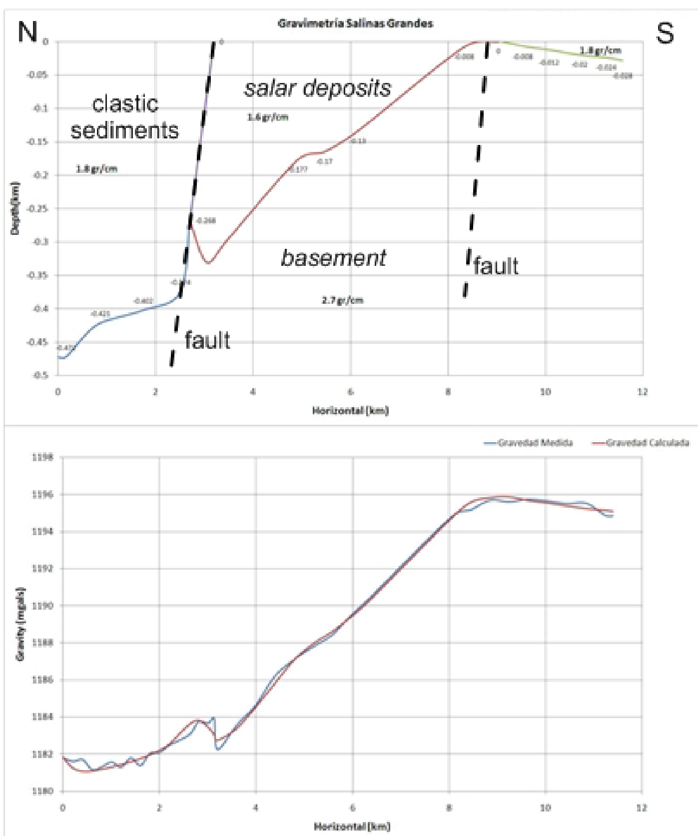
The Bouguer anomaly was inverted using Talwari software to produce a series of possible 2D stratified models. The results were modeled for a two-layer system, since not enough geological or drilling data exists at this stage to warrant more complex interpretations. Boundary conditions are not well established at this stage and will require further analysis in due course. Nevertheless, the model results show a good fit to the gravity data and represent a good first order approximation to the subsurface.

Table 12.1 Bulk rock density values used in the gravity interpretation.

Unit	Density (gm cm^{-3})
Salar deposits	1.6
Clastic sediments	1.8
Basement 2	2.6
Basement 1	2.7

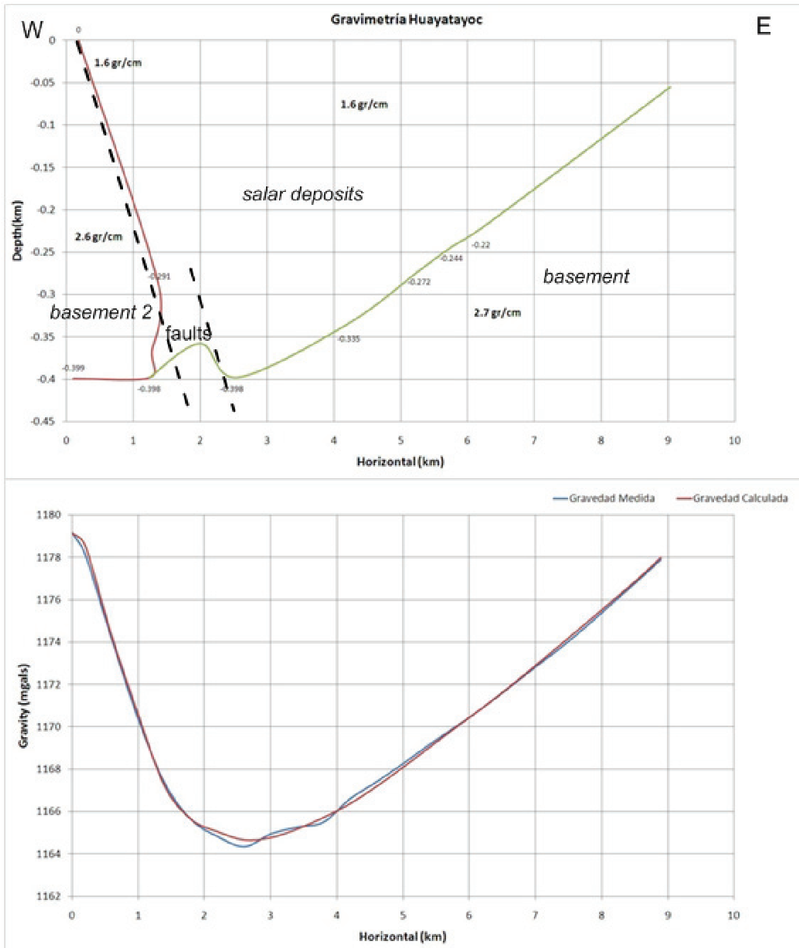
The following pages and Figures 12.4 and 12.5, show the interim interpretation of the data, which will be subject to calibration with borehole data and reinterpretation. However, the results obtained to date are encouraging for an eventual more detailed interpretation.

Figure 12.4 Interpretation of the Salinas Grandes Bouger anomaly and model fit to data.



The fitted model suggests faulting in the central and southern parts of the basin, with clastic sediments dominating towards the north and salar deposits in the central southern section. In other words the basin appears to be asymmetric with the salar having evolved towards the south as the coarser clastic material was deposited from the north. This would agree with the geological and satellite image data that suggest a very large clastic fan enters the salar from the north. The basin may be over 400 m deep.

Figure 12.5 Interpretation of the Guayatayoc Bouger anomaly and model fit to data.



The fitted model suggests the western part of the basin is fault bounded, bringing the Jurassic-Cretaceous (basement 2) into direct contact with the salar deposits in the center of the basin. The salar deposits appear to thin eastward. The basin may reach 400 m thickness.

