

**November 16, 2018**

**TECHNICAL REPORT  
INITIAL MEASURED LITHIUM AND POTASSIUM RESOURCE ESTIMATE  
HOMBRE MUERTO NORTH PROJECT  
SALTA AND CATAMARCA PROVINCES, ARGENTINA**

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**November 16, 2018**

**INITIAL MEASURED LITHIUM AND POTASSIUM RESOURCE ESTIMATE  
HOMBRE MUERTO NORTH PROJECT  
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**1. SUMMARY**

The Report has been prepared for NRG Metals Inc. (NRG) to conform to the regulatory requirements of Canadian National Instrument (NI) 43-101 using the form 43-101 F1 Standards of Disclosure for Mineral Projects. The Project area straddles the northern edge of the Salar del Hombre Muerto basin (the Salar), near Salta and Catamarca provincial boundaries in the Puna Region of northwest Argentina. The Salar is a large evaporite basin comprising enriched lithium brine concentrations and within the Central Andes of Argentina and the so-called “Lithium Triangle” of Argentina, Bolivia and Chile.

**Reliance on Other Experts**

For the purposes of the Report, Mr. Rosko relied on: 1) Jorge Enrique Moreno, President of One Borax S.A., and José Hector Isa, Counsel of One Borax, for control of the standing of property in the Salta Mining Court; 2) the expertise of geologists Sergio Lopez and Pedro Ruiz, geologists engaged by One Borax to conduct brine sampling and geological mapping; 3) the work completed by geophysicist Sascha Bolling (GEC), for performance of a CSAMT survey and interpretation of respective geophysical data, and; 4) the opinion of lawyer Jorge Vargas of Vargas Galíndez Abogados on the mining rights covering partially the “zone of overlapping jurisdiction” between Salta and Catamarca provinces. However, it should be noted that the resource estimation expressed in this report is for the Tramo concession and 100% located within the jurisdiction into the Salta Province.



### **Location and Description**

The Project is located northern portion of the Salar del Hombre Muerto, at the boundary zone of the Catamarca and Salta provinces, 170 km southeast of the city of Salta. The area of the Project area comprises a collection of properties or concessions acquired under purchase options from the existing owner. The properties are held as “minas” (full mining licenses not subject to further area reduction requirements) by Mr. Jorge Moreno, a private borate producer focused on the exploration, exploitation and marketing of ulexite. The Project comprises six properties distributed over the Salar for a total of 3,237 hectares. The area of the Property is not subject to any known environmental liabilities.

### **Summary of property concessions for the Hombre Muerto North Project**

<b>Concession Identifier</b>	<b>Concession File Identifier</b>	<b>Area (hectares)</b>
Alba Sabrina	18.823	2,089
Tramo	18.993	383
Natalia Maria	18.830	115
Gaston Enrique	18.824	55
Norma Edith	18.829	285
Viamonte	13.408	310
	TOTAL	3,237

### **Accessibility, Physiography, Climate, Local Resources and Infrastructure**

The most common access is from Salta along national route RN-51 for 230 km, northwest to Cauchari, and then south along routes RP-27 and RP-17 for 170 km. The climate is characterized as a cold, high elevation, desert environment with very little precipitation and extreme evaporation rates. Main infrastructure includes a 600 megawatt/375 kilovolt (KV) power line between Salta and Mejillones, Chile passing about 160 km north of the Property. A natural gas pipeline, connecting mine operations in the Puna, passes 10 km from the Property area. A railroad is being reactivated between Salta and the Antofagasta seaport in Chile, passing 100 km north of the property. Currently, Salta province and private companies, such as Total Eren, are considering a new gas pipeline and power distribution project that would use



32% renewable energy. The project could be completed in 18 to 24 months. NRG is being considered as a potential future off-taker.

### **History**

No significant past mining exploration on the Property has occurred, although One Borax has mined minor amounts of borates (ulexite). Since 1996, the Fenix Mine (FMC Lithium) in the Salar has been producing 10,000 tonnes per annum (tpa) of lithium carbonate. The Tincalayu borate mine initiated operations in 1954 and continues producing through Orocobre Ltd. In 1979, the Argentinean Government conducted exploration for lithium covering a number of salars in the Puna including the Salar del Hombre Muerto. More recently Galaxy Resources Limited (Galaxy) defined a lithium and potassium brine resource and reserve at their Sal de Vida project, adjacent to the Property.

### **Geological Setting**

The Puna region has a complex geological history tracing back to the Precambrian. Starting in the Jurassic, the area became a new and active plate margin, with associated volcanic arc and basin development. By the Oligocene to Miocene (25 to 20 Ma), the region was consolidated as an uplifted terrain, with basin and range geomorphological positioning and endorheic drainages. Leaching of favorable lithologies and repeated seasonal precipitation and extreme evaporation rates in the closed basins resulted in large accumulations of lithium and potassium bearing brines.

Local geology at the Salar del Hombre Muerto includes a basement built up of Precambrian and Early Paleozoic intrusive sedimentary and metamorphic events, thick sequences of Ordovician marine sedimentary rocks topped by continental Mesozoic sedimentary units. These are overlain by Miocene to Pliocene volcanic developments, which are common characteristics of the salars within the sedimentary basins of the region.



## Deposit Types and Dimensions

The lithium bearing brines are liquid mineral deposits accumulated at depth in the basins and defined by: the volume and transmissibility of the brine aquifers, the effective porosity of the sediments, the amenability for circulation brines to extraction wells as a mining method, and the salar geometry in lateral and vertical extensions. No volumes of brine are defined in the Property boundary at this early stage of the Project, although mineral resources and reserves have been estimated to a depth of 300 meters at the neighboring Sal de Vida project (Galaxy Resources). The western part of the Salar del Hombre Muerto is host to FMC Lithium's Fenix Mine (approximately 20 km south of the Property), which has been producing lithium brine for over 20 years.

## Exploration

Exploration completed in October 2016 and January 2017 at the Project includes surface geochemical sampling totaling 20 brine samples with anomalous high values of lithium and potassium. Sample results range from 48 to 1,064 mg/L lithium concentration and averaged 587 mg/L lithium concentration. Magnesium to lithium ratios range from 1.1:1 to 10.2:1, averaging 4.6:1. Averages for three areas of the Project are provided as follows.

### Averages of surface brine sample assays for the Hombre Muerto North Project

Sample Set	Li (mg/L)	K (mg/L)	Mg (mg/L)	Mg/Li
Tramo Group	655	4,791	2,337	3.9
Alba Sabrina Group	310	2,482	2,345	8.2
Salar Group <sup>a</sup>	741	6,788	1,224	1.6

a) combined salar properties: Natalie Maria, Gaston Enrique, Norma Edit, and Viamonte

The third round of sampling was conducted by QP Michael Rosko on January 10, 2018, and included collection of seven samples, SHMN-001, -003, -004, -006, -007, -009, and -011 (not including duplicates); results are shown below.



### Summary of 2018 geochemical results for surface brine samples

Sample	Location Name	Li	Ca	Mg	B	Na	K	Density g/mL	Conductivity mS/cm	Mg/Li
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
<b>3<sup>st</sup> Round</b>										
SHMN_001	Tramo #1	1,120	978	3,594	255	91,495	8,554	1.163	189	3.21
SHMN_002	Tramo #2	792	940	2,392	277	86,552	6,049	1.151	181	3.02
SHMN_004	Tramo #3	1,011	1,105	2,378	396	96,202	9,236	1.169	192	2.35
SHMN_005	Tramo #3 Duplicate	1,008	1,104	2,379	395	96,393	9,539	1.169	193	2.36
SHMN_006	Tramo #4	1,216	1,381	3,718	177	98,220	10,368	1.175	193	3.06
SHMN_007	Alba Sabrina #5	353	737	2,674	244	80,373	3,059	1.134	171	7.58
SHMN_009	Natalia Maria #6	911	944	1,300	435	109,391	8,857	1.181	195	1.43
SHMN_010	Natalia Maria #6 Duplicate	913	943	1,297	432	109,943	8,861	1.181	195	1.42
SHMN_011	Natalia Maria #7	793	1,018	1,075	399	106,828	8,870	1.178	194	1.36

A 10-station CSAMT geophysical survey completed by GEC indicates a shallow, low resistivity anomaly along the “Tincalayu Gulf” on the Alba Sabrina property. The anomaly extends up to 250 m in vertical expression. Additionally, a well-defined low resistivity anomaly is developed over the Tramo and Natalia Maria properties, showing vertical extensions potentially up to 250 m or more over approximately 6 km. The low resistivity anomalies detected by the CSAMT survey are considered to be indicative of the presence of brine.

### Drilling and Pumping Tests

The diamond drilling program included drilling two vertical coreholes, TH18-01 and TH18-02, ranging in depth from 280 to 401 meters. Drilling was done during the period between April 24 and July 13, 2018, by AGV Falcon based in Salta, Argentina. The objectives of this diamond drilling program were to obtain the following:

- Continuous cores for mapping and characterization,
- Geologic samples for Brine Release Capacity Test, including Bulk Density, Total Porosity, Field Water Capacity, and Specific Yield and particle density.
- Depth-specific brine samples for laboratory chemical analyses
- Information for the construction of wells for future sampling and monitoring.



Location and sample information for the coreholes is given below.

### Summary of well locations and samples

Corehole Identifier	Total Depth (meters)	UTM Easting <sup>1</sup> (meters, POSGAR 94)	UTM Northing <sup>1</sup> (meters, POSGAR 94)	Number of drainable porosity samples collected	Number of drainable porosity samples analyzed	Number of depth-specific brine samples collected and analyzed
TH18-01	401	3,402,349	7,210,113	37	10	33
TH18-02	280.8	3,400,168	7,210,220	10	10	10
	Total = 681			Total = 47	Total = 20	Total = 43

<sup>1</sup> UTM Easting and Northing from hand-held GPS.

NOTE: IncludeS duplicate brine samples

To date, one exploration/pumping test well, TWW18-01, has been drilled, constructed, and tested. Location information for the exploration well is given below.

### Location and Depth for Pumping Well TWW18-01

Exploration Well Identifier	Total Depth (meters)	Easting <sup>1</sup> (meters, POSGAR 94)	Northing <sup>1</sup> (meters, POSGAR 94)
TWW18-01	401	3,402,357	7,210,100

<sup>1</sup> Easting and Northing from a hand-held portable GPS.

Testing demonstrated that large quantities of brine can be pumped from the aquifer. Test results are given below.

### Summary of computed aquifer parameters for well TWW18-01

Pumped Well Identifier	Observation Well Identifier	Distance from Pumped Well (meters) <sup>1</sup>	Average Pumping Rate (L/s) <sup>2</sup>	Theis (1935) Drawdown method Transmissivity (m <sup>2</sup> d) <sup>3</sup>	Theis (1935) Recovery method Transmissivity (m <sup>2</sup> d)
TWW18-01	---	0	25	Not analyzed	55
	TH18-01	6	---	61	Not analyzed

<sup>1</sup> Measured with calibrated tape

<sup>2</sup> Liters per second

<sup>3</sup> Square meters per day



The table below is a summary table for the laboratory results from 15 brine samples obtained during pumping test operations conducted at pumping well TWW18-01 during the period July 17 through July 27, 2018.

**Summary of laboratory chemical results for brine samples obtained during the pumping test at well TWW18-01**

SAMPLE ID	Date	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
HMN-50	17/07/2018	793	2,061	7,829	544	2.60
HMN-51	17/07/2018	790	1,873	8,202	582	2.37
HMN-52	17/07/2018	790	1,814	8,365	600	2.30
HMN-53	17/07/2018	783	1,806	8,255	593	2.31
HMN-54	18/07/2018	784	1,818	8,239	594	2.32
HMN-55	18/07/2018	788	1,803	8,427	598	2.29
HMN-56	18/07/2018	774	1,802	7,965	594	2.33
HMN-57	18/07/2018	786	1,806	8,199	597	2.30
HMN-58	25/07/2018	784	1,823	8,113	594	2.33
HMN-59	25/07/2018	783	1,827	8,082	593	2.33
HMN-60	26/07/2018	787	1,806	8,129	599	2.29
HMN-62	27/07/2018	787	1,802	8,145	604	2.29
HMN-63	27/07/2018	792	1,806	8,210	602	2.28
HMN-64	29/07/2018	796	1,823	8,259	608	2.29
HMN-65	29/07/2018	788	1,801	8,199	597	2.29
AVERAGE		787	1,831	8,175	593	2.33

Exploration/pumping test well TWW18-02 has been drilled to a depth of 400 meters, and as of the release of this report, is still being constructed (i.e. it is being reamed to a larger diameter in order to install large diameter casing similar to well TWW18-01).

**Sample Collection, Preparation, Analysis and Security**

The field sampling of brines from the pumping tests was done in accordance with generally accepted industry standards. The quality control data, based upon the insertion of field blanks and analysis of duplicates indicate that the analytical data are accurate and repeatable. As a



result, the author is confident that the reported results are representative of the brine chemistry in the aquifer.

### Estimated Resource

Results of the calculations for estimating the Measured and Indicated Resource for the Tramo concession are summarized below.

#### Summary of measured and indicated resource

Resource Category	Brine Volume (m <sup>3</sup> )	Avg. Li (mg/L)	In situ Li (tonnes)	Avg. K (mg/L)	In situ K (tonnes)
Measured	119,862,077	797	95,556	7,039	843,671
Indicated	21,936,404	534	11,714	5,517	121,023
M+I	141,798,481	756	107,270	6,803	964,694

*Cutoff grade: 500 mg/L lithium – No laboratory results were less than 500 mg/L*

*The reader is cautioned that mineral resources are not mineral reserves and do not have demonstrated economic viability.*

It is common in the lithium and potassium industries to report lithium and potassium metals as equivalents. Lithium carbonate (Li<sub>2</sub>CO<sub>3</sub>) is a commonly reported equivalent for lithium; potassium chloride (KCl) is a commonly reported equivalent for potassium. Equivalents for lithium carbonate and potassium chloride are shown below.

#### Summary of lithium carbonate and potassium chloride equivalents

Resource Category	In situ Li (tonnes)	Li <sub>2</sub> CO <sub>3</sub> Equivalent (tonnes)	In situ K (tonnes)	KCl Equivalent (tonnes)
Measured	95,556	508,627	843,671	1,608,881
Indicated	11,714	62,351	121,023	230,791
M+I	107,270	570,979	964,694	1,839,672

*Cutoff grade: 500 mg/L lithium*

The following averages and ratios have been computed as weighted averages using all depth-specific brine samples obtained and analyzed from coreholes TH18-01 and TH18-02, and



extrapolated values from the lower part of well TWW18-02 (based on completed drilling to date).

- **MEASURED RESOURCE**

- average lithium grade is approximately 797 mg/L as lithium
- average potassium grade is about 7,039 mg/L as potassium
- average magnesium:lithium (Mg/Li) ratio is about 2.7
- average sulfate:lithium (SO<sub>4</sub>/Li) ratio is about 11.0

- **MEASURED AND INDICATED RESOURCE COMBINED**

- average lithium grade is approximately 756 mg/L as lithium
- average potassium grade is about 6,803 mg/L as potassium
- average magnesium:lithium (Mg/Li) ratio is about 2.6
- average sulfate:lithium (SO<sub>4</sub>/Li) ratio is about 11.7

### **Adjacent Properties**

Adjacent properties to The Project include the following land positions at the Salar del Hombre Muerto:

- Galaxy Resources holding large lithium and potassium brine tenements to the southeast and south of the Project.
- Orocobre Limited, holding borate exploration operations at Tincalayu mine, nearby and in between the Project properties.
- FMC Lithium producing and processing lithium brine southwest of the Project.
- Santa Rita and Maktub Group holding borate properties and ulexite production south of the Project.

### **Conclusions**

The geochemical sampling results for the Project reveal large concentrations of lithium when compared with other projects in the salars of the Puna region. The available geophysical data outlined large, deep resistivity target areas amenable to be drilled and tested for lithium-enriched brine; recent exploration drilling and testing on the Tramo concession confirmed this.