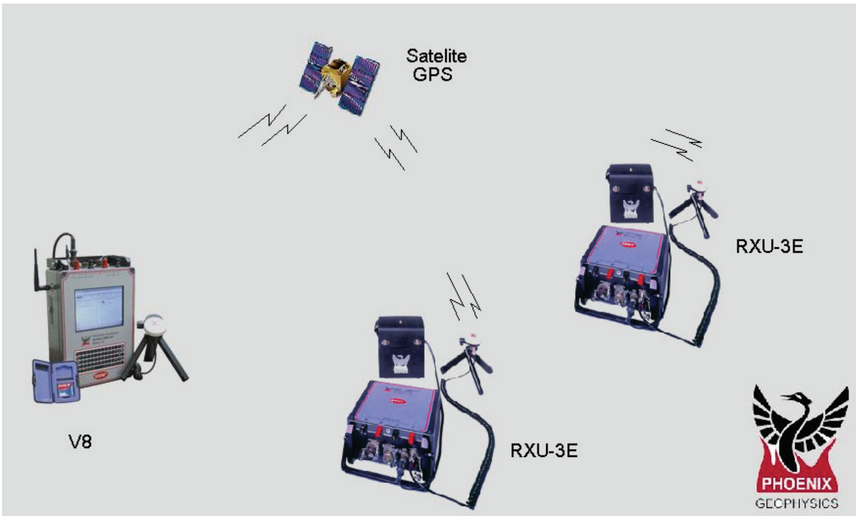
12.4. Audio magnetotelluric

12.4.1. *Data acquisition*

Data at a total of 72 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 <= 5 for 95% of the acquisition time) requiring 18-20 hours of recording at each station.

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

Figure 12.6 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.

12.4.2. *Data Processing and Modelling*

Processing of the AMT data requires the following stages:

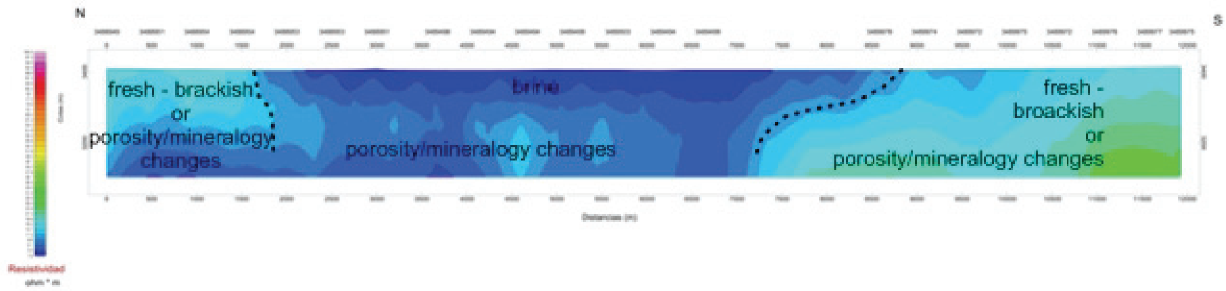
- Filtering and impedance inversion of each station
- 1D inversion for each station
- Development of a resistivity pseudosection
- 2D profile inversion (including topographic 3D net)

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

12.4.3. *Model output and interpretation*

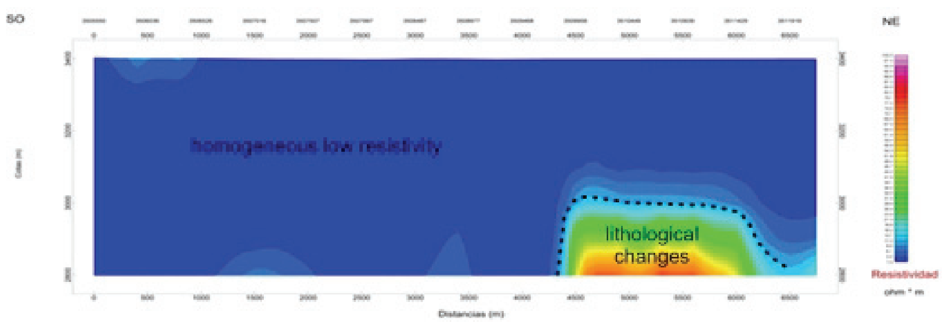
The 2D model results for the sections at Salinas Grandes and Guayatoyoc are presented below (Figures 12.7 and 12.8).

Figure 12.7 Resistivity profile for Salinas Grandes (see Figure 12.1 for location).



The interpretation of the Salinas Grandes ATM section is subject to alternative interpretations, but in general it would appear that the brine body coincides with the surface distribution of salar deposits identified in satellite images and the gravity profile. At depth, changes in porosity and/or lithology complicate the interpretation, whilst towards the northern and southern margins, the higher resistivities could be due to either less saline fluids or changes in the formation properties.

Figure 12.8 Resistivity profile for Guayatayoc (see Figure 12.1 for location).



The interpretation of the Guayatoyoc ATM section is difficult and may suggests a homogeneous brine throughout the section, apart from what appears to be a well defined lithological change at depth in the eastern part of the section. However, the homogeneous nature of the low resistivity "brine body" may be deceptive, and could be interpreted as a result of clay-rich facies dominating the section. Strangely, the bedrock identified at the western end of the gravity section does not express itself in the resistivity section.

13. DRILLING AND RELATED ACTIVITIES

As of the date of this report, no drilling has been undertaken on the Salinas Grandes-Guayatayoc properties. A comprehensive exploration program is being planned, which will include drilling to better understand the subsurface geology and to evaluate the resource.

14. SAMPLING METHOD AND APPROACH

14.1. Brine Sample Program Design

As discussed in Section 10, reconnaissance sampling on the Project has consisted of a total of 273 brine samples from pits excavated through the surface (often halite crust) to obtain brine samples. This sampling was not undertaken on a grid and had a bias towards the central parts of each salar. The overall area was approximately 2,500 km^2, providing an average density of about one sample per ~10 km^2, although numerous samples were taken on a closer spacing The sampling was carried out between April and December 2009, largely in the dry season, but with some in the wet season to evaluate temporal variations.

The main objectives of the reconnaissance pitting and sampling program were to obtain data on the distribution of lithium and potassium, as well as the overall brine chemistry and its variability. Subsidiary objectives included obtaining data on near surface material composition and water levels. The sample pits in the project area were hand dug to a maximum depth of 2 m. The results from this exploration have been discussed in Section 9.

14.2. Salinas Grandes-Guayatayoc pit sampling

Sample pits in the project area were hand dug (Figure 14.1) to a maximum depth of 2 m, for reasons of safety and the difficulty of removing soil from the pits beyond this depth. Where brine inflow to the pit was encountered within 2 m of surface the pit was excavated to approximately 20 cm below the level of the inflow, providing a sump for inflow. The pit was allowed an hour to fill with brine before a sample was taken. Where no brine inflow was noted in the upper 2 m the pit was extended a further meter using a power auger.

The lithology and stratigraphy of selected pits was described by the sampling crew and the depth of brine inflow noted. Photographs were taken of the pits, showing the pit wall, the depth of the pit and groundwater inflow, in addition to the surface location of the pit.

Brine samples were collected from the base of the pits using a one liter plastic bottle. The bottle was rinsed with the brine, and then filled to capacity to remove any airspace. Where brine was encountered in auger holes drilled beneath the base of the pits samples were collected by lowering 500 ml bottles taped to a rod into the auger hole. Up to 2 liters of sample was collected at each site. Field measurements of brine parameters were not made at the time of sampling. In the Salta office 200 ml sub samples were taken for laboratory analysis by decanting from the 1 liter bottles, minimizing any transfer of settled sediment. Samples were sent to Alex Stewart (Assayers) Argentina (ASA).

During the pit sampling a number of replicate samples were taken. This was undertaken by re-sampling pits, some days or months after the original sample was taken. 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 13.

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.

14.3. Sampling Supervision

Sample collection at Salinas Grandes-Guayatayoc was conducted by personnel from South American Salars, under the supervision of the geologist conducting geological logging of the sample pits. The geologist was responsible for geological logging and overseeing sample collection and pit location.

14.4. Sample Security

All samples from Salinas Grandes-Guayatayoc 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 Alex Stuart laboratory in Mendoza, with a sample list and analytical instructions, which were also sent to the laboratory by email.

15. SAMPLE PREPARATION, ANALYSES AND SECURITY

15.1. Sample Preparation

Samples from pits were not field filtered and were not subjected to any preparation prior to shipment to the laboratory. All samples collected contained some suspended sediment. Following shipment of the initial batch of one liter samples a reduced sample size of 200 ml was provided in all subsequent batches, at the request of the laboratory. In the Salta office 200 ml sub samples were taken by decanting from the one liter bottles, minimizing any transfer of settled sediment.

15.2. Sample Analyses

The samples from the Project were analyzed by Alex Stewart Assayers (ASA) of Mendoza, Argentina.

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.

A summary of the pit brine analyses results are presented in Table 11.1 above, and an evaluation of the repeat assays are discussed below.

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 Code	 Method	University of Salta 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	IMA-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	Volumemetric Acid Base
Chloride (Cl)	SM 4500-Cl-B	Titration Method.	Argentometric Method
Sulfates (SO_4)	SM 4500-SO4-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

15.3.1. *Relative percentage difference evaluation*

QA/QC procedures adopted for the reconnaissance sampling involved the use of standards, duplicate, and replicate samples. These have been evaluated by calculating the relative percentage difference between the two or more samples for each standard or pit sample. The standard formula used consists of:

$$\text{Relative percent difference} = 100 * \{2 * |\text{value 1} - \text{value 2}| / (\text{value 1} + \text{value 2})\}$$

where $|\text{value 1} - \text{value 2}|$ is the absolute value of the difference between the two samples. In the case of more than two samples the greatest difference was used, with the average of all the samples used.

No check assay work with independent laboratories was undertaken as the analyses are not used for resource estimates or for purposes other than general assessment and trends.

15.3.2. *Standard Analyses*

A number of certified standards prepared by the UNSA were used as part of the QA/QC program on the Salinas Grandes-Guayatayoc project. In addition to these a non-certified brine standard collected from Olaroz Pit 7, was also used in the program. A bulk sample of Pit 7 brine was collected during one sampling event for use as a standard throughout the sampling program. The standard sample results are shown in Table 15.2, together with the RPD evaluation. Figures 15.1 and 13.2 show the results graphically.

Table 15.2 Sample standards analysis. Standards certified by UNSA, Pit 7 results are repeat analyses of the same bulk sample.

Sample	Li mg l^{-1}	K mg l^{-1}
Standard	**300**	**3,000**
SAL-G-17	256	3,025
GEO-S-16	277	2,977
RPD%	8%	2%
Standard	**500**	**5,000**
GEON 20	475	4,977
CHREGT 050	478	5,557
RPD%	1%	11%
Standard	**800**	**8,000**
HUAY 1	771	8,588
HUAY 19	795	8,804
HUAY 50	770	8,265
RPD%	3%	4%
Standard	**80**	**800**
SALREG-B 142	84	796
SALREG-B 144	78	825
00381	82	729
00466	88	768
50047	94	702
RPD%	19%	16%

Sample	Li mg l^{-1}	K mg l^{-1}	B mg l^{-1}
Pit 7 replicates			
HUAY 51	951	9,552	874
HUAY 53	952	9,619	877
SALG 18	876	8,747	883
REG 38	842	7,967	872
SALS 36	895	8,477	890
GEON-05	822	8,316	858
GEO-S-03	839	9,378	860
CHREGP 049	926	8,097	904
SALREG-B 143	872	9,367	926
366	958	9,341	1,071
439	838	8,700	840
50042	892	7,756	820
RPD%	15%	21%	28%

Figure 15.1 ASA determinations of UNSA standards.

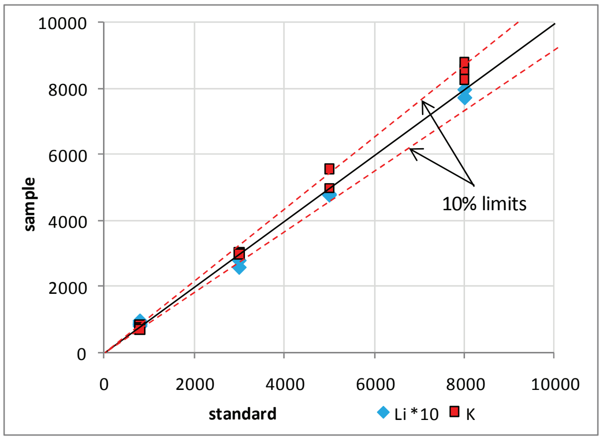
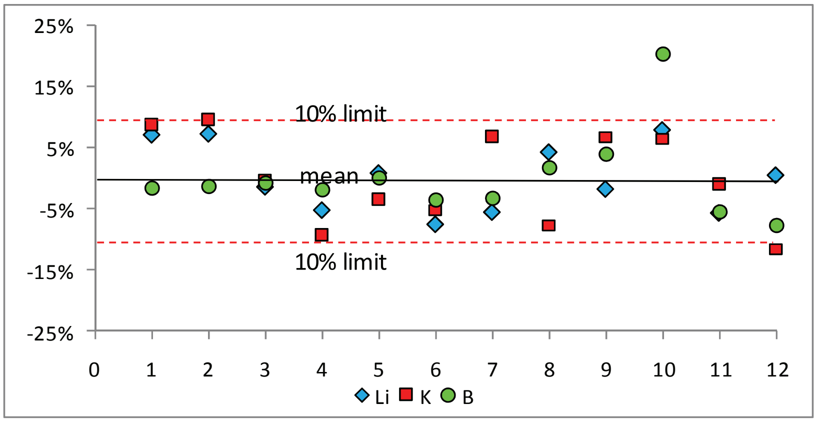


Figure 15.2 Repeat analyses of uncertified standard sample from Pit 7.