## **Recommendations**

Based on the results of the recent exploration, NRG plans to continue with development of the Project and believes that it has future economic potential for development. Following conversations with NRG, we are recommending that NRG focus on the further assessment and development of the Tramo concession. Therefore, we recommend that the ongoing chemical process test work (not documented in this report) be completed. In addition, we recommend two new courses of action: 1) Development of a Preliminary Economic Assessment (PEA), and 2) Determine the potential of the Tramo concession to provide a sustainable source of brine from a small wellfield, and estimate a Reserve.

A PEA report would provide an initial estimate of the economic viability of the project and would help support decisions to move forward with estimation of an economic Reserve using a numerical groundwater flow model. The PEA should include information on what will be required to bring the project into production, details on processing and production methods and rates, and estimates of how much lithium carbonate and cash it will produce. It should include information on pre-production capital costs, life-of-mine sustaining capital, mine life and cash flow, and closure costs.

The total cost of the above recommended activities would be approximately US\$ 30,000 for completion of the ongoing test work, US\$ 250,000 for the PEA report, and US\$ 50,000 for other consulting and legal fees; total estimated costs are US\$ 330,000. These costs do not include the conversion of Resources to Reserves that could be a sustainable source of brine from the Tramo wellfield, which is work that would be carried out after completion of a successful PEA.

Assuming that the PEA is favorable and supports moving forward with additional effort, a numerical groundwater flow model should be prepared in the Tramo area to be able to upgrade the current Resource to an economic Reserve. To prepare a reliable groundwater flow model, additional information is needed for the basin boundaries and aquifer in that part of the basin.



Because NRG has drilled several exploration wells in the Tramo concession, these will be able to function as calibration points for recommended geophysical surveys. When additional wells have been drilled and tested in the other concessions, the groundwater flow model would be modified to include other areas.

Finally, in addition to modeling, an investigation into sources of fresh water needed for future processing is also recommended if processing of brine is to occur on site. Currently, details on future processing are not known, but based on the author's experience and understanding of the Tramo area and other concessions currently held by NRG, this would be a logical and pragmatic next step if the PEA is favorable.



## 2. INTRODUCTION

This Technical Report was requested by NRG to support its exploration program to advance the Hombre Muerto North Project to development and lithium brine production. The mining concessions of the Project total 3,246 hectares. NRG has recently entered into an option agreement to purchase the Project from Mr. Jorge Moreno, a private businessman from Salta, Argentina. The Project is located in the northern part of the Salar del Hombre Muerto, in the vicinity of Salta and Catamarca provincial boundary and within in the Argentinean Puna geological environment.

NRG retained Montgomery & Associates Consultores Limitada to provide an update of the exploration program realized in year 2018. The results of this exploration program have been used to estimate the mineral Resource for the Tramo concession of the Project. In addition, the aquifer testing realized as part of this recent exploration program demonstrates the ability of the aquifer to yield brine to pumping wells.

### **2.1 AUTHORSHIP AND TERMS OF REFERENCE**

Mr. Michael Rosko, through Montgomery & Associates (M&A) is responsible for compiling, editing, and verifying the Report for regulatory compliance. Mr. Rosko is a Registered member of Society for Mining, Metallurgy, and Exploration (SME), and has many years of experience designing and evaluating lithium brine exploration and development projects, and is an independent Qualified Person (QP) within the context of the NI 43-101. Mr. Rosko assumes responsibility for all sections of the report.

Mr. Rosko and associated staff of M&A prepared the Report using the format NI 43-101 Technical Report– Standards of Disclosure for Mineral Projects including Form 43-101F1 – Technical Report and Companion Policy 43-101CP. Finally, the Report also adheres to guidelines prepared Houston et al. (2011) for estimation of mineral Resources and Reserves



for lithium brines under the NI 43-101 regulations.

Mr. Rosko visited the NRG property on July 7, 2017, January 10, 2018, and April 13, 2018; previously, during the period from 2011 through 2013, Mr. Rosko had visited Salar de Hombre Muerto multiple times while working for Lithium One Inc. and Galaxy Resources Limited. In addition, a senior hydrogeologist working for Mr. Rosko visited the site near the beginning of the most recent drilling and testing program May 2-5, 2018.

Mr. Rosko and M&A hydrogeologists have been historically involved in drilling, testing, and sampling activities in Salar del Hombre Muerto, as well as in other salar basins in the Puna. Mr. Rosko has managed projects in The United States, Bolivia, Chile, Colombia, Argentina, Perú, and Mexico and serves as General Manager for M&A's Santiago de Chile office. During his 30-year career at M&A, he has developed new water supplies and assessed aquifer conditions for mining operations in arid environments, both in the southwestern U.S. and in the desert "salar" regions of South America. Mr. Rosko's responsibilities have included designing wells and wellfields, characterizing regional hydrogeologic systems, analyzing groundwater chemistry, designing and implementing monitoring programs, integrating satellite image analysis into water supply, lithium and potassium salar brine characterization and resource and reserve estimation, and environmental projects. Mr. Rosko co-authored a Canadian National Instrument (NI) 43-101 Technical Report for Galaxy Resources' Sal de Vida project in Salar del Hombre Muerto (Montgomery & Associates and Geochemical Applications International, 2012).

### **2.3 SOURCES OF INFORMATION**

The following two reports were previously prepared for this Project, and much of what is in these reports has been modified or copied directly in this report:

- Rojas y Asociados, 2017. Hombre Muerto North Project, Salta and Catamarca Provinces, Argentina. Technical report prepared for One Borax S.A., 102 p.



- Montgomery & Associates Consultores Limitada, 2017. Technical report for the Hombre Muerto North Project, Salta and Catamarca Provinces, Argentina: October 9, 2017. Report for NI-43101 prepared on behalf of NRG Metals, Inc.

The current Report supersedes these two older reports.

In addition to the reports prepared directly for the project area, the following report was relied on because the Project area is adjacent and many of the conclusions from the report are relevant to the current Project.

- Montgomery & Associates, Inc., and Geochemical Applications International, Inc., 2012. Measured, indicated, and inferred lithium and potassium resource, Sal de Vida project, Salar del Hombre Muerto, Catamarca-Salta: March 7, 2012. Report for NI-43-101 prepared on behalf of Lithium One Inc.

### **2.3 STATEMENT FOR BRINE MINERAL PROSPECTS & RELATED TERMS**

Brine Mineral Resource and Reserve estimates are not “solid mineral deposits” as defined under the CIM (2003, 2010, and 2012) standards. However, there are sufficient similarities to mineral deposits that the guidelines published by the CIM are followed for this Report. Brine is a fluid and hosted in an aquifer and thus has the ability to move and mix with adjacent fluids once extraction starts using production wells as a mining method. Resource estimation is based on knowledge of the geometry of the aquifer, and the variation in drainable porosity and brine grade within the aquifer. In order to assess the potential 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 life of mine.



### 3. RELIANCE ON OTHER EXPERTS

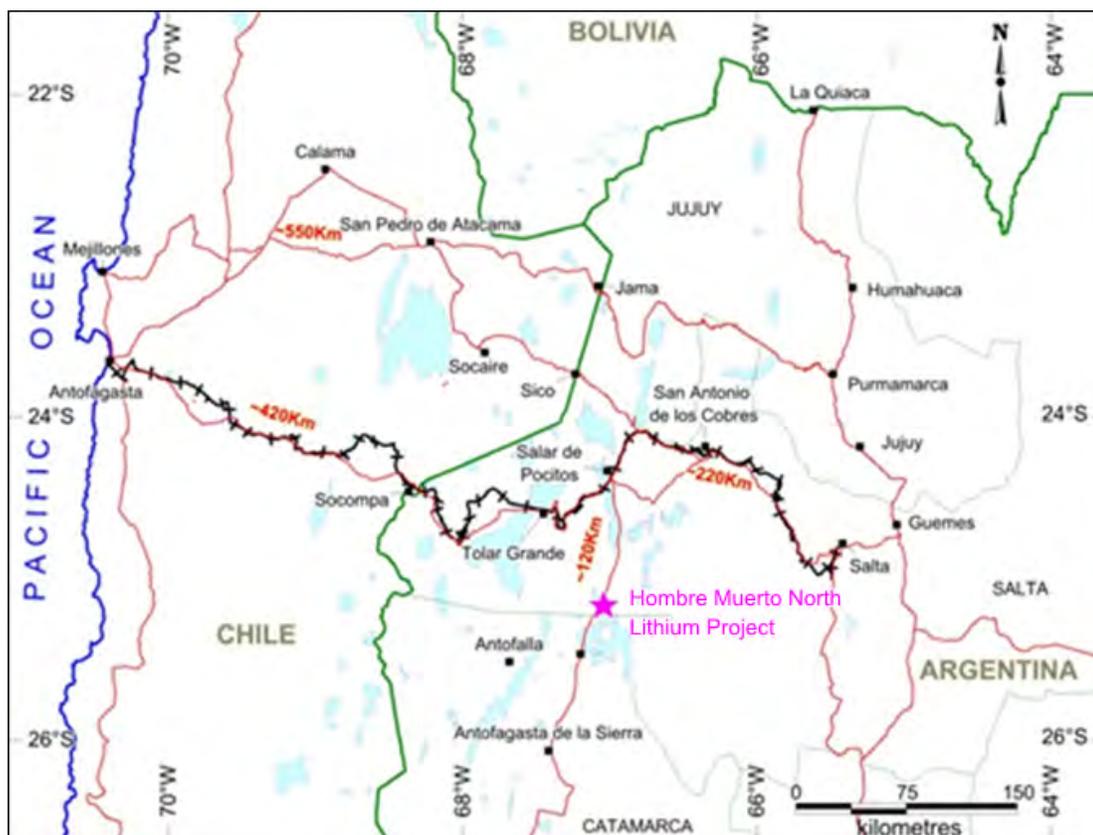
The expertise and professional skills of Sergio Ramon Lopez and Pedro Stewart Ruiz, senior geologists and graduates of the Universidad Nacional de Salta was relied on to conduct geological mapping, geochemical brine sampling and supervision of exploration tasks. The QP also relied on expertise and extensive experience of Mr. Sascha Bolling, who is Senior Geophysicist and Managing Director of Geophysical Exploration & Consulting S.A. of Mendoza, Argentina (GEC). GEC completed the Controlled-source Audio-frequency Magnetotellurics (CSAMT) survey for the Project.

For the purpose of this Report, the QP relied on the Legal and Title Opinion regarding the Property dated June 28, 2017 by Sr. Jorge Vargas Gei of the law firm Vargas-Galíndez Abogados of Mendoza, Argentina. Sr. Vargas Gei is a graduate of Universidad de Mendoza School of Law, Argentina, and holds a Master of Law Degree and a Master's in Business Administration degrees both from University of Wales, Aberystwyth, United Kingdom, and he has completed the Program for General Management at the IAE Management and the Business School of the Universidad Austral, Buenos Aires, Argentina. Sr. Vargas' title opinion is relied upon for the material covered in Sections 4.3, 4.4, and 4.5 of this report, and is included in **Appendix A**.

## 4. PROPERTY LOCATION AND DESCRIPTION

### 4.1 LOCATION

The Project is located in the north part of the Salar del Hombre Muerto, close to the boundary of the Catamarca and Salta provinces, in northwest Argentina. The Project is in the Argentinean Puna, at an elevation of approximately 4,000 meters above sea level (masl) and lies approximately 1,400 km northwest of the capital of Buenos Aires. Straight-line distance from Salta's provincial capital is 170 km WSW; from the city of Catamarca, the Project is 380 km NNW; and from Antofagasta, Chile the Project is 390 km SE (**Figure 4.1**).



**Figure 4.1. Location and access to the Project, Salar del Hombre Muerto, Argentina**



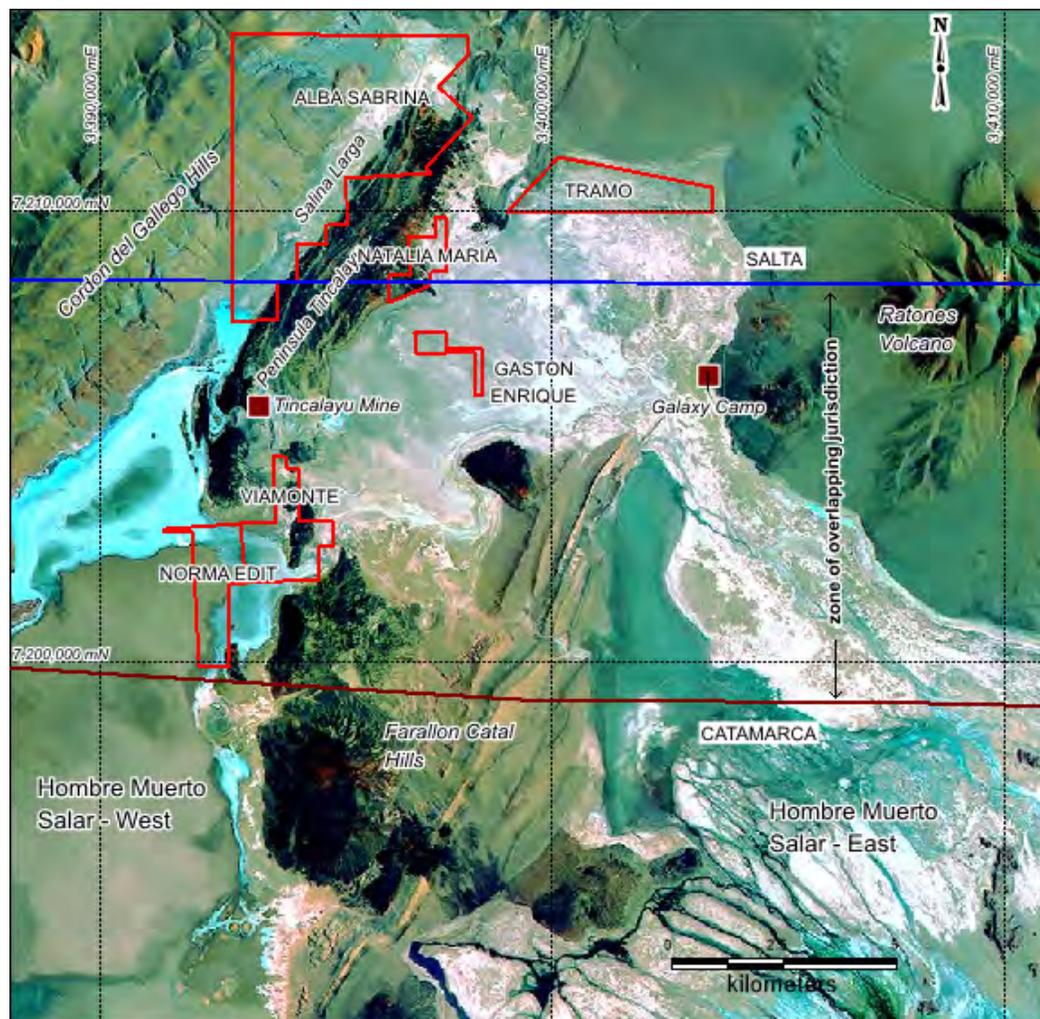
## **4.2 DESCRIPTION OF PROPERTY**

The Hombre Muerto North Project (formerly the “New Brine Lithium Project”) comprises six Exploitation Concessions (minas) totaling 3,237 hectares registered by One Borax S.A. and distributed at the north part of the Salar del Hombre Muerto. One Borax S.A. is a private Argentinian company owned by Mr. Jorge Moreno of Salta, Argentina. The concessions are registered at Salta Mining Court as Alba Sabrina (File 18.823), Tramo (File 18.993), Natalia Maria (File 18.830), Gaston Enrique (File 18.824), Viamonte (File 13.408), and Norma Edit (File 18.829). Location and coordinates of the properties are shown in **Figure 4.2** and summarized in **Tables 4.1 and 4.2**.