Both standards and Pit 7 replicates generally fall within acceptable 10% error bounds.

The RPD values of the 80 mg l^{-1} standard are noted to be higher, reflecting the lower concentration of the standard and possible inaccuracies in the dilution. The RPD for the uncertified Pit 7 standard show higher values, interpreted to reflect the larger number of analyses of this uncertified standard.

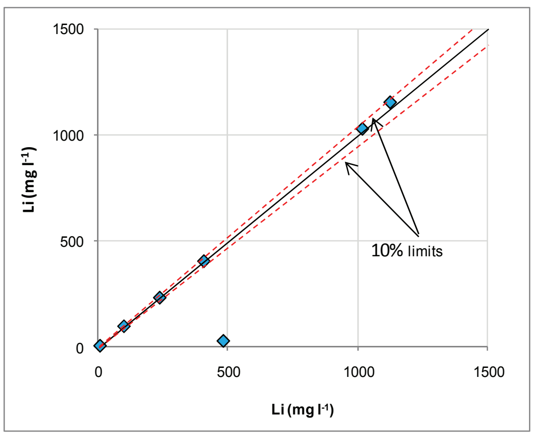
15.3.3. *Sample Duplicate/Replicate Analyses*

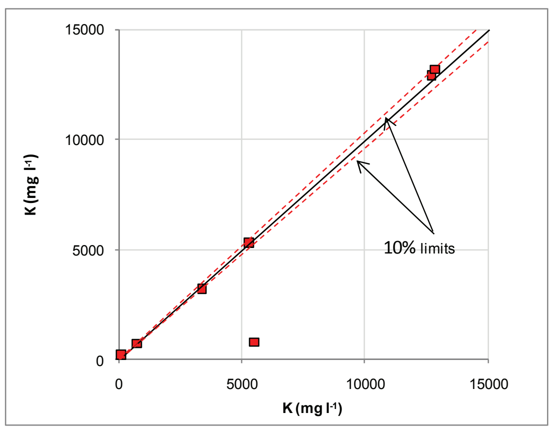
Seven blind duplicate samples (equivalent to 2.5% of all samples) were analyzed at the ASA laboratories. The results are shown in Table 15.3 and Figure 15.3 below.

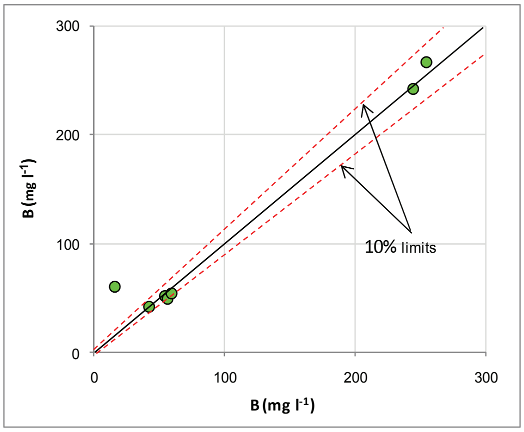
Table 15.3 Sample duplicate analyses at ASA laboratories for Salinas Grandes-Guayatayoc samples.

Sample	Li	K	B
SALG 01A	1018	12728	245
SALG 01B	1028	12906	242
RPD%	1%	1%	1%
SALG 03A	1125	12867	255
SALG 03B	1153	13182	266
RPD%	2%	2%	4%
SALG 05A	407	5303	42
SALG 05B	403	5297	42
RPD%	1%	0%	0%
SALG 07A	99	753	54
SALG 07B	96	721	52
RPD%	3%	4%	3%
SALG 09A	237	3394	56
SALG 09B	231	3210	49
RPD%	3%	6%	14%
SALS 10A	7	79	16
SALS 10B	4	207	60
RPD%	51%	90%	116%
GEO-S-09-A	482	5523	59
GEO-S-09-B	27	781	54
RPD%	179%	150%	8%

Figure 15.3 Cross plots for duplicate samples from Salinas Grandes-Guayatayoc analysed at the ASA laboratories.







It is noted in Table 15.3 that RPD values for lithium, potassium and boron are generally less than 5%. RPD values are higher at low concentrations. Generally duplicate results are considered to show adequate repeatability for analyses completed at Alex Stuart Laboratories, except for GEO-S-09 A/B, which appear to be completely different samples and is most likely the result of a mixed up sample in either field or laboratory.

Sixteen samples were taken from selected pits after a period of several weeks had elapsed. These samples represent repeats, although they do not contribute to the QA/QC since natural variations in brine chemistry may have taken place between the sampling dates. Table 15.4 provides the results of the repeat analyses provided by ASA laboratories.

The average RPD for all ions across all samples is around 50%, suggesting that there is indeed significant temporal variation in brine quality.

Table 15.4 Sample replicate analyses at ASSA laboratories for Salinas Grandes-Guayatayoc samples.