On May 17, 2017, NRG Metals Inc. of Vancouver, British Columbia, Canada entered into a purchase option agreement to acquire the Project from Mr. Jorge Moreno, who is a private borate producer from Salta, Argentina. Terms of the agreement are itemized as follows:

1. US \$50,000 on signing for a 90-day due diligence period and for the completion of a NI 43-101 Technical Report on the project. The due diligence period may be extended to 120 days, if necessary.
2. Upon acceptance of the NI 43-101 report by the TSX, NRG will pay Mr. Moreno US \$100,000 and issue one million common shares of NRG common stock. At that time, Mr. Moreno will join the board of NRG Metals Inc.’s Argentine subsidiary.
3. At six months from Item 2, US \$250,000 and one million common shares of NRG.
4. At 12 months from Item 2, US \$250,000 and one million common shares of NRG.
5. At 18 months from Item 2, US \$1,000,000 and one million common shares of NRG.
6. At 30 months from Item 2, US \$1,000,000 and two million common shares of NRG.
7. At 42 months from Item 2, US \$1,000,000 and two million common shares of NRG.
8. At 54 months from Item 2, US \$2,000,000 and two million common shares of NRG.

The project will be subject to a 3% Net Production Royalty, of which 50% may be purchased for US\$3,000,000 within 36 months of Item 2.



**Figure 4.2. Location of the Project property areas**

**Table 4.1. Gauss Kruger - Posgar coordinates for the Project properties**

Name	File #	Application Year	Area (has)	Property Coordinates	
				Y	X
Tramo	18.993	2007	383	3,400,153.49	7,211,193.41
				3,403,581.75	7,210,496.92
				3,403,582.30	7,209,935.26
				3,399,000.83	7,209,940.11

**Table 4.1. Gauss Kruger - Posgar coordinates for the Project (continued)**

Name	File #	Application Year	Area (has)	Property Coordinates	
				Y	X
Alba Sabrina	18.823	2007	2.089	3,396,745.63	7,213,857.40
				3,398,151.06	7,213,830.65
				3,398,150.81	7,213,456.32
				3,397,478.55	7,212,728.84
				3,398,215.08	7,212,048.20
				3,397,204.42	7,210,940.69
				3,397,334.99	7,210,820.12
				3,395,420.09	7,210,685.04
				3,395,488.53	7,209,689.37
				3,394,990.70	7,209,655.15
				3,395,017.65	7,209,256.85
				3,394,319.62	7,209,210.33
				3,394,372.76	7,208,412.21
				3,393,873.83	7,208,379.09
				3,393,926.71	7,207,581.42
3,392,926.74	7,207,514.94				
3,392,926.74	7,213,929.36				
Natalia Maria	18.83	2007	115	3,396,365.98	7,208,544.74
				3,396,865.67	7,208,578.22
				3,396,812.76	7,209,376.47
				3,397,428.68	7,209,417.55
				3,397,401.69	7,209,822.28
				3,397,663.94	7,209,839.76
				3,397,663.91	7,208,655.67
				3,397,303.47	7,208,642.43
				3,397,242.42	7,208,295.88
				3,396,406.25	7,207,939.52
				3,396,392.58	7,208,145.31

**Table 4.1. Gauss Kruger - Posgar coordinates for the Project (continued)**

Name	File #	Application Year	Area (has)	Property Coordinates	
				Y	X
Gaston Enrique	18.824	2007	55	3,396,950.52	7,207,289.71
				3,397,663.94	7,207,298.43
				3,397,663.94	7,206,923.60
				3,398,454.95	7,206,923.60
				3,398,454.95	7,205,885.50
				3,398,321.79	7,205,887.17
				3,398,304.10	7,206,195.77
				3,398,259.97	7,206,866.22
				3,396,984.09	7,206,781.87
Viamonte	13.408	1988	310	3,393,107.85	7,203,055.41
				3,393,207.30	7,201,730.86
				3,394,832.45	7,201,826.53
				3,394,788.32	7,202,557.72
				3,395,170.12	7,202,578.18
				3,395,150.66	7,203,102.78
				3,394,425.41	7,203,094.14
				3,394,411.39	7,204,270.76
				3,394,111.53	7,204,251.49
				3,394,091.79	7,204,550.80

**Table 4.2. Summary of property concessions for the Hombre Muerto North Project**

<b>Concession Identifier</b>	<b>Concession File Identifier</b>	<b>Area (hectares)</b>
Alba Sabrina	18.823	2,089
Tramo	18.993	383
Natalia Maria	18.830	115
Gaston Enrique	18.824	55
Norma Edith	18.829	285
Viamonte	13.408	310
	TOTAL	3,237



### **4.3 EXPLORATION AND MINING PERMITTING**

In Argentina, mineral resources belong to the provinces where the resource is located. The provinces control property mineral resources and have authority to grant mining rights to private applicant entities. Provinces have the authority to implement the National Mining Code and to regulate its procedural aspects and to organize each enforcement authority within its territory. There are two types of mineral tenure granted by provinces according to Argentina mining laws: Exploitation Concessions and Exploration Permits.

- Exploitation Concessions sometimes referred to as “Minas” or “Mining Permits” are licenses that allow the property holder to exploit the mineral resources of the property, providing environmental approval is obtained. These permits have no time limit as long as obligations in the National Mining Code are abided.
- Exploration Permits referred to as “Cateos” have time limits that allow the property holder to explore the property for a period of time that is related to the size of the property. Exploration Permits also require environmental permitting.

Depending on the province, Exploitation Concessions are granted by either a judicial or administrative decision. An Exploration Permit can be transformed into an Exploitation Concession any time before its expiration period by filing a report and paying a canon fee. The condition under which Exploitation Concessions are held is indefinite providing that annual payments are made.

Exploitation or Exploration cannot start without obtaining the environmental impact assessment (EIA) permit. In mining-friendly provinces of Argentina (which include Salta and Catamarca), the content and approval of EIA reporting is straightforward. Permitting for drilling in areas of both types of mineral tenure must specify the type of mineral the holder is seeking to explore and exploit. Claims cannot be over-staked by new claims specifying different minerals, however adding mineral species to a claim file is relatively straightforward (e.g., the owner of borate claims can add lithium to the claim).



The Exploitation Concessions of the Project are secured by NRG under a purchase option from Mr. Jorge Moreno (**Section 4.2**), a private borate producer focused on the exploration, exploitation and marketing of ulexite, a sodium-calcium borate mineral mainly used for the production of boric acid. Ulexite is produced from shallow surface mining, not by extraction of brines. For future exploration drilling, an EIA will be required, as well as adding the mineral species lithium to the claim file.

There are no private owners of the surface rights in the area of the project, and the surface area is therefore owned by the province, in which each concession is located.

#### **4.4 PROVINCIAL JURISDICTION**

The mining claims listed on **Table 4.1** are partially located within a zone of overlapping jurisdiction between Salta and Catamarca provinces. The northern border of Catamarca province overlaps the southern border of Salta province, and both provinces claim this area as part of their territory. As indicated by Vargas (2017) and in **Appendix A**, in this area, the mining claims applied for earlier prevail with respect to newer applications, regardless of which province the mining claims are requested in. According to Vargas (2017) in the latest ruling of the Supreme Court of Justice of the Republic of Argentina (“Supreme Court”), in 2015, in the case “Catamarca, Provincia de c/ Salta, Provincia de p/ ordinario”, the Supreme Court ruled that this dispute must be resolved by a law of the National Congress, pursuant to Article 75, Section 15 of the National Constitution.

As of the date of this legal opinion, both provincial governments are trying to resolve this issue in order to promote mineral development within the zone. Currently other companies are operating in the area.



#### **4.5 LEGAL TITLE OPINION**

NRG has requested a legal title regarding the concessions that comprise the Hombre Muerto North Project from Sr. Jorge Vargas Gei of the Vargas-Galíndez law firm of Mendoza, Argentina. The full legal opinion by Sr. Vargas is attached as **Appendix A**. A summary of the title opinion is as follows:

Some of the mining claims listed on **Table 4.1** are partially located within a zone of overlapping jurisdiction between Salta and Catamarca provinces. The northern border of Catamarca province overlaps the southern border of Salta province, and both provinces claim this area as part of their territory. In this area, the mining claims applied for earlier prevail with respect to newer applications, regardless of which province the mining claims are requested in.

- The Tramo concession is located entirely within Salta province,
- The Gaston Enrique, Viamonte and Norma Edith concessions are located within a zone of overlapping jurisdiction between Salta and Catamarca.
- The Alba Sabrina and Natalia Maria concessions are located mainly in Salta and partially within the zone of overlapping jurisdiction.

Vargas (2017) concludes that:

- Mr. Jorge E. Moreno and Ms. Alba Silvia Sala have good and valid, legal and beneficial title to the mining claims listed on **Table 4.1**.
- The mining claims listed on **Exhibit A (Appendix A)** are in good standing and comply with applicable regulations. Property coordinates (corners) are found on **Exhibit A (Appendix A)**.
- The mining claims listed on **Exhibit A (Appendix A)** are subject to the Moreno Option Agreement between NRG Metals Argentina S.A. and Mr. Moreno and Ms. Sala dated May 17, 2017 (**Exhibit B, Appendix A**). Other than the obligations arising out of the Moreno Option Agreement, the mining claims listed on Exhibit A are free and clear from any liens, charges or encumbrances, recorded in the relevant registries.



- The mining “fees” (“*canon*”) of the mining claims listed on **Exhibit A (Appendix A)** are up to date.
- Upon exercise of the purchase option by NRG Metals Argentina S.A. under the Moreno Option Agreement, Mr. Moreno and Ms. Sala have the obligation to transfer the mining claims to NRG Metals Argentina S.A.



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

### **5.1 ACCESSIBILITY AND LOCAL RESOURCES**

The Project area straddles the provincial limits of Catamarca and Salta. The nearest large city is Salta (608,000 inhabitants), located 170 km to the northeast of the Project area. The closest town is Antofagasta de La Sierra, which is 100 km south in Catamarca province. It has a population of 1,200 inhabitants with services such as a hospital, lodging facilities, and a school. The town can be reached following the unpaved Provincial routes RP-17 (Salta) and RP-43 (Catamarca).

Local resources in the area are very basic. Most supplies are brought from Salta or San Antonio de los Cobres (210 km). Several mine camps and a small village are powered locally by diesel generators; fuel is transported to mine camps by truck. These centers are: Tincalayu Mine (borate mine owned by Orocobre); Fenix Mine (production of lithium carbonate from brine by FMC Lithium); Galaxy's Sal de Vida camp (with little current activity); El Martillo camp (a borate operation owned by Santa Rita SRL); and the Diablillos camp (a currently unused silver-gold exploration project). Ciénaga Redonda village has some 20 permanent residents dedicated to llama and sheep herding. The local population in the Project area is very limited, estimated to be 10 to 20 people, scattered over a 1,000 km<sup>2</sup> area. A 3-km long airstrip, certified by the Argentina Air Force is located at the Fénix Mine camp. Workers employed at these existing mines are transported from the nearest towns (e.g., Antofagasta de La Sierra, San Antonio de Los Cobres and Salta).

The most common access to the area is from the city of Salta, along national route RN-51 for 230 km to Cauchari, passing through the towns of Campo Quijano and San Antonio de los Cobres. About 70% of Route 51 is paved and the remainder in fairly good condition. From



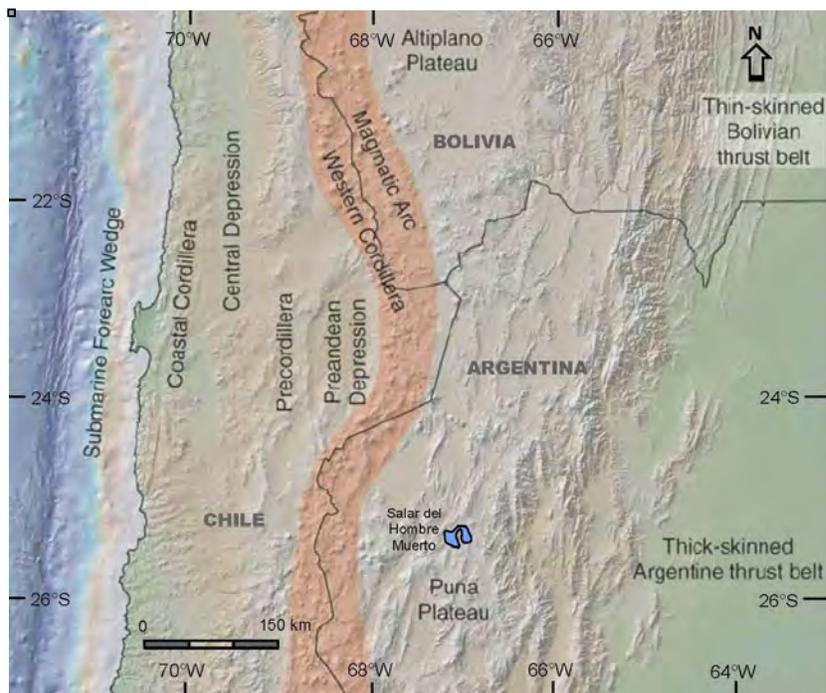
Cauchari, RP-70 is a wide and well maintained route leading south to Salar de Pocitos (50 km) and then RP-17, a gravel road leading to access road to the Tincalayu mine and the Alba Sabrina property. Access from the city of Antofagasta, Chile on the Pacific Coast is 330 km to the Sico Pass on the border between Chile and Argentina and then 220 km to the Project area (**Figure 4.1**).

## **5.2 PHYSIOGRAPHY**

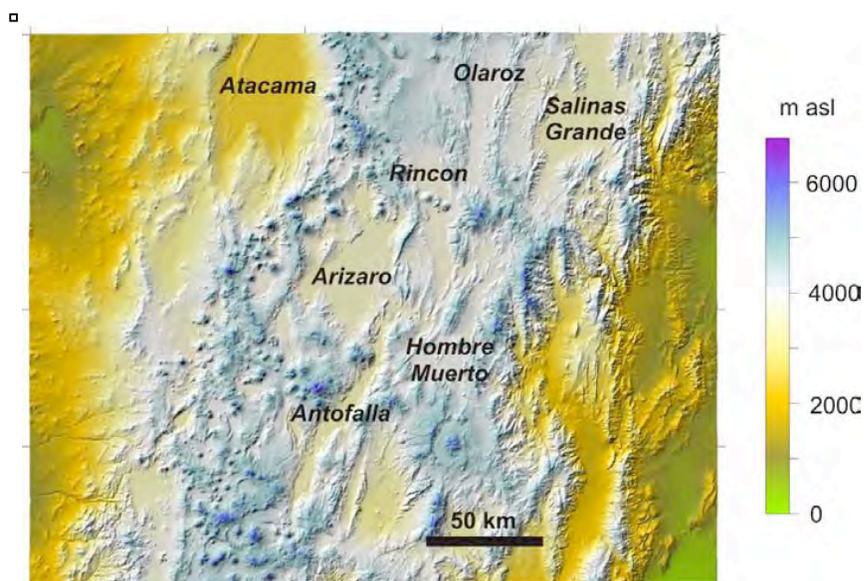
The Altiplano (Bolivia) or Puna (Argentina) region is a high elevated plateau within the Central Andes (**Figure 5.1**). The average elevation of the Puna is 3,700 masl and the Puna covers parts of the Argentinean provinces of Jujuy, Salta and Catamarca.

The Altiplano-Puna magmatic volcanic arc complex (commonly APVC in literature) is located between the Altiplano and Puna. It is associated with numerous stratovolcanoes and calderas. Recent studies have shown that the APVC is underlain by an extensive magma chamber at 4 to 8 km deep (de Silva et al., 2006) and potentially the ultimate source of anomalously high values of lithium in the region.

The physiography of the region is characterized by basins separated by mountain 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 (**Figure 5.2**).



**Figure 5.1. Physiographic and morphotectonic units of the Central Andes, showing the Altiplano-Puna plateau, and the magmatic arc**

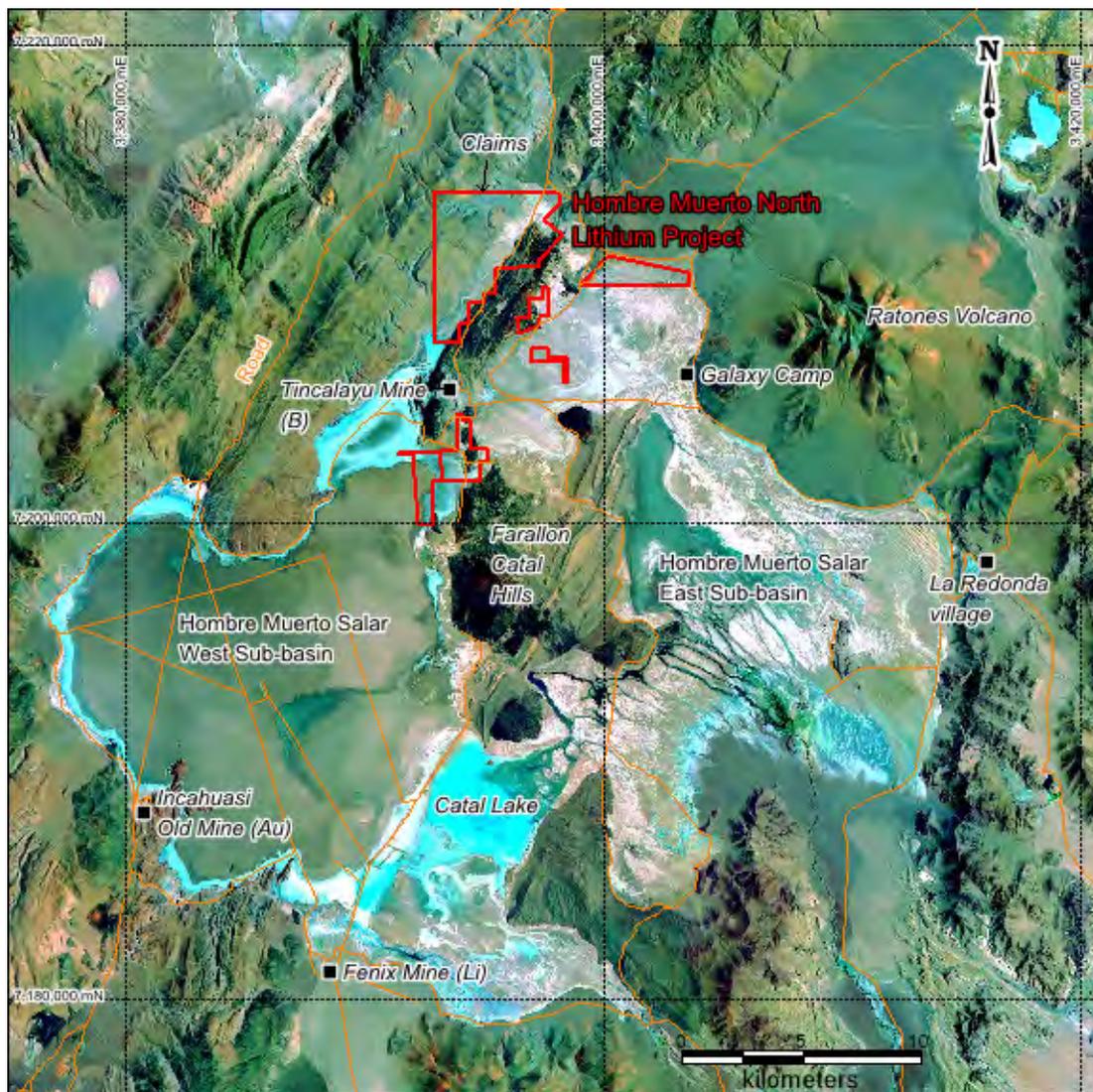


(Source: Houston and Jaacks, 2010)

**Figure 5.2. Digital elevation model of the Puna showing several salar locations**



The Project is located at the north part of the Salar del Hombre Muerto (**Figure 5.3**). The elevation at the surface of the salar is approximately 4,000 masl. The highest point near the Project is the Ratones volcano, located east of the properties at an elevation is 5,252 masl. The salar is fairly flat, disrupted at its center by hills of the Farallon Catal volcano reaching an elevation of 4,350 masl, and the Tincalayu peninsula located at the northern border with an elevation of 4,035 masl. The salar is located within a closed basin, with internal (endorheic) surface water drainage. Surface water inflow to the salar is marked by seasonal precipitation events, mainly in summer, and surface water mostly drains through the Rio Trapiche and Rio Los Patos located in the south and south-east part of the salar. Alluvial fans are developed in the area where these streams flow into the salar. The total area of the Salar del Hombre Muerto basin is 3,929 km<sup>2</sup> (Houston and Jaacks, 2010). The drainage within the salar is towards the interior where two lagoons are formed: Laguna Catal and Laguna Verde (Houston and Jaacks, 2010).



**Figure 5.3. Salar del Hombre Muerto and the Project properties**

### **5.3 CLIMATE**

The climate in the Project area is characterized as a cold, high altitude desert with sparse vegetation. Solar radiation is intense, particularly during the summer months of October through March, leading to extremely high evaporation rates. Strong winds are frequent in the Puna adding to rates to evaporation, reaching speeds of up to 80 km/hour during the dry season. During summer, warm to cool winds are generally pronounced after midday and winds are usually calm during the night. Based on data from the meteorological station located at the



Fenix Mine Camp (Conhidro, 2001), the mean annual precipitation in the area is 77.4 mm for the period between 1992 and 2001. The main rainy season is between December through March, when 82% of the annual rainfall occurs. The period between April and November is typically dry. Annual temperature average is about 5°C (Table 5.1).

**Table 5.1. Mean daily temperatures - Fenix Mine Camp meteorological station**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1992	10.9	10.3	8.3	3.9	1.8	-0.6	-2.8	-0.5	1.1	5.9	7.8	9.9	4.7
1993	11.5	9.1	9.2	5.6	1.9	0.9	-0.6	1.3	2.6	7.1	8.9	11.3	5.7
1994	12.1	10.7	8.7	5.8	2.9	0.7	0.1	1.7	5.7	5.7	8.5	12.4	6.3
1995	13.0	9.8	8.8	5.2	2.5	0.9	-1.0	2.7	5.1	6.7	9.9	8.9	6.0
1996	11.1	11.8	8.3	5.7	2.0	-1.2	-1.5	1.1	2.6	6.3	8.6	10.8	5.5
1997	13.6	12.1	7.9	6.6	0.6	-1.4	.02	1.6	4.7	4.5	8.2	9.4	5.7
1998	13.8	11.6	9.5	6.6	1.2	-0.4	-0.9	-1.5	0.6	3.6	6.4	8.5	4.9
1999	8.9	11.1	10.7	5.0	1.4	-3.0	-4.6	-1.0	1.6	5.0	4.6	7.5	3.9
2000	11.2	11.2	8.1	5.2	1.1	-2.0	-3.8	-1.8	0.2	4.4	4.4	9.0	3.9
2001	10.6	12.0	11.2	5.9	1.0	-1.6	-1.5	-0.3	2.8	4.8	7.0	8.6	5.0
<b>Mean</b>	<b>11.6</b>	<b>10.9</b>	<b>9.0</b>	<b>5.5</b>	<b>1.6</b>	<b>-0.8</b>	<b>-1.6</b>	<b>0.3</b>	<b>2.7</b>	<b>5.4</b>	<b>7.4</b>	<b>9.6</b>	<b>5.2</b>

(Source: Conhidro, 2001)

## **5.4 VEGETATION**

Due the extreme weather conditions in the region, the predominant vegetation is high-altitude xerophytic type plants, dominated by woody herbs of low height from 0.40 to 1.5 m, grasses, and cushion plants. Due to the high salinity on the salar surface, the core area of the salar is devoid of vegetation.

A study carried out in the project area by de la Fuente in 2008 identified three main vegetation zones, which he described as follows:

**High Soil Moisture Zone:** Areas near flowing streams, lakes and springs where increased humidity favors plant growth and increased volume and number of plant species. Plant species detected in this zone include: añagua (*Adesmia horridiuscula*), tolilla (*Fabiana densa*), ricarica (*Acantholippia hastulata*), suriyanta (*Nardophyllum armatum*) and grass-like “iro” or “paja



iru” (*Festuca orthopylla*). Approximately 35% of the area in this zone is currently covered by vegetation.

**Salar Surface Zone:** (currently being mined for ulexite). Areas contain sparse and sporadic occurrences of vegetation, including yaretilla (*Frankenia triandra*). Approximately 0.5% of this area is covered by vegetation.

**Foothills Zone:** (in the vicinity of current ulexite mining). Approximately 20% of the area in the Hombre Muerto and Farallon Catal area is covered by vegetation and consists of ñagua (*Adesmia horridiuscula*) and tola (*Parastrephia phylliciformis*).

## **5.5 FAUNA**

The fauna of the Puna is characterized by adaptation to extreme living conditions as a result of the severe aridity, intense sunlight during the day and very low temperatures at night. Many animals have nocturnal habits and live sheltered by rocks. Others live below the surface or acquire certain physiological behavior allowing them to withstand the harsh environment.

Cabrera and Willink (1980) describe the animal species in the Puneña biogeographic province. In the Salar del Hombre Muerto region, camelids exist such as vicuña (*Vicugna vicugna*) and llama (*Lama glama*), the latter domesticated. Fox (*Dusicyon Lycalopex*) representing a carnivorous species is also present in the area.

Among the rodent family common to the Project location is the mole, Oculito or Tuco-Tuco (*Ctenomys opimus*), which can contribute to desertification as it feeds on roots of local flora. Additionally, and the Puna mouse (*Auliscomys sublimis*) live in the region.

Birds found in the region include the Parina or Pink Flamingo (*Andean flamingo*), which live in moist and saline lagoons, and the Andean Goose, Guayata or Huallata (*Chloephaga*



*melanoptera*). The queu or quevo (*Tinamotis pentlandi*) inhabits the highlands and is similar to a large partridge. The ñandú enano, comparable to the species *Pterocnemia pennata* (classification is questioned) and similar to the ostrich, inhabits the lower plains of the region. Small parrots, pigeons and owls exist as sporadic inhabitants.

The donkey (*Equus africanus asinus*) is a species introduced by inhabitants of the area. Although domesticated, it competes for food with llamas and vicuñas.

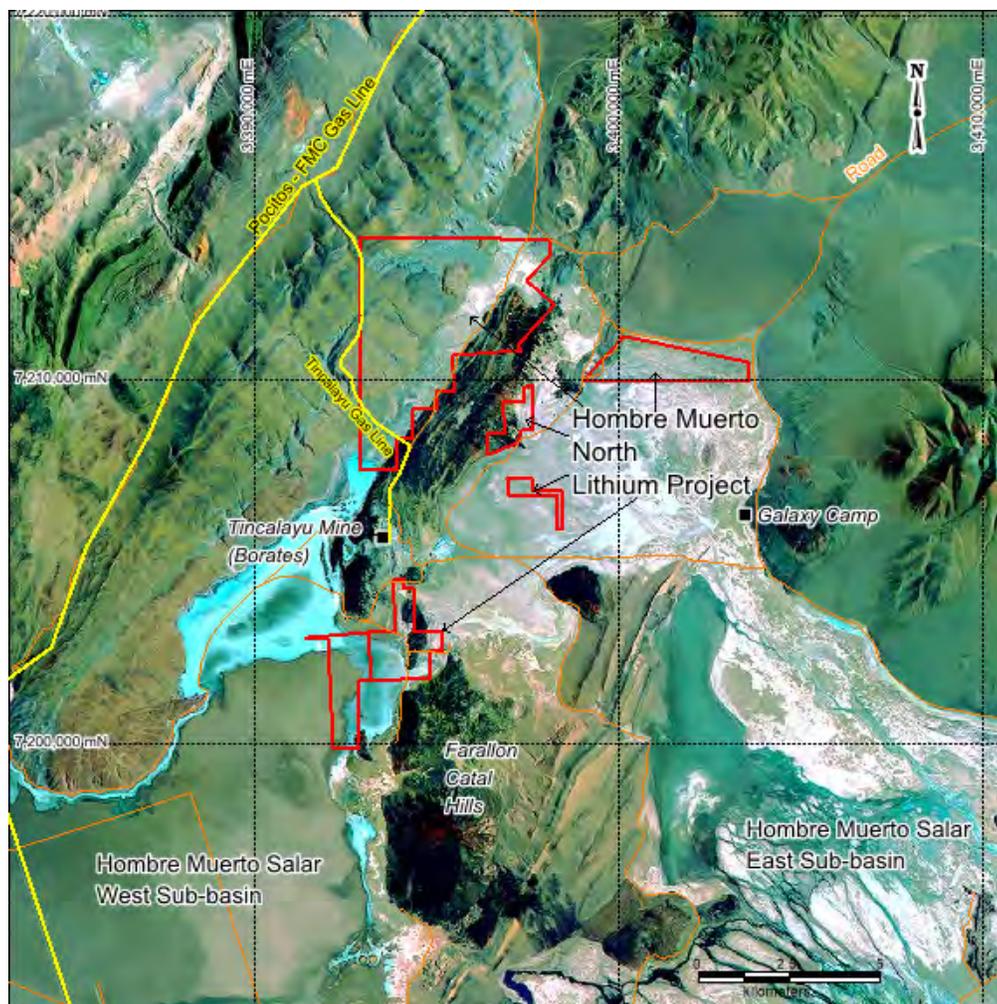
## **5.6 INFRASTRUCTURE**

### **5.6.1 Electrical Power**

The 600 megawatt (Mw), 375 kilovolt (Kv) power line between Salta and Mejillones in Chile passes about 160 km north of the Property. The line was built in the 1990's with the aim of transporting energy from Argentina to Chile, but it was out of service by 2009 due to difficulties with the energy policy of previous local governments. In February, 2016, the line resumed operation and reportedly transmits 110 Mw from Mejillones to the Argentinean Interconnected System. In the event that a power supply for mining operations is required, a special line must be constructed for service (Rojas, 2017). Currently, Salta province and private companies, such as Total Eren, are considering a new gas pipeline and power distribution project that would use 32% renewable energy. The project could be completed in 18 to 24 months. NRG is being considered as a potential future off-taker.

### 5.6.2 Natural Gas Pipeline

A natural gas line (Gasoducto de la Puna) passes through San Antonio de los Cobres and Estación Salar de Pocitos, and it is connected to Orocobre's Tincalayu borate mine via a 5-inch diameter pipeline. This pipeline crosses over the Alba Sabrina property (**Figure 5.4**).



(Source: SEGEMAR and REMSA)

**Figure 5.4. Map showing gas pipeline connection to Tincalayu Mine in the vicinity of the Project properties**



### **5.6.3 Railway Antofagasta-Salta**

An existing railroad between Salta, Argentina and Antofagasta, Chile is administrated by two companies: the Chilean *Ferrocarril Antofagasta – Bolivia* (Chilean Luksic Group) and the Argentinean state owned *Ferrocarril General Belgrano* (Rojas, 2017). It consists of a narrow-gauge railway connecting Antofagasta, Chile on the Pacific coast to northern Argentina in addition to connections to Buenos Aires on the Atlantic coast (**Figure 4.1**). The railway presently is being reactivated with agreements between the regional governments. The Chilean part has been used for hauling copper cathodes and providing general supplies for the Escondida and Zaldívar mines in Chile. More recently, it has worked intermittently transporting borates, fruit, cattle and grains between Salta and Antofagasta. Transportation costs to the Pacific coast and the port of Antofagasta using this link would undoubtedly benefit a lithium operation at the Project, as well as other projects in the Puna.

### **5.6.4 Road Connections**

The Project is connected to Salta, Salar de Pocitos and San Antonio de los Cobres by the way of a well maintained, paved and unpaved road network. Provincial Route 17, which is a gravel and dirt road, passes within 10 km of the Project.