Sample	Date	Li	K	Mg	Na	Ca	B
SALG 02A	6/23/2009	937.4	8506	2237	45504	1493.7	93.3
SALG 02B	6/24/2009	592.9	8306	1614	88215	1593.4	201.2
RPD%		45%	2%	32%	64%	6%	73%
SALG 04A	6/23/2009	599.7	8330	1573	91001	1548.2	200.2
SALG 04B	6/24/2009	997.1	8884	2289	49105	1496.6	95.5
SALREG-B 139		1098	11068	2788	56129	1871	104
RPD%		55%	29%	55%	64%	23%	78%
SALG 06A	6/23/2009	1497.6	15027	4020	88415	1763.6	398.7
SALG 06B	6/24/2009	1548.6	15555	4175	88775	1831.2	415.5
RPD%		3%	3%	4%	0%	4%	4%
SALG 08A	6/23/2009	1275.5	14158	3252	73951	1506.4	317.1
SALG 08B	6/24/2009	1261.5	13790	3093	76134	1423.3	302.7
RPD%		1%	3%	5%	3%	6%	5%
SALS 06A	11/7/2009	< 1	59	94	1138	261.1	3.9
SALS 06B	11/7/2009	9	268	316	3127	439.9	14.3
RPD%			128%	108%	93%	51%	114%
SALS-19	7/17/2009	1876	18834	4816	60932	2157.1	296.1
SALREG-B 140		4027	45380	11888	76526	2296	980
RPD%		73%	83%	85%	23%	6%	107%
SALREG-B 100	12/9/2009	572	6151	1525	42028	918	97
00441	31/11/09	324	4647	1153	114018	1804	77
RPD%		55%	28%	28%	92%	65%	23%
SALREG-B 119	11/9/2009	865	10003	2234	72229	1274	97
00443	31/11/09	285	4172	1038	137261	1887	50
RPD%		101%	82%	73%	62%	39%	64%
SALREG-B 120		499	5193	1305	40827	1357	66
00444	31/11/09	404	4316	871	45123	952	55
RPD%		21%	18%	40%	10%	35%	18%
SALREG-B 072	7/9/2009	1461	17761	3666	104138	2012	450
00445	31/11/09	2	45	11	345	63	11
RPD%		199%	199%	199%	199%	188%	190%
SALREG-B 111		363	6437	1094	86868	2107	290
00449	31/11/09	446	7539	1493	137120	1802	235
RPD%		21%	16%	31%	45%	16%	21%
SALREG-B 115	11/9/2009	318	5465	1108	109233	1883	170
00450	31/11/09	444	7474	1471	134209	1767	230
RPD%		33%	31%	28%	21%	6%	30%
SALS 20	12/7/2009	1439	14253	3422	57279	1108.4	195.2
00465	11/30/2009	567	10835	838	36640	545	66
RPD%		87%	27%	121%	44%	68%	99%
SALS-21	7/16/2009	398	6957	632	23712	430.2	37.2
00467	11/30/2009	576	10878	834	35322	537	66
RPD%		36%	44%	28%	39%	22%	56%
SALS 22	7/16/2009	684	8182	1394	35499	687.4	61.2
00468	11/30/2009	791	11114	1582	49641	789	78
RPD%		14%	30%	13%	33%	14%	24%

15.4. Anion-Cation Balance

Anion-cation balances cannot be properly checked on the reconnaissance samples, since no full major ion analyses are available. In particular there are no carbonate determinations. However, if it is assumed that the carbonate component will be relatively small and the dominant anions are Cl and SO_4, a provisional check balance can be made on 79 out of 237 samples (equivalent to 33% of samples). The average ion balance across these samples is 3%, with a range of 0.02-12%. This would be considered acceptable for brine samples, except that the very low ion balance error may be indicative of some ions being calculated by difference rather than direct determination.

Whilst this level of accuracy/repeatability may not be critical for a reconnaissance study, it will require that further studies interact more closely with the laboratory to reduce these errors.

15.5. Quality Control Conclusions

The quality control processes developed by the Company have been suitable for ensuring laboratory performance to this point. Laboratory analyses are of sufficient accuracy and reproducibility for the purposes of the reconnaissance sampling programs undertaken so far. Adoption of procedures currently being used at the Olaroz project will result in quality control system suitable for resource estimation

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. Original copies of the analytical certificates from Alex Stewart laboratories were provided to the first author. These certificates do not specify the methods employed by the laboratory for the analysis listed on the certificate, but it is assumed the methodology given in Table 15.1 was used. Analytical and sampling quality control measures employed by the company are discussed in Section 13 above.

16.3. Geological data

The 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. The author has verified that detailed photographs are available for more recent pit sampling at Salinas Grandes and Guayatayoc.

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 Grandes-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 Salinas Grandes-Guayatayoc with other salar brine chemical compositions (mg l^{-1})

	Salar de Atacama Chile	Hombre Muerto Argentina	Salar de Rincon, Argentina	Salar de Olaroz Argentina	Salinas Grande* Argentina	Guayatayoc* Argentina	Cauchari* Argentina	Salar de Cauchari Argentina	Salar de Uyuni Bolivia	Silver Peak Nevada
	mean	FMC	Sentient	………...	Orocobre	…..…….		(LAC)		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 adjacent Salar of Olaroz and Cauchari. 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. Geos Mining (2009) estimated an Inferred Resource for the Salar de Olaroz at 350 million m^3 of brine at 800 mg l^{-1} Lithium and 6,600 mg l^{-1} Potassium to an average depth of 55m.

Lithium Americas Corporation holds tenements in Cauchari and on the eastern side of the Salar de Olaroz. An Inferred Resource over approximately 24 km^2 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).

Li3 Energy (February 2010 corporate presentation) is reportedly in discussions to purchase property at the south of the Cauchari salar, although no information is available as to sampling results there.

Rhodinia Minerals announced in March 2010 they had entered an agreement to purchase tenements adjacent to Orocobre's Salinas Grandes tenement on the basis of initial brine sampling from pits. Brine samples up to 900 mg l^{-1} were reported..
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 km^2.

Several companies are evaluating the potential of other salars in northwestern Argentina.

The mineralization on 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 Salinas Grandes-Guayatayoc 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 km^2. 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.

18. MINERAL PROCESSING AND METALLURGICAL TESTING

18.1. Aspects relating to the water balance and brine extraction.

Brine prospects differ from solid phase industrial mineral prospects by virtue of their fluid nature. During production, the flow of brine through the host aquifer will cause rearrangement and mixing, so that it becomes necessary to address the response of the aquifer to pumping. This requires knowledge of the permeability and flow regime, not only of the host aquifer within the claim area, but beyond the margins where hydraulic continuity with contiguous aquifers and surface water may allow flow into the host aquifer.

The Salinas Grandes-Guayatayoc project is at too early a stage to have such data available, but plans are underway to obtain aquifer and flow regime characteristics within and beyond the claim areas.

18.2. Mineral Processing and Metallurgical Testing

The Salinas Grandes-Guayatayoc project is at too early a stage to have been subject to mineral processing and metallurgical testing. However, based on the brine chemistry some initial conclusion can be drawn.

The Salinas Grandes brine has low Mg/Li ratios and high K/Mg ratios, which is positive for lithium and potassium process efficiencies. A fraction of the samples were analyzed for sulfate and calcium revealing low sulfate and moderate calcium content. These parameters indicate that brine from Salinas Grandes is very suitable for the production of potassium chloride and lithium carbonate through conventional brine processing.