### **5.6.5 General Services**

**Water Supply:** Fresh water in the area near the Project is scarce. Water for human consumption is brought from Salta; water for general use and camp needs can be provided by a spring managed by Orocobre’s Tincalayu operations, some 5 km north of the Project property areas. Depending on Project requirements for brine processing, additional freshwater sources may be required from freshwater wells on Project properties.

**Camp:** There are no camp facilities on site at this time. As the Project evolves, a camp will be required to support basic needs for exploration activities. Communications by satellite



phone are available in the area; communication and internet systems have been used by nearby camps.



## 6. HISTORY

There has been no past exploration or mining for lithium brines on the Project properties, although the nearby Fenix Mine (FMC Lithium) has been reportedly producing about 10,000 tonnes of lithium carbonate per year since 1996; and the company is reportedly planning to increase output to 30,000 tonnes per year in 2017.

In 1954, Rio Tinto through its subsidiary Boroquimica SAMICAF (more recently Borax Argentina S.A.) initiated industrial production of borates (tincal or borax) at the Tincalayu mine in Salar del Hombre Muerto. The Tincalayu mine is located approximately halfway between the Alba Sabrina and Viamonte concessions (**Figure 4.2**). The mine is presently operated by Borax Argentina S.A., which is a local subsidiary of Orocobre Limited.

In 1979, the Dirección General de Fabricaciones Militares conducted an exploration program covering a number of salars in the Puna region, including Salar del Hombre Muerto East and Salar del Hombre Muerto West. The work included mapping and surface sampling, and collection of brine samples from the salar surface and from hand-dug pits.

One Borax S.A., a private company owned by Jorge Moreno of Salta, Argentina, has mined borates (ulexite) at the Project Tramo property area on the northeastern border since 2007.

## 7. GEOLOGICAL SETTING

### 7.1 REGIONAL GEOLOGY

The geological evolution of the Puna region includes a long history as summarized by Kasemann et al., 2004 (**Figure 7.1**). For the purpose of this report, the geological evolution is presented from Jurassic to Recent, as this time span is considered the relevant period for discussion of the salar brine evolution in the Puna.

#### 7.1.1 Jurassic and Cretaceous

The Andes have been part of a convergent plate margin since early Jurassic, and both the volcanic arc and the associated sedimentary basins developed as a result of subduction processes. An island arc formed up along the western coast of South America during all the Jurassic (195 to 130 Ma). During mid-Cretaceous (125 to 90 Ma), the magmatic arc moved eastward (Coira et al., 1982). An extensional regime persisted through the late Cretaceous generating back-arc rifting and grabens (Salfity and 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, 2002).

#### 7.1.2 Paleogene

During the late Cretaceous to Eocene (78 to 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) mainly in the west, with associated uplift to perhaps 1,000 m (Gregory and Wodzicki, 2000) creating a major north-south watershed. Coarse clastic continental sediments eroded from the uplifted ridge indicate eastward transport in Chile and Argentina (Jordan and Alonso, 1987). The subsequent initiation of shortening and uplift in the Eastern Cordillera of Argentina (approximately 38



### **7.1.3 Neogene**

By the late Oligocene to early Miocene (20 to 25 Ma), the volcanic arc switched to its current location in the Western Cordillera. At the same time, significant shortening across the Puna on reversed thrusts led to the initiation of separated depositional centers. Major uplift of the Altiplano-Puna plateau began during the middle to late Miocene (10 to 15 Ma), perhaps reaching 2,500 masl by 10 Ma, and 3,500 masl by 6 Ma (Garziona et al., 2006). The late Miocene volcanic flare-up (5 to 10 Ma), centered on the Altiplano-Puna magmatic volcanic arc complex (APVC) between 21° to 24° S latitude (de Silva, 1989), produced large concentrations of both caldera subsidence and associated extensive ignimbrite sheets, as well as andesitic-dacitic stratovolcanoes.

The Puna volcanic activity was frequently constrained by major NW-SE crustal megafractures (Chernicoff et al., 2002). During the early to middle Miocene, redbed sedimentation is found throughout the Puna, Altiplano and Chilean Pre-Andean Depression (Jordan and Alonso, 1987). As thrust faulting, uplift and volcanism intensified during the middle to late Miocene, the sedimentary basins became isolated, 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 sand and mud-flat 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 pattern, a global scale tropical atmospheric circulation that features air rising near the equator (Hartley et al., 2005), and the Andean uplift where all flow of moisture from Amazonia to the southwest has been blocked, leading to increased aridity since at least 10 to 15 Ma. The combination of internal drainage and hyper-arid climate led to the deposition of evaporite precipitates in many of the Puna and Altiplano basins.

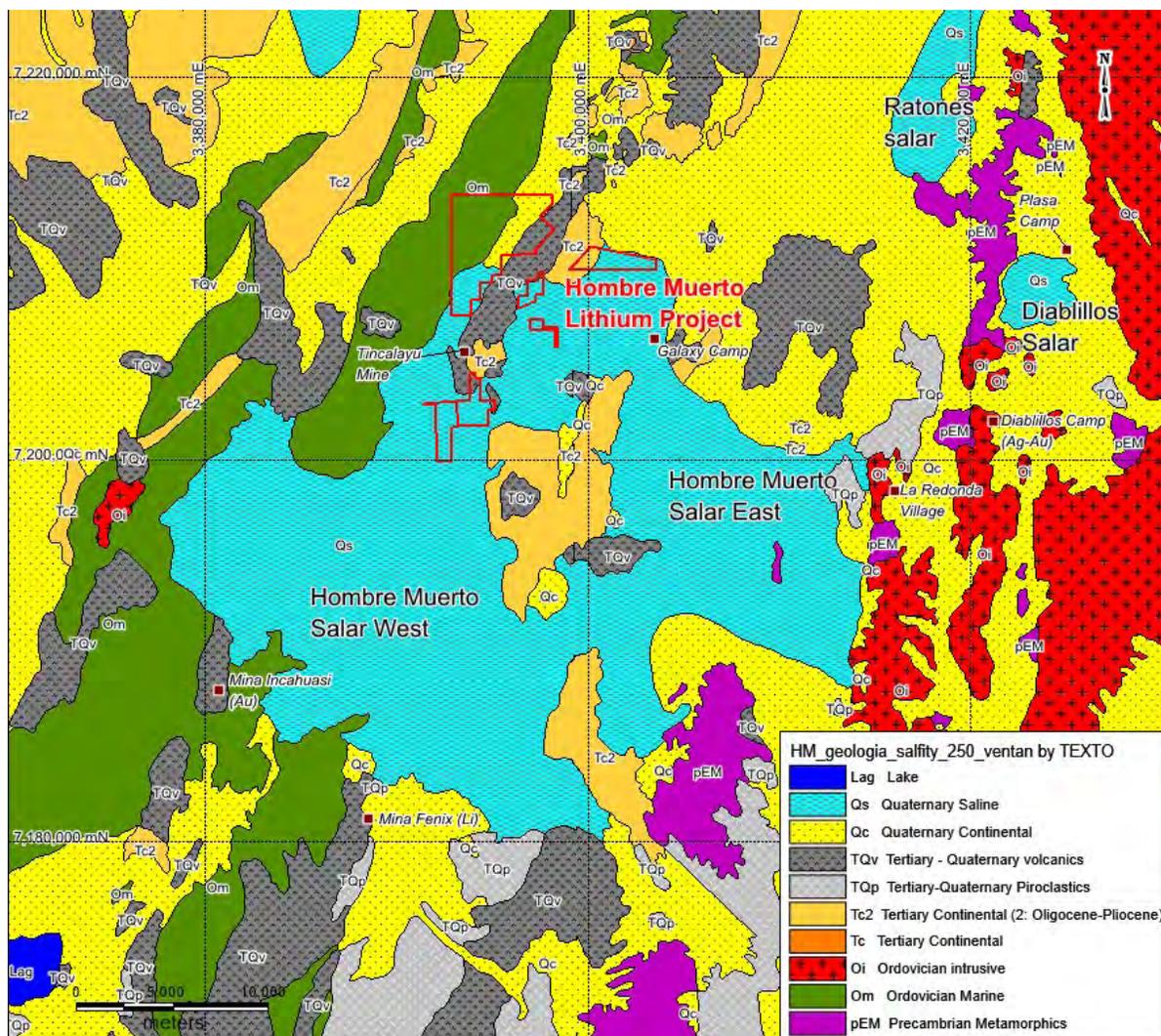
### **7.1.3 Late Neogene and Quaternary**

During the Pliocene to Pleistocene, deformation occurred as a result of shortening, and the once humid environment moved out of the Puna and into the Santa Barbara system (eastwards). The Santa Barbara system is a 400 km long segment of the Sub-Andean foreland thrust belt. At the same time, a fluctuating climate regime initiated with short periods of wetter conditions alternating with drier ones. As a result of both reduced tectonic activity and frequent aridity, a reduction in erosion and accommodation space meant that sediment accumulation in the isolated basins was limited. Nevertheless, solute dissolution of basin sediments continued, eventually concentrating brine in aquifers comprising salar centers where evaporative flux drives outflow from the basin. Evaporite minerals occur both disseminated within clastic sequences and as discrete beds. The earliest record of evaporite formation is middle Miocene, with frequency and magnitude tending to increase during the Late Neogene to Quaternary (Alonso et al., 1991; Vandervoort et al., 1995; Kraemer et al., 1999). The thick halite sequences in the Salares del Hombre Muerto and Atacama suggest that they have mostly formed since 100 Ka (Lowenstein, 2000; Lowenstein et al., 2001).

### **7.2 GEOLOGY OF SALAR DEL HOMBRE MUERTO BASIN**

The oldest rocks cropping out at the Salar del Hombre Muerto basin envelope are schist and migmatites interbedded with metamorphic limestone and amphibolites (**Figure 7.2**). This metamorphic sequence, which is Neoproterozoic in age, is known as the Pachamama Formation. Occurrences of these rocks stand along the east flank of the Hombre Muerto salar. Metasedimentary rocks assigned to the lower Paleozoic outcrop at the northwest border of the salar and are assigned to the Tolillar Formation. This formation, mainly volcanoclastic sandstone with subordinate sandstone beds, occurs over the northern border of the salar. Overlaying this clastic sequence is the Ordovician sedimentary sequence of the Falda Ciénaga Formation composed of greywacke, tuff and volcanoclastic sandstones. Rocks of this formation are widespread along the eastern flank of the salar. Conglomerates and red sandstones assigned to the middle Eocene lie unconformably over the Ordovician sediments. These rocks are

assigned to the Geste Formation, which crops out in the northern limits of the salar. The Geste Formation is overlain by conglomerates, sandstone, and red clays with gypsum assigned to the Vizcachera Formation.



(Source: Salfity, 2009)

**Figure 7.2. Generalized geological map showing Salar del Hombre Muerto**



The Catal Formation, conglomerates with sandstones interbedded with ignimbrite flows and volcanoclastic rocks, overly the Vizcachera Formation. This formation occurs in the central portion of the Salar and forms the Farallon Catal hills. Two age dates, one at the bottom and the other at the top of the Catal Formation show  $15.0 \pm 0.2$  Ma and  $7.2 \pm 1.4$  Ma respectively (Donato and Vergani, 1985; Hongn and Seggiaro, 2001).

The clastic sediments and evaporitic rocks of the Sijes Formation occur along the Peninsula de Tincalayu, located in the northern portion of the salar. The sequence contains the borate deposit currently being exploited in the Tincalayu Mine. The age of this sequence is reported at  $5.86 \pm 0.14$  Ma (Watson, in Alonso et al. 1984a).

Dacites and andesites of the Tebenquicho Formation crop out in the southern border of the salar, along the Hombre Muerto peninsula. The age of these rocks is reported as  $14 \pm 5$  and  $11 \pm 1$  Ma (Gonzales, 1983). The Ratones Andesite, which occurs in the northeast border of the basin, and constitutes the volcano of the same name, has been dated at  $7.1 \pm 0.2$  Ma (Gonzales, 1984). The dacitic ignimbrites assigned to the Cerro Galan Volcanic Complex, have a widespread occurrence in the area, and constitute the eastern border of the salar. A radiometric age date obtained by the K-Ar method is reported as  $2.56 \pm 0.14$  Ma, with an Rb-Sr isochrons reports at  $2.03 \pm 0.07$  Ma (Francis et al. 1983; Sparks et al. 1985). The Quaternary deposits are represented by clastic sediments, evaporites and basaltic lava flows with an age of  $0.754 \pm 0.2$  Ma (Alonso et al. 1984b).

The basement outcrop known as Farallon Catal (approximately  $72 \text{ km}^2$ ), located at the central portion of the salar, divides the basin in two parts, locally named as *Subcuenca Occidental* (Western sub-basin) and the *Subcuenca Oriental* (Eastern sub-basin). The sub-basins differ in their sedimentology: the Eastern Sub-basin consists largely of clastic sediments, borate precipitates and limited halite, while the Western Sub-basin is dominated by halite with little clastic material.



Geophysics, drilling and trenching results carried out during the evaluation of the Fenix Lithium plant (FMC Lithium) confirm the asymmetric distribution of the minerals that occurs in the salar surface. Drilling results from the Western Sub-basin indicate that halite occurs throughout to depths of 30 to 50 m, with one well penetrating 90 m of halite. Gravity geophysics suggests that the core of the salt body could have a depth of up to 900 m in the Western Sub-basin.

### **7.3 GEOLOGY OF THE PROJECT AREA**

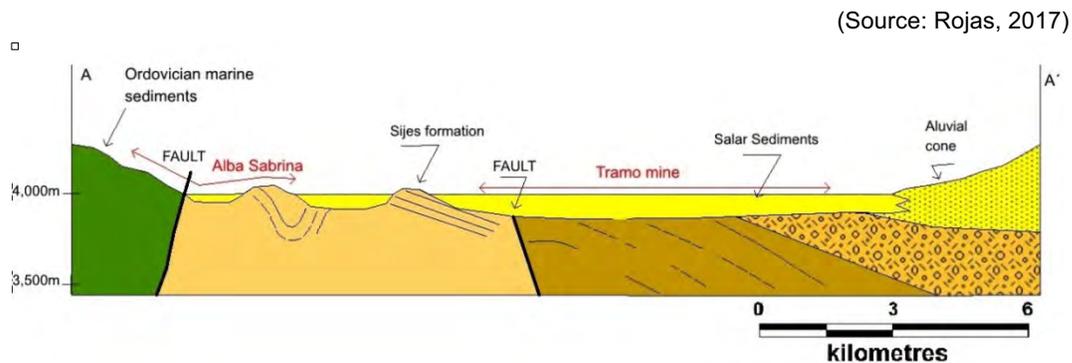
The following describes the geological units cropping out in the Project property areas, listed from the oldest to youngest (**Figures 7.2 and 7.3**):

**Cordon del Gallego Range:** located in the western part of the Project, it consists of Ordovician marine sediments (shales and quartzites) assigned to the Falda Ciénaga Formation. This unit constitutes the basement in this region of the Puna. Bedding strikes NNE-SSW, appears folded and typically dips west.

**Farallón Catal Range:** located in the central part of the Salar, these rock outcrops are assigned to the middle Miocene Farallón Catal Formation, which is composed of a Lower Member (Tfc1) of pale brown sandstones with abundant muscovite, red claystones and intercalated gypsum beds, and an Upper Member (Tfc2) built up of a basal welded tuff and ignimbrite dating, 11.3 Ma (K/Ar method), followed by dominant conglomerate, sandstone and red clays dominating towards the top. This unit has a NNE-SSW strike and dips 40° to 50° east.

**Peninsula Tincalayu:** these rocks are assigned to the Sijes formation (TSi), 5.8Ma in age, and are sandstones, red and green argillites, tuffs, borates, gypsum and halite. The inferred thickness is over 300 m. This unit was described in detail at the Tincalayu borate mine; the beds are faulted and folded and have a general NNE-SSW strike.