The Guayatayoc brine is a more diluted brine, and requires much more solar evaporation in order to concentrate the brine. It has a low Mg content and a fraction of the samples were analyzed for sulfate and calcium revealing high sulfate and low calcium content. These parameters suggest that brine from Salinas Grandes is suitable for the production of potassium sulfate salts with some limited production of lithium carbonate.

19. MINERAL RESOURCES AND MINERAL RESERVE ESTIMATES

The Salinas Grandes-Guayatayoc project is at too early a stage to make mineral resource estimates. The magnitude of potential is suggested by the large area containing high levels of lithium and potassium in near-surface brine, but more information regarding the host aquifer and the contained brine, as well as the catchment water balance is required before any form of estimate can be made. Plans are underway to obtain this data by means of a drilling, testing and sampling project.

20. OTHER RELEVANT DATA AND INFORMATION

No information – this section intentionally left blank.

21. INTERPRETATION AND CONCLUSIONS

The Salinas Grandes-Guayatayoc prospect is at an early stage of exploration.

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 center of an endorheic (internal drainage) basin of ~20,000 km^2. Influent dilute waters evaporite around the margins of the salar and transfer concentrated solutions to the nucleus, which over thousands of years has lead to a creation of a brine body hosted in the sedimentary aquifer.

The current salar covers an area of approximately 2,500 km^2. Geophysical studies suggest that the aquifer may be up to 400 m thick, hosting a brine body.

Reconnaissance surface pitting, brine sampling and chemical analyses indicate a nucleus, largely within Salinas Grandes, where lithium is highly concentrated reaching over 2000 mg l^{-1} over an area of ~60 km^2, with a maximum of 3117 mg l^{-1}. Both potassium and boron are also found in high concentrations in the center and western parts of Salinas Grandes. K values of >20,000 mg l^{-1} occur over and area of approximately 40 km^2, and B values > 500 mg l^{-1} occur over more than 50 km^2. Subsidiary concentrations of K and B are found in the central and northern parts of Guayatayoc.

The information currently available strongly suggest the possibility of a significant resource of Li, K and B at Salinas Grandes-Guayatayoc. Planned exploration programs are warranted to define a resource.

Quality control systems have been sufficient for requirements to date. However, in order to develop resource estimates, investigations involving further surface pitting, drilling, sampling and testing are required. Formal QA/QC procedures similar to those used at the Company's Salar de Olaroz project need to be implemented. The recommended program is detailed below.

22. RECOMMENDATIONS

22.1. Background

22.1.1. *Salinas Grandes*

The results of the reconnaissance studies carried out to date indicate the possibility of a significant brine resource at Salar Grandes, containing possibly economic quantities of Li, K, and B. It is thus recommended that a phased program of investigation be commenced as described below.

22.1.2. *Guayatayoc*

The results of the reconnaissance studies carried out to date indicate the possibility of a significant brine resource at Guayatoyoc, containing possibly economic quantities of K and B. It is thus recommended that a phased program of investigation be commenced as described below.

22.2. Objectives

The objectives of the next phases of work are to establish the resource with a greater level of confidence. The program outlined below is intended to initially establish the Inferred Resources of the salars and in a second phase, to move to a Measured Resource under NI 43-101/JORC terminology. A final phase, not detailed here, will be required to establish a Probable Reserve. At the conclusion of each phase the results will be used to determine the viability of moving forward to the next step.

The first two stages will allow a reliable in-situ resource estimate to 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 project life.

It is not intended that this next phases 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.

22.3. Scope of work required for Inferred Resource evaluation

22.3.1. *Basin evaluation*

A first order evaluation of the basin is required to determine its generalized structure, stratigraphy and sedimentary architecture.

22.3.2. *Surface variation of brine chemistry*

As a first step in understanding the fluid chemistry, facies distribution and provenance, the variation in the near surface brine, its density and flow directions are required.

22.3.3. *Subsurface geology*

At this stage, the subsurface geology requires investigation to establish the principal lithological variations with depth.

22.3.4. *Porosity variations*

The effective porosity of the main lithological units needs to be established at this stage.

22.3.5. *Subsurface brine variations*

The chemistry of the pore fluid in the major lithological units needs to be established at this stage.

22.4. Methodology for Inferred Resource

22.4.1. *Geological survey and review*

Using published geological information, satellite imagery and site surveys, the salar and its surroundings requires mapping.

22.4.2. *Surface pitting program*

By digging shallow (1-3 m) pits on a regular grid of approximately 2 km, and having them accurately surveyed (both for location and elevation) it will be possible to obtain information on the elevation of the brine surface and to take samples for determination of pH, density, temperature and electrical conductivity in the field, in addition to sending samples to a laboratory for major ion (and Li, B) analysis.

22.4.3. *Drilling*

Eight wells shall be drilled to 50 m at selected locations across the salars. The wells will be cored using advanced sonic techniques, in order to be able to be able to sample both the formation and the brines at specified depth intervals, under what are expected to be difficult drilling conditions

22.4.4. *Core logging and testing*

Logging and core sampling and analysis will proceed in the same manner as described in more detail below (see section 20.5.2).

22.4.5. *Geophysical logging*

All holes will be logged using, natural gamma, neutron, density and sonic.

22.4.6. *Brine sampling*

Brine sampling and analysis will proceed in the same manner as described in more detail below (see section 20.6.4).

22.4.7. *Analysis and Reporting*

Wherever possible analysis of the data gathered will be on-going throughout the field work so that errors and omissions may be identified and corrected in a timely manner. Final analysis at the end of the field work will lead to the development of a detailed report containing the resource estimate.

22.5. Scope of work required for Measured Resource evaluation

22.5.1. *Aquifer geometry and boundary conditions*

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

22.5.2. *Lithological variations and nucleus hydrostratigraphy*

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

22.5.3. *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.

22.5.4. *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.

22.5.5. *Permeability*

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

22.5.6. *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.

22.5.7. *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.

22.5.8. *Analysis and Reporting*

Wherever possible analysis of the data gathered will be on-going throughout the field work so that errors and omissions may be identified and corrected in a timely manner. Final analysis at the end of the field work will lead to the development of a detailed report containing the resource estimate.