At the western slope of Ratones Volcano, black to black-grey andesitic lava flows are outlined as Ratones Formation (Tva, 7 to 4 Ma). In the Tincalayu peninsula and in the western sector of the Farallón Catal Range, dark grey lava flows crop out and are assigned to the Carahuasi Formation with an estimated age of 1.0 to 0.1 Ma. In some salar areas, horizontal Quaternary terraces are evident with layers of argillite, sandstone and travertine.



**Figure 7.3. West-East interpretive section of the north part of the Project**

Outside of the Salar del Hombre Muerto, extensive outcrops of unconsolidated gravel and sand correspond to alluvial fan sequences. Finally, unconsolidated sediments developed over the salar surface consisting of red, green and black clay (mixed with black organic matter), silt, fine red to brown sand with small crystals of gypsum, and borates (ulexite). Layers of ulexite occur as material up to 0.5 m thick or nodules several centimeters in diameter (locally referred to as “cotton balls”). Towards the edges of the salar, an extensive plateau of cream-colored travertine is present with more than 1.0 m thickness. To the south of the Tincalayu peninsula a saline crust crops out; however, it may be temporary as characteristics of the salar surface can change annually due to seasonal flooding.



## 8. DEPOSIT TYPE AND CONCEPTUAL MODEL

The deposit type is a brine aquifer within a salar basin.

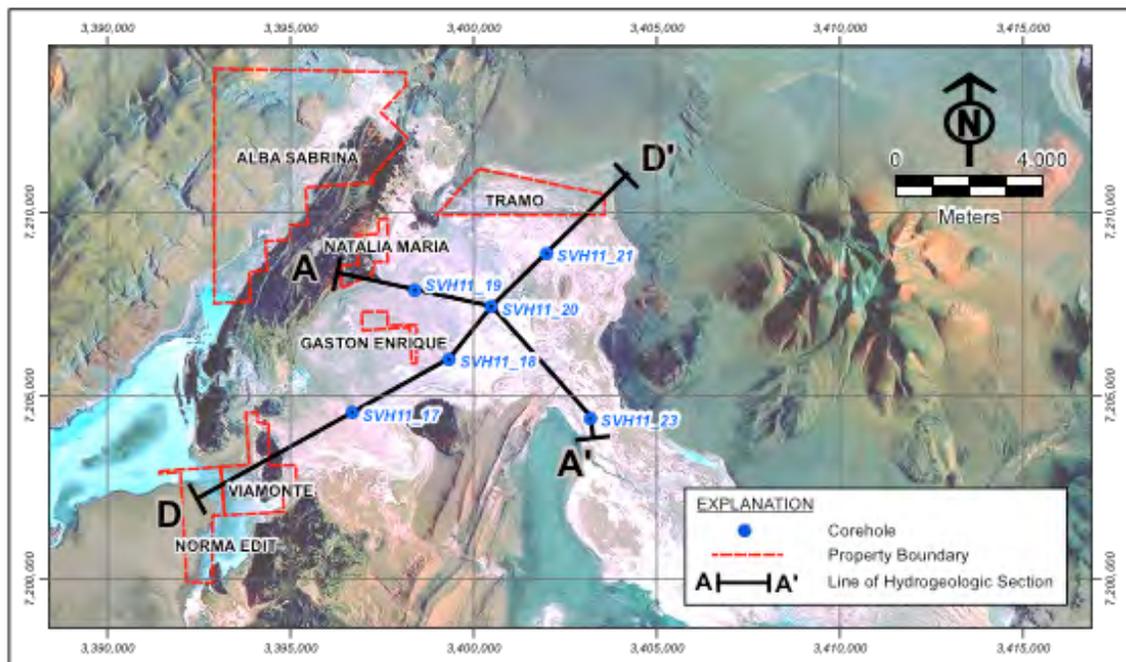
### **8.1 CONCEPTUAL MODEL OF SALAR BASINS**

The conceptual model for the Hombre Muerto basin, and for its brine aquifer, is based on exploration of similar salar basins in Chile, Argentina, and Bolivia. Salar basins are characterized by closed topography and interior drainage. The lowest exposed portions of these basins may contain salt encrusted playas, or “salars”. Typically, no significant groundwater discharges from these basins as underflow. All groundwater discharge that occurs within the basin is evaporated. All surface water that flows into the basin is either evaporated directly, or enters the groundwater circulation system and is evaporated at a later time.

Salar basin locations and basin depths are typically structurally controlled, but may be influenced by volcanism that may alter drainage patterns. Basin-fill deposits within salar basins typically contain thin to thickly bedded evaporite deposits in the deeper, low-energy portion of the basin, together with thin to thickly bedded low-permeability lacustrine clays. Coarser-grained, higher permeability deposits associated with active alluvial fans can typically be observed along the edges of the salar. Similar alluvial fan deposits, associated with ancient drainages, may occur buried within the basin-fill deposits. Other permeable basin-fill deposits which may occur within salar basins include pyroclastic deposits, ignimbrite flows, lava-flow rocks, and spring deposits.

### **8.2 CONCEPTUAL MODEL OF HOMBRE MUERTO BASIN**

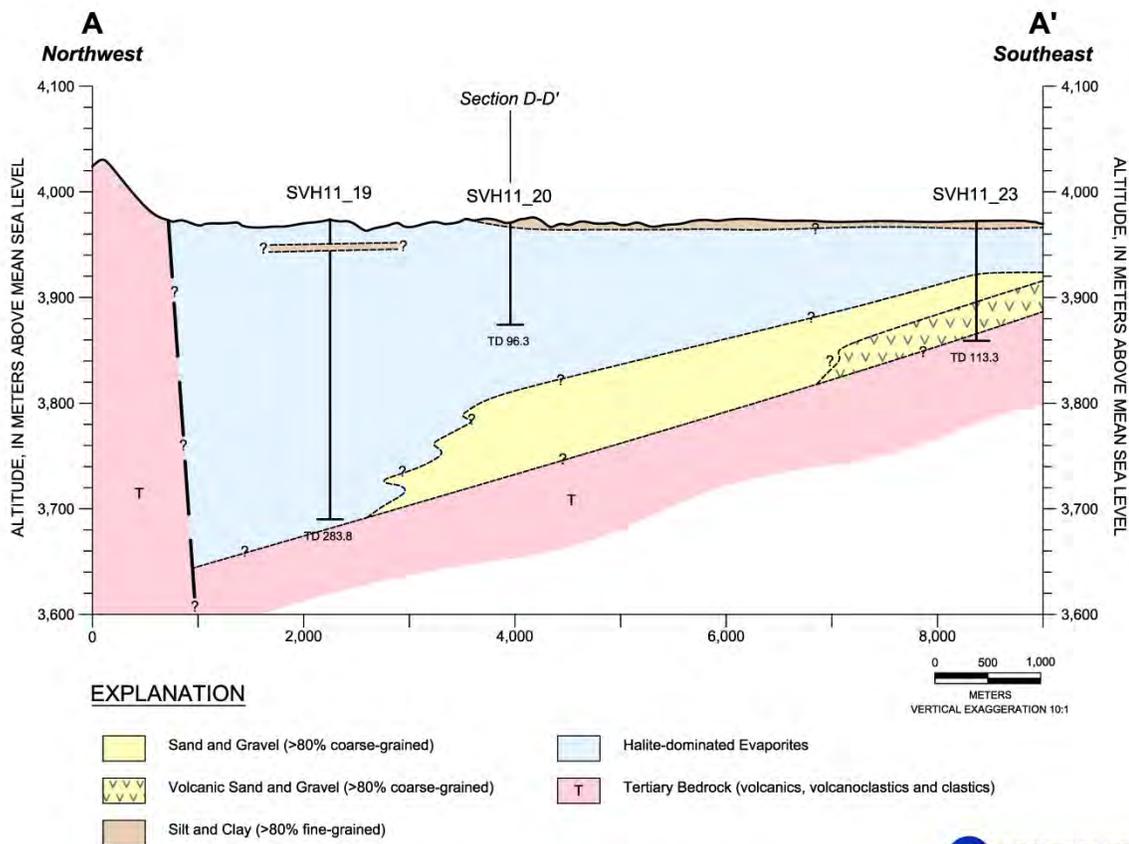
Conceptual hydrogeologic sections were prepared incorporating results of exploration drilling at the Sal de Vida project (M&A and GAI, 2012). Location of sections are shown on **Figure 8.1**; sections are shown on **Figures 8.2 and 8.3**.



(Modified from M&A and GAI, 2012)

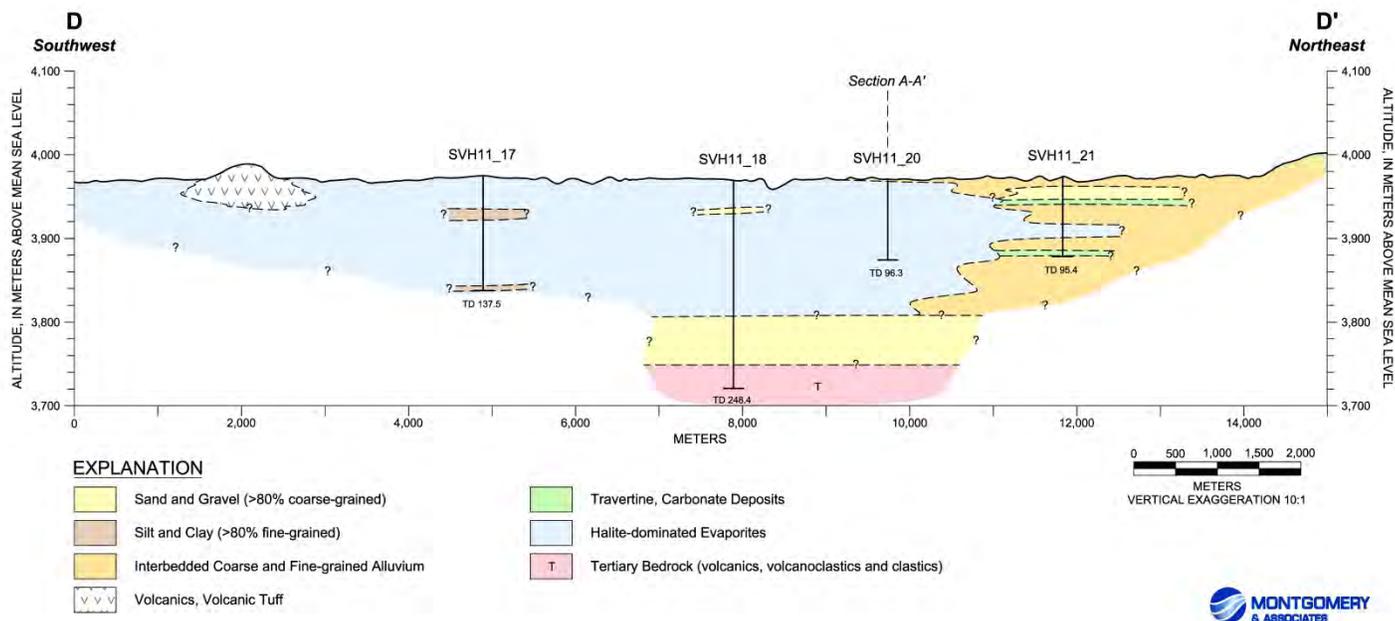
**Figure 8.1. Map of showing location of hydrogeologic sections**

□



(Source: M&A and GAI, 2012)

**Figure 8.2. Hydrogeologic section A-A'**



(Source: M&A and GAI, 2012)

**Figure 8.3. Hydrogeologic section D-D'**

The Hombre Muerto basin has an evaporite core that is dominated by halite. Basin margins are steep and are interpreted to be fault controlled. The east basin margin is dominated by Precambrian metamorphic and crystalline rocks. Volcanic tuff and reworked tuffaceous sediments, together with tilted Tertiary rocks, are common along western and northern basin margins. In the Sal de Vida project area, dip angle of Tertiary sandstone is commonly about 45 degrees to the southeast. Porous travertine and associated calcareous sediments can occur in the subsurface and are flat lying. These sediments form a marker unit that is encountered in some locations. Five boreholes located near basin margins have completely penetrated the flat-lying basin-fill deposits. These boreholes, at their maximum depths, reach tilted Tertiary sandstone, volcanic tuff, or micaceous schist.



Metamorphic and crystalline bedrock along the east basin margin are expected to have low hydraulic conductivity and should approximate a “no-flow” groundwater boundary during extraction of brine from basin fill deposit aquifers by pumping wells. Tertiary sediments along the west and north basin boundaries exhibit drainable porosity, and conceptually approximate “low-flow” boundaries that are expected to contribute brine to the basin fill deposit aquifers.

Fine-grained lacustrine deposits are common throughout the exposed basin floor of Salar del Hombre Muerto. These deposits are interpreted to have low hydraulic conductivity. In many parts of the basin, this surface is believed to restrict downward flow of freshwater from the Rio de los Patos that enters the basin from the southeast and flows across the salar toward the north and west. In addition, hydraulic conductivity in the vertical direction of groundwater flow ( $K_z$ ) is typically less than hydraulic conductivity in the horizontal direction ( $K_h$ ). For layered sediments, such as occur in Salar del Hombre Muerto, the ratio  $K_z/K_h$  is commonly 0.01 or less (Freeze and Cherry, 1979, p. 34). The low vertical permeability of the salar sediments, combined with the density difference between surface water inflow and deep brine, restrict the vertical circulation of fresh water entering the salar from Rio de los Patos.

The principal sources of water entering the Hombre Muerto basin are the surface water inflows, and groundwater inflow from natural recharge along the mountain fronts via alluvial fans. Drill results, indications from vertical electrical soundings, and density relations interpreted in previous studies for the Sal de Vida project suggest restricted vertical circulation of lower density water entering the basin and diluting brine mineral resources.

### **8.3 ASSIGNMENT OF HYDROGEOLOGIC UNITS**

Results of diamond drilling on NRG’s Tramo concession indicate that basin-fill deposits in the north part in Salar del Hombre Muerto can be divided into hydrogeologic units that are dominated by three lithologies, all of which have been sampled and analyzed for both drainable



porosity and brine chemistry. Predominant lithologies, meters drilled, and number of analyzes are given in the following table:

**Table 8.1. Sample data for hydrogeologic units**

<b>PREDOMINANT LITHOLOGY OF HYDROGEOLOGIC UNITS</b>	<b>METERS DESCRIBED OF LITHOLOGIC UNIT</b>	<b>NUMBER OF DRAINABLE POROSITY ANALYSES</b>	<b>NUMBER OF BRINE CHEMISTRY ANALYSES</b>
Sand, silty sand and sandstone	274.1	14	18
Halite or other evaporite	108.5	1	3
Conglomerate, sand and gravel	245.2	5	14



## 9. EXPLORATION

Historically, exploration was carried out by Lithium One (Galaxy Resources) near the Tramo concession and is available in public reporting (M&A and GAI, 2012). This includes surface brine samples over some Project properties, however, these are not considered as part of this Report. Previous exploration work completed for the Project included 20 geochemical brine samples conducted during two sampling rounds in 2016 and 2017, and the completion of a 10-station CSAMT survey along two section lines, and previously reported by Montgomery & Associates (2017). A third surface sampling round conducted in 2018 was reported by NRG in a press release dated January 16, 2018 and is reported here for the first time in a 43-101 report.