22.6. Methodology for Measured Resource

22.6.1. *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. The salars are likely to present special drilling challenges because of the mixed strata and their probable unconsolidated nature. Drill sites within the main prospective resource areas will have ~2.5 km grid spacing. This will represent between 50-80 cored wells within the main area of Salinas Grandes. At two sites within the nucleus a deep exploration hole to 300-400 m will investigate possible deeper targets and establish a baseline hydrostratigraphy for the salar. Six additional sites outside the nucleus will be drilled to depths of up to 100 m to evaluate the hydrogeological boundary conditions.

The main core drilling program will use advanced sonic techniques, in order to be able to be able to sample both the formation and the brines under what are expected to be difficult drilling conditions. Rotary drilling using the in-situ brine will be used to drill the pumping test well groups as well as the deep exploratory holes.

22.6.2. *Core logging and testing*

All logging of cores will be done by on-site by an experienced geologist. It will be preferable for the same person to log all cores so that descriptive bias is avoided and the work should be carried out on-site. The same person will be responsible for selecting and packaging the core samples for analysis.

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 off-site. A percentage of these samples will be fixed with dyed resin and thin-sectioned for microscopic analysis. Petrological and XRD analysis will also be undertaken on these samples. Detailed protocols for this work have been developed to ensure proper QA/QC.

22.6.3. *Geophysical logging*

All holes will be logged using, natural gamma, neutron, density and sonic. Quality control of the logging is critical and a reputable contractor will be appointed. On-site paper traces will be examined for quality and completeness and a digital record kept for subsequent processing and analysis.

22.6.4. *Brine sampling*

Brine samples will be obtained from a push-ahead well point 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. Full QA/QC procedures will be established and documented.

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. Some samples should be sent away for specialized Li, stable and carbon isotope determinations.

22.6.5. *Pumping tests*

Five pumping test sites will be selected within the claim areas. Test wells shall be completed at 200 mm diameter to a nominal 50m depth, and slotted PVC casing installed from surface to full depth. Given the nature of the strata, a generous gravel pack shall be installed in the annulus between the drilled wall and the internal screen.

At each test site a minimum of three and maximum of six narrow diameter observation wells shall be drilled at varying distances, with piezometers set at appropriate depths.

The pump used for testing should be capable of operating over a range of flows from 5-25 l/s. Discharge of the pumped water needs to 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 shall be designed to initiate with a 4-step 8 hour test followed by recovery and then pumped at a constant rate for a minimum of 20 days.

22.6.6. *Surface geophysics*

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

22.6.7. *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.

22.6.8. *Regional water sampling and monitoring*

A small network of monitoring points needs to be 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 must be established to provide input data for the water balance analysis.

22.7. Program of activities

22.7.1. *Inferred Resource Program*

The program of activities for Salinas Grandes-Guayatayoc is expected to run sequentially with that for Cauchari, thus the total time required for both studies if they go ahead would be around 2 years. The following table indicates the main tasks to be accomplished to achieve an Inferred Resource:

Table 22.1 Program to establish an Inferred Resource.

Task	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
FIELDWORK						
Geological survey						
Pitting program						
Well site location/roads						
Core drillers mobilisation						
Core drilling						
On-site geological logging						
Geophysics downhole						
OFF-SITE WORK						
Core analysis						
Brine analysis						
ANALYSIS & REPORTING						
Data analysis and interpretation						
Reporting						

22.7.2. *Measured Resource Program*

The following table indicates the main tasks to be accomplished to achieve a Measured Resource.

Table 22.2 Program to establish a Measured Resource.

Task		Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14	Month 15
FIELDWORK										
Well site location/roads										
Core drillers mobilisation										
Core drilling										
On-site geological logging										
On-site core analysis										
Geophysics downhole										
Test well drillers mobilisation										
Test/observation well drilling	P1									
	P2									
	P3									
	P4									
	P5									
On-site geological logging										
Pump testing	P1									
	P2									
	P3									
	P4									
	P5									
OFF-SITE WORK										
Core analysis										
Brine analysis										
Fresh water analysis										
ANALYSIS & REPORTING										
Data analysis and interpretation										
Reporting										

22.8. Estimated costs

22.8.1. *Inferred Resource Program*

The following table provides a budget estimate of the work required for the Inferred Resource Program.

Table 22.3 Budget estimate for the Inferred Resource Program.

Task	Cost USD
Geological survey and pitting program	450,000
Core drilling, logging and sampling	720,000
Core and brine analyses	200,000
Contingency	137,000
TOTAL	1,507,000

22.8.2. *Measured Resource Program*

The following table provides a budget estimate of the work required for the Measured Resource Program.

Table 22.4 Budget estimate for the Measured Resource Program.

Task	Cost USD
Core drilling, logging and sampling	5,800,000
Test production well drilling and testing	1,700,000
Core and brine analyses	600,000
Contingency	810,000
TOTAL	8,910,000

23. REFERENCES

Allmendinger, R.W., Jordan, T.E., Kay, S.M., and Isacks, B.L., 1997. The Evolution of the Altiplano-Puna Plateau of the Central Andes: Annual Review of Earth and Planetry Science, v. 25, p. 139-174.

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

Alonso, R.N., Jordan, T.E., Tabbutt, K.T. and Vandevoort, D.S. 1991. Giant evaporite belts of the Neogene central Andes. Geology, 19: 401-404.

Alonso, R., J. G. Viramonte y R. Gutiérrez. 1984. Puna Austral bases para el subprovincialismo geológico de la Puna Argentina. Actas IX Congreso Geológico Argentino, Actas1: 43-63, Bariloche.

Chernicoff, C.J., Richards, J.P., and Zappettini, E.O., 2002, Crustal lineament control on magmatism and mineralization in northwestern Argentina: geological, geophysical, and remote sensing evidence: Ore Geology Reviews, v. 21, p. 127-155.

Coira, B., Davidson, J., Mpodozis, C., and Ramos, V., 1982, Tectonic and Magmatic Evolution of the Andes of Northern Argentina and Chile: Earth Science Reviews, v. 18, p. 303-332.

Coutand, I., Cobbold, P.R., Urreiztieta, M., Gautier, P., Chauvin, A., Gapais, D., Rossello, E.A. and Lopez, O. 2001. Style and history of Andean deformation, Puna Plateau, NW Argentina. Tectonics, 20: 210-234.

de Silva, S.L., 1989, Altiplano-Puna volcanic complex of the central Andes: Geology, v. 17, p. 1102-1106.

de Silva, S.L., Zandt, G., Trumball, R., Viramonte, J.G., Salas, G., and Jiménez, N., 2006, Large ignimbrite eruptions and volcano-tectonic depressions in the Central Andes: a thermomechanical perspective, *in* Troise, C., De Natale, G., and Kilburn, C.R.J., eds., 2006, Mechanisms of Activity and Unrest at Large Calderas: Geological Society, London, Special Publication 269, p. 47-63.

Garrett, D. 2004. Handbook of lithium and natural calcium chloride: their deposits, processing, uses and properties. 1st ed. Elsevier Ltd, Amsterdam, San Diego, Oxford, London.

Garzione, C.N., Molnar, P., Libarkin, J.C., and MacFadden, B.J., 2006, Rapid late Miocene rise of the Bolivian Altiplano: Evidence for removal of mantle lithosphere: Earth and Planetary Science Letters, v. 241, p. 543-556.

Geos Mining, 2009. Salar de Olaroz Resource Estimation, April 2009. Sydney, NSW.

Gregory-Wodzicki, K.M., 2000, Uplift history of the Central and Northern Andes: A review: Geological Society of America Bulletin, v. 112, p. 1091-1105.

Hartley, A.J., Chong, G., Houston, J. and Mather, A. 2005. 150 million years of climatic stability: evidence from the Atacama Desert, northern Chile. Journal of the Geological Society, London, 162: 421-424.

Houston, J. 2006a. Variability of Precipitation in the Atacama Desert: Its Causes and Hydrological Impact. International Journal of Climatology 26: 2181-2189

Houston, J. 2006b. Evaporation in the Atacama desert: An empirical study of spatio-temporal variations and their causes. Journal of Hydrology, 330: 402-412.

Houston, J., Evans, R.K. in prep. The evaluation of brine prospects and the requirement for new filing standards. Economic Geology.
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
Jordan, T.E., Alonso, R.N. 1987. Cenozoic stratigraphy and basin tectonics of the Andes Mountains, 20-28^{o}S latitude. American Association of Petroleum Geologists Bulletin, 71:49-64.
Kasemann, S., 1999. The geochemestry of boron in the Puna Plateau of the Central Andes, NW Argentina. A geochemical and isotope study of whole-rocks, tourmalines, borates, and hydrothermal fluids: The significance of boron isotopes for recycling processes in continental crust. Doctoral thesis, University of Berlin, Germany.
Kay, S.M., Coira, B., Mpodozis, C. 2008. Field trip guide: Neogene evolution of the cemtral Andean Puna plateau and southern Central Volcanic Zone. in Kay, S.M. and Ramos, V.A. (eds) Field trip guides to the Backbone of the Americas in the southern and central Andes: Ridge collision, shallow subduction, and plateau uplift. Geological Society of America Field Guide 13: 117-181.
Kraemer, B., Adelmann, D., Alten, M., Schnurr, W., Erpenstein, K., Kiefer, E., van den Bogaard, P. and Gorler, K. 1999. Incorporation of the Palaeogene foreland into the Neogene Puna plateau: The Salar de Antofalla area, NW Argentina. Journal of South American Earth Sciences, 12: 157-182.
Lamb, S., Hoke, L., Kennan, L., and Dewey, J., 1997, Cenozoic evolution of the Central Andes in Bolivia and northern Chile *in* Burg, J.P., and Ford, M., eds., Orogeny Through Time: Geological Society, London, Special Publication 121, p. 237-264.
Lowenstein, T. 2000. 80 ka Paleoclimate Record from Salar de Hombre Muerto, Argentina, www.geol.binghamton.edu/faculty/lowenstein/hm/hombremuerto.html
Lowenstein, T., Hein, M.C., Bobst, A.L., Jordan, T.E., Godfrey, L.V., Ku, T.L. and Luo, S. 2001. A 106Kyr paleoclimate record from the Salar de Atacama, Chile: Evidence for wet Late Glacial climates. in: Betancourt, J., Quade, J. and Seltzer, G. (editors) Paleoclimatology of the Central Andes. PEPI USGS Workshop Abstracts, Tucson, Arizona.
Mon, R. 2005. Control tectónico de la red de drenaje de los Andes del norte argentine. Revista de la Asociación Geológica Argentina, 60: 461-466.
Morris, D.A., Johnson, A.I. 1967. Summary of hydrologic and physical properties of rock and soil material, as analyzed by the Hydrologic Laboratory of the U.S.G.S. 1948-1960. Water Supply Paper 1839-D, USGS, Washington, DC.
Ramos, V.A. 1999. Los depósitos sinorogénicos terciarios de la región Andina. Rn: Caminos, R. (Ed.), Geología Argentina, Instituto de Geología y Recursos Minerales, Anales 29 (22): 651-682. Buenos Aires.
Salfity, J.A. 1985. Lineamientos transversales al rumbo Andino en el noroeste de Argentino. IV Congreso Geologico Chileno – Antofagasta, 2: 119-137.
Salfity, J.A., and Marquillas, R.A. 1994. Tectonic and sedimentary evolution of the Cretaceous-Eocene Salta Group basin, Argentina. In Salfity, J.A. (ed) Cretaceous tectonics of the Andes, Earth Evolution Series, Vieweg, Weisbaden.
Scotese, C.R. 2002. Atlas of Earth History. PALEOMAP Project website, http://www.scotese.com

SEGEMAR, 2008a. Hoja Geologica Susques 2366-III. 1:250,000.
SEGEMAR, 2008b. Hoja Geologica Ciudad Libertador General San Martin. 1:250,000.
Vandervoort, D.S., Jordan, T.E., Zeitler, P.K. and Alonso, R.N. 1995. Chronology of internal drainage development and uplift, southern Puna plateau, Argentine central Andes. Geology, 23: 145-148.

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 Quarternary precipitation in the Atacama Desert based on data from rodent middens). *XII Congreso Geologico 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 Economico* **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 precipitacion torrencial del año 2000 en Quebrada Chacarilla y el calculo de recarga al acuifero Pampa Tamarugal, norte de Chile. *Revista Geologíca de Chile* **28**:163-177

2001 with Jensen and Arevalo: Constitucíon de derechos de aprovechamiento sobre aguas subterraneas almacenadas. *Revista de Derecho Administrativo Economico* **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 Sammim brine development, Oman (1991).
8. I am responsible for the preparation of the Salinas Grande-Guayatayoc 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:- 4thDay of May, 2010

____
Signature of John Houston, C.Geol.

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