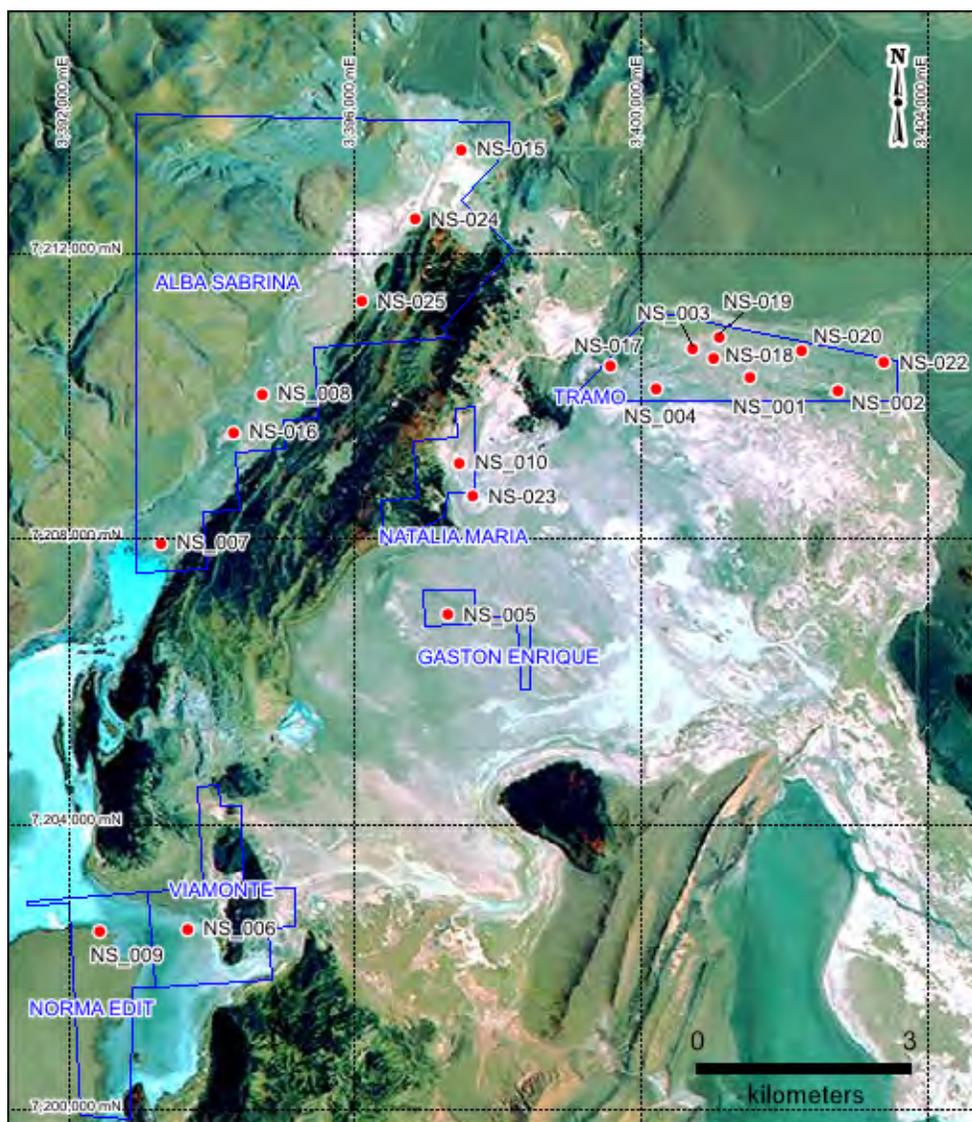
### **9.1 GEOCHEMICAL SAMPLING – 2016 AND 2017**

Locations and geological descriptions for each of the samples collected on Project properties are shown in **Figure 9.1** and **Table 9.1**. Geochemical results for main anions, density and conductivity values are given in **Table 9.2**. Results of laboratory analyses for lithium concentrations are shown on **Figure 9.2**. Analytical results from the laboratory are provided in **Appendix B**.

The first brine sampling round was completed on October 3 and 4, 2016, in dry salar conditions by Sergio Lopez a consulting geologist contracted by Jorge Moreno and Nivaldo Rojas, a consulting mining engineer and former QP contracted by Jorge Moreno. The first round of sampling comprised 10, 1-liter samples collected from pits excavated using shovel and manual auger drilling methods; samples NS\_001, to NS\_010 were obtained (**Tables 9.1 and 9.2**). These samples returned positive lithium results and led to a second round of sampling.

The second round of sampling was conducted by Pedro Ruiz on January 31 through February 2, 2017, during the rainy season, and included collection of 10 samples, NS\_015 to NS\_20 and NS\_022 to NS\_025 (**Tables 9.1 and 9.2**). Mr. Ruiz is a consulting geologist contracted by Jorge Moreno. The second round of sampling was only partially completed due the incidence

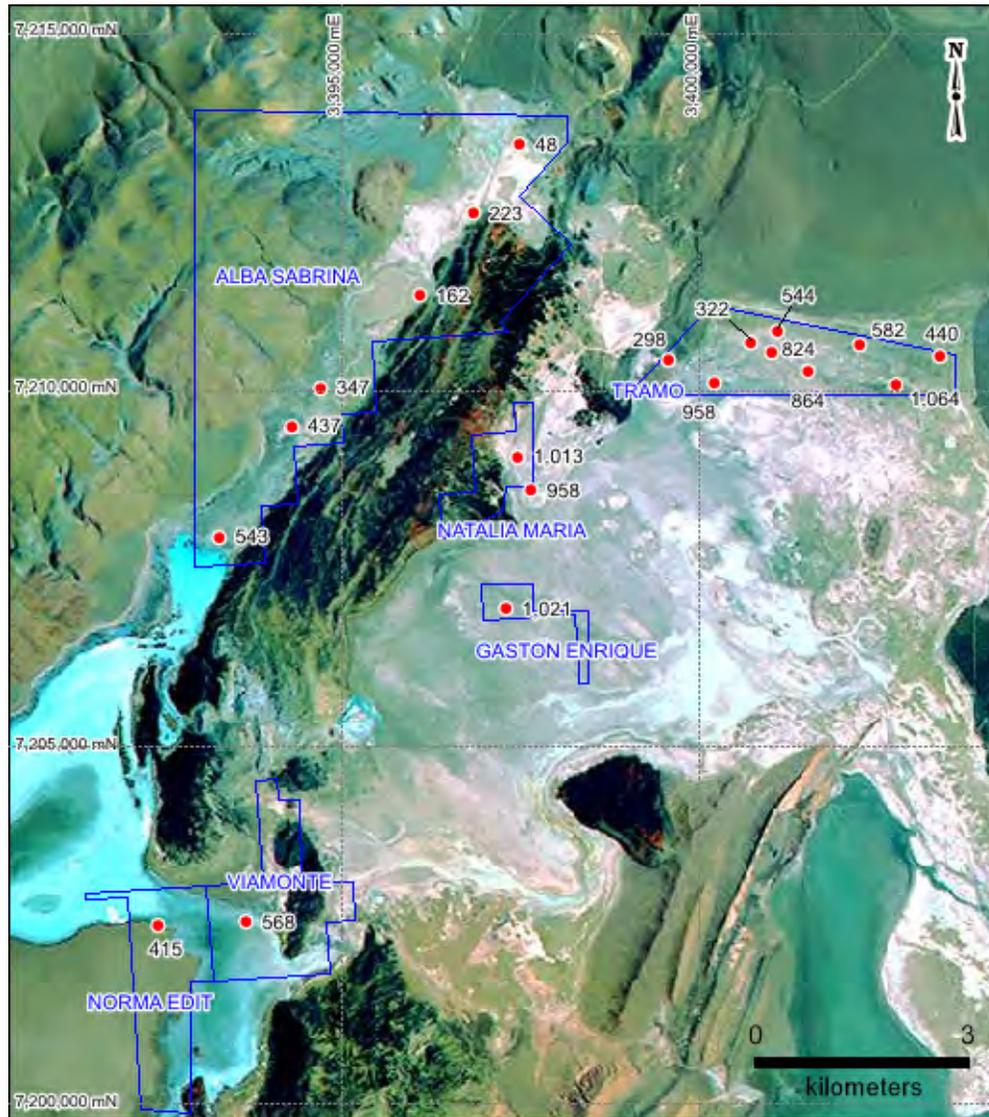
of heavy rains flooding the salar area, which prevented sampling at the south properties (Gaston Enrique, Viamonte and Norma Edith).



**Figure 9.1. Location of geochemical brine samples collected on Hombre Muerto North Project properties**

**Table 9.1. Summary of brine samples collected on Project properties**

Sample ID	Longitude wgs84	Latitude wgs84	Elevation (masl)	Depth to Water (m)	Brine Sample Description	Lithology	Claim Identifier
<b>1st Round</b>							
NS_001	-66.97728	-25.22792	3979	1.4	Brown, muddy	Clay; green-black; ab. organic matter	Tramo
NS_002	-66.96498	-25.22961	3979	1.35	Light grey	Clay, reddish on top & dark green at the bottom	Tramo
NS_003	-66.96498	-25.22414	3980	1.3	Light grey	Clay, reddish on top & dark green at the bottom	Tramo
NS_004	-66.99033	-25.22937	3974	0.6	Reddish	Sand, red, coarse to medium grain size "cotton balls of ulexite".	Tramo
NS_005	-67.01957	-25.25759	3973	1.25	Brown	Sand, red with minor ulexite "cotton" balls	Gaston Enrique
NS_006	-67.05588	-25.29700	3975	1.2	Brown	Sand with quartz grains, red color with halite crystals- gypsum.	Viamonte
NS_007	-67.05914	-25.24833	3978	1.1	Reddish	Sand, red, coarse grain; sand, red color, quartz.	Alba Sabrina
NS_008	-67.04492	-25.22953	3980	1.3	Reddish	Sand brown-reddish, quartz & lithic fragments.	Alba Sabrina
NS_009	-67.06819	-25.29725	3975	1.2	Brown	Red sand with gypsum rosettes, halite crystals.	Norma Edit
NS_010	-69.01777	-25.23841	3979	1.1	Light grey	red sand on top & dark grey to the bottom	Natalia María
<b>2<sup>nd</sup> Round</b>							
NS_015	-67.01702	-25.19892	3989	1.2	Brown, muddy	0-20 cm: brownish calcareous cap; 20-80 cm: green clay; 80-90cm: Black organic matter	Alba Sabrina
NS_016	-67.04891	-25.23439	3988	1	Brown, muddy	0-40: Brown-reddish medium grained sand; 40cm: green clay; 40-140 cm: brown, medium grained sand with halite crystals	Alba Sabrina
NS_017	-66.99666	-25.22627	3984	0.8	Brown, muddy	0-40 cm: medium grained sand; 40-120 cm: black sand	Tramo
NS_018	-66.98243	25.22543	3983	1.4	Dark grey, muddy	0-40 cm: brown-reddish, medium grained sand; 40-100 cm: greenish green clay and coarse grained sand; 100-190 cm: black clay with organic matter	Tramo
NS_019	-66.98152	-25.22284	3989	0.7	Brown, muddy	0-30 cm: brown, reddish, coarse grained sand; 30-80 cm: conglomerate cemented by carbonate	Tramo
NS_020	-66.96998	-25.22447	3990	0.8	Brown, muddy	0-30 cm: brown, reddish, coarse grained sand; 30-80 cm: conglomerate cemented by carbonate	Tramo
NS_22	-66.95884	-25.22614	3979	0.7	Brown, muddy	0 - 120 cm: brown reddish coarse grained sand; 120 - 140 cm: conglomerate tightly cemented by carbonate.	Tramo
NS_23	-67.01594	-25.24262	3981	1.1	Brown, muddy	0 - 80 cm: dark brown reddish coarse grained sand with a 5 cm ulexite layer on the top; 80 - 150 cm: dark brown coarse grained sand.	Natalia María
NS_24	-67.02355	-25.20761	3991	1.1	Brown, muddy	0 - 40 cm: brown reddish, coarse grained sand. 40 - 80 cm: pale grey, pale brown tightly cemented conglomerate; 80 - 110 cm: dark brown sand and conglomerate. 110- 130 cm: pale grey, pale brown strongly cemented conglomerate.	Alba Sabrina
NS_25	-67.03114	-25.21795	3991	2.4	Brown, muddy	0-240 cm pale grey, pale brown strongly cemented conglomerate; 240 - 270 cm brown reddish sand and clay.	Alba Sabrina



**Figure 9.2. Distribution of lithium concentration results (mg/L) for Project properties**

**Table 9.2. Summary of geochemical results**

Sample	Type	Li	Ca	Mg	B	Na	K	Density g/mL	Conductivity mS/cm	Mg/Li
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
<b>1<sup>st</sup> Round</b>										
NS_001	Brine	864	1,042	2,515	311	98,485	5,866	1.18	229	2.91
NS_002	Brine	1,064	2,594	4,385	216	92,559	6,727	1.18	237	4.12
NS_003	Brine	322	1,084	1,537	212	71,389	2,451	1.13	188	4.77
NS_004	Brine	958	986	2,038	589	106,339	7,314	1.2	227	2.13
NS_005	Brine	1,021	676	1,549	646	116,588	7,758	1.21	240	1.52
NS_006	Brine	568	778	1,112	503	124,940	4,912	1.22	242	1.96
NS_007	Brine	543	534	3,432	381	106,382	3,758	1.19	225	6.32
NS_008	Brine	347	569	3,087	248	88,023	2,559	1.16	208	8.9
NS_009	Brine	415	912	861	432	128,409	3,391	1.22	230	2.07
NS_010	Brine	1,013	897	1,155	438	113,437	8,593	1.2	193	1.14
<b>2<sup>nd</sup> Round</b>										
NS_015	Brine	48	407	490	14	10,846	427	1.03	40	10.21
NS_016	Brine	537	544	3,952	69	89,573	4,644	1.19	187	7.36
NS_017	Brine	298	1,636	2,008	97	83,817	1,486	1.17	184	6.74
NS_018	Brine	824	1,091	2,666	67	89,280	7,057	1.19	193	3.24
NS_019	Brine	544	1,008	1,856	67	77,486	4,276	1.16	176	3.41
NS_020	Brine	582	652	1,932	76	76,214	4,803	1.15	173	3.32
NS_021	Brine	575	661	1,841	75	74,326	4,481	1.15	174	3.20
NS_022	Brine	440	882	2,098	55	56,538	3,142	1.12	150	4.77
NS_023	Brine	958	686	1,441	129	106,491	9,288	1.21	184	1.5
NS_024	Brine	223	604	1,794	50	44,507	2,106	1.1	123	8.04
NS_025	Brine	162	411	1,317	38	32,423	1,400	1.08	97	8.13

Inspection of **Tables 9.1 and 9.2** supports the thought that elevated concentrations of lithium are located in the brine, including brine at the surface of the salar. The Tramo, Gaston Enrique, and Natalia Maria areas contain the largest concentrations of lithium. These areas are located in the principal east sub-basin area (**Figures 9.1 and 9.2**).

As can be seen in **Table 9.2** and on **Figure 9.2**, three samples, NS\_015, NS\_024 and NS\_025, contain significantly lower values of lithium (48, 223 and 162 mg/l, respectively) compared to the other samples in the salar. As can be seen on **Figure 9.2**, all three samples are in the north part of the Alba Sabrina area and suggest that this area is more affected by shallow surface



water associated with precipitation runoff. Near-surface brine samples at the edges of the salar (where fresh water enters the system and is believed to dilute the brine) may not be representative of deeper groundwater chemistry.

Finally, a comparison between samples obtained for the two different sampling rounds in the Tramo and Alba Sabrina areas suggests that near-surface samples obtained during the dry period have more dense brine and higher lithium concentrations than samples obtained during the rainy season. This is believed to be solely the result of near surface brine dilution from precipitation. Based on the author's experience in salar basins, precipitation dilution does not extend deeper than several meters into the aquifer. Averages for each sampling round in these two areas are as follows:

**TRAMO:**

Average Li content during dry season is 802 mg/l (4 samples, October 2016)

Average Li content during rainy season is 538 mg/l (5 samples, January 2017)

**ALBA SABRINA:**

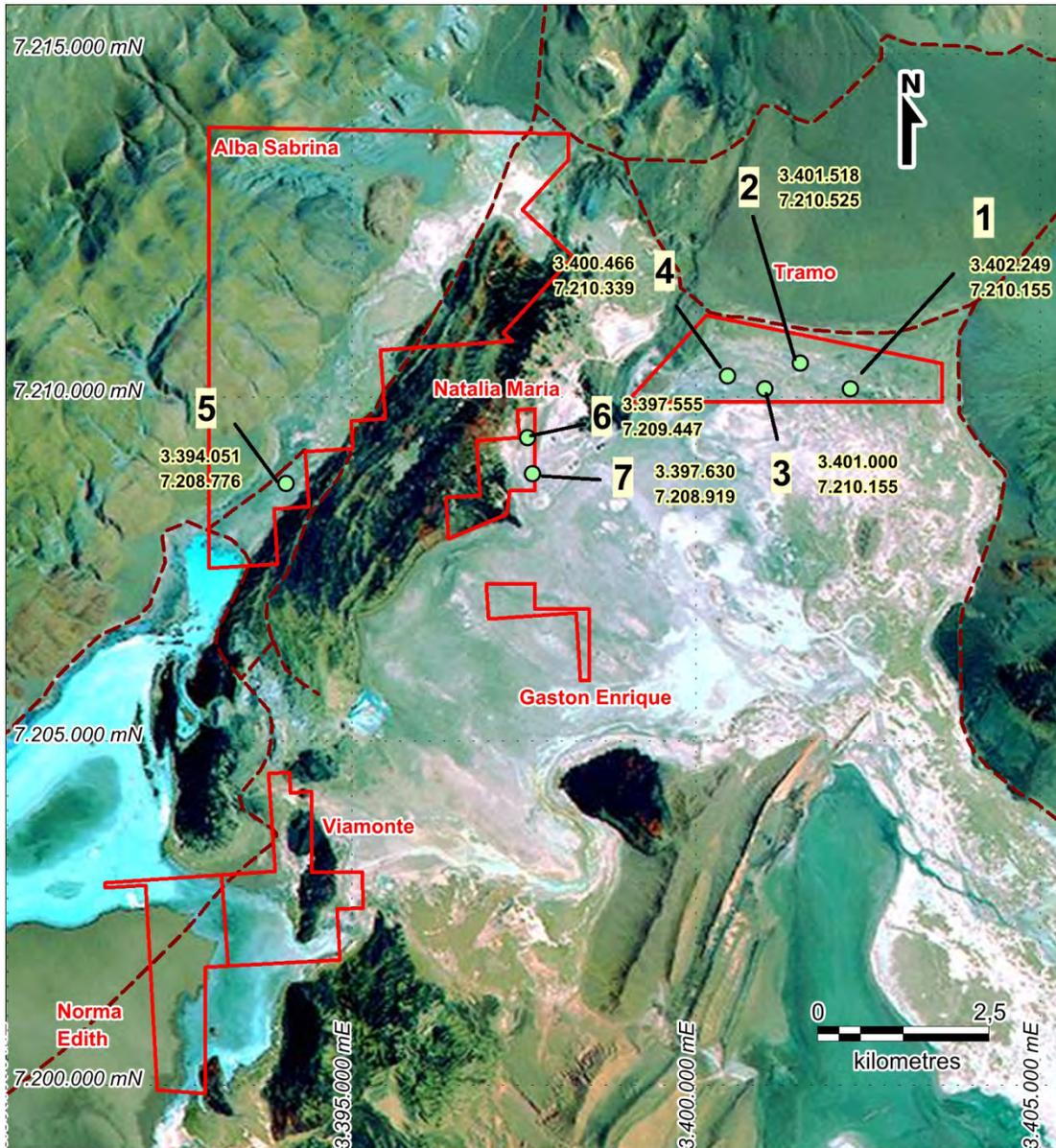
Average Li content during dry season is 445 mg/l (2 samples, October 2016)

Average Li content during rainy season is 242 mg/l (4 samples, January 2017)

## **9.2 GEOCHEMICAL SAMPLING –YEAR 2018**

Locations for each of the samples collected by on Project properties in year 2018 are shown in **Figure 9.3**. Geochemical results for main anions, density and conductivity values are given in **Table 9.3**. Analytical results from the laboratory are provided in **Appendix B**. Goal of this sampling round was to confirm previous sampling results, which were not consistent likely due to precipitation dilution in the near surface where the samples were obtained.

The third round of sampling was conducted by QP Michael Rosko on January 10, 2018, and included collection of seven samples, SHMN-001, -003, -004, -006, -007, -009, and -011 (not including duplicates) (**Table 9.3**).



**Figure 9.3. Location of geochemical brine samples collected on Project properties, January 2018**

**Table 9.3. Summary of geochemical results from January 2018**

Sample	Location Name	Li	Ca	Mg	B	Na	K	Density g/mL	Conductivity mS/cm	Mg/Li
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L			
<b>3<sup>st</sup> Round</b>										
SHMN_001	Tramo #1	1,120	978	3,594	255	91,495	8,554	1.163	189	3.21
SHMN_002	Tramo #2	792	940	2,392	277	86,552	6,049	1.151	181	3.02
SHMN_004	Tramo #3	1,011	1,105	2,378	396	96,202	9,236	1.169	192	2.35
SHMN_005	Tramo #3 Duplicate	1,008	1,104	2,379	395	96,393	9,539	1.169	193	2.36
SHMN_006	Tramo #4	1,216	1,381	3,718	177	98,220	10,368	1.175	193	3.06
SHMN_007	Alba Sabrina #5	353	737	2,674	244	80,373	3,059	1.134	171	7.58
SHMN_009	Natalia Maria #6	911	944	1,300	435	109,391	8,857	1.181	195	1.43
SHMN_010	Natalia Maria #6 Duplicate	913	943	1,297	432	109,943	8,861	1.181	195	1.42
SHMN_011	Natalia Maria #7	793	1,018	1,075	399	106,828	8,870	1.178	194	1.36

Inspection of **Table 9.3** supports the thought that elevated concentrations of lithium are located in the surface brine. The Tramo and Natalia Maria areas contain the largest concentrations of lithium. These areas are located in the principal east sub-basin area (**Figure 9.3**). The duplicate samples are replicated with a high level of precision.

Finally, a comparison between samples obtained for the January 2018 sampling round suggests that there is a significant range in surface brine samples depending on the time of year and precipitation. Average lithium concentration in Tramo in January 2018 was 974 mg/L, versus 538 mg/l for the January 2017 sampling round. The difference is a direct result of abundant precipitation in 2017 versus 2018.

### **9.3 GEOPHYSICAL SURVEY**

A program to complete a CSAMT survey covering all of the properties of the Project was planned for early January 2017. The original plan included 14 CSAMT stations, of which 10 were surveyed in the field. The CSAMT survey was conducted by Geophysical and Exploration Consultants S.A., Mendoza, Argentina (GEC), under the supervision of Sascha

Bolling, Senior Geophysicist and Managing Director of GEC. The survey defined two section lines (Figure 9.4).

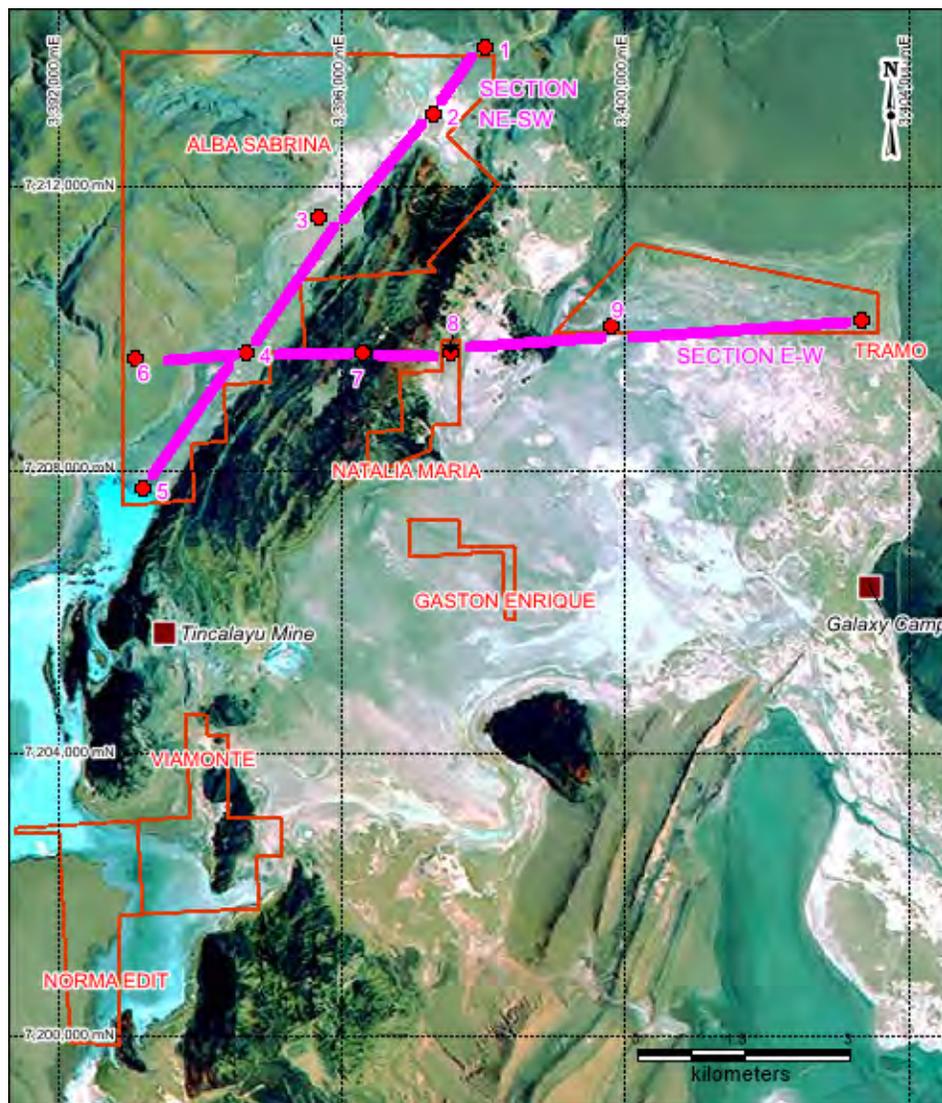
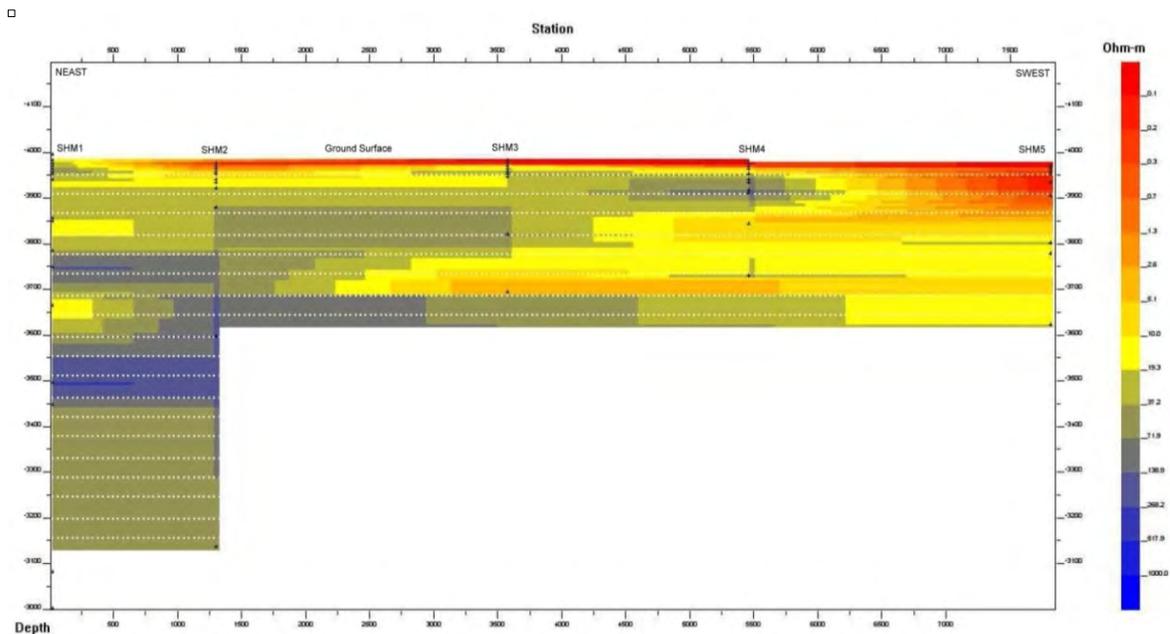


Figure 9.4. Distribution of CSAMT stations



### **9.3.1 CSAMT Section SHM1 – SHM5 (Alba Sabrina Property)**

The Alba Sabrina CSAMT section line included stations SHM1 through SHM5 for a total length of approximately 7,800 meters along a NE – SW orientation. For 6,000 m southwest along the “Gulf” a near-surface, highly conductive layer, up to 60 m thick in depth (with resistivity values of 0.01 to 10 ohm/meter), is interpreted as a dominant, low-resistive brine close to surface. From this point to end of the section, the interpreted low-resistivity layer increases in thickness to approximately 150 to potentially 250 m. Some semi-resistive (10 to 70 ohm/m) layers are shown below the less-resistive layer over 40 to 200 meters in depth. Stronger resistive horizons, interpreted as freshwater water or diluted brine, are seen in the northeast part of the section, which vary southwest to moderately less-resistive levels and then to clearly less-resistive layers (**Figure 9.5**).



(Source: GEC, 2017)

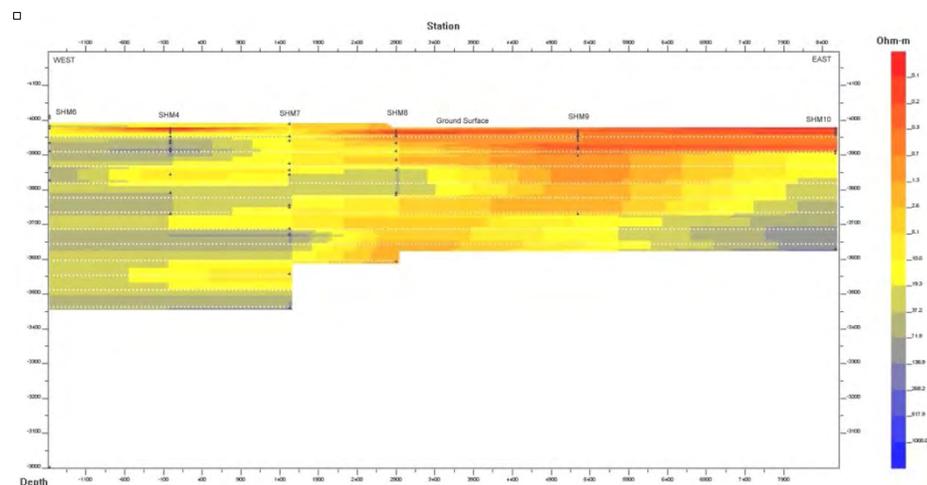
**Figure 9.5. CSAMT results for NE-SW section from SHM1 to SHM5**



The near surface brine occurrence along the peninsula widens as brine from the Salar is incorporated to the system. It is likely that the Sijes formation (an early evaporite facies within the evolution of the basin) remains active and is being selectively re-invaded by brines circulating through the Salar. The Ordovician shales and sandstones may represent the bottom of the system below 250 m. The anomaly is clearly open to the southwest and apparently to be open at depth.

### **9.3.2 Section SHM6 –SHM10 (Alba Sabrina-Natalia María-Tramo Properties)**

This section shows CSAMT survey results over 9,600 meters from west to east (**Figure 9.6**). The section confirms the peninsula “Gulf” anomaly begins to define the Sijes Formation and clearly outlines the east part of the sedimentary brine-bearing basin. A long, low-resistive anomaly is seen along the Salar between SHM8 (Natalia Maria) to SHM10 (east border of Tramo) for about 6 km. A low-resistivity 60 to 70 m thick upper horizon, with resistivity values of 0.2 to 1.3 ohm/m, is interpreted over the length of 6,000 meters. This continues to a depth of 250 m through the central sector at station SHM9 to the west and the border of the Tramo property. The anomaly remains open at depth in the central part of the section.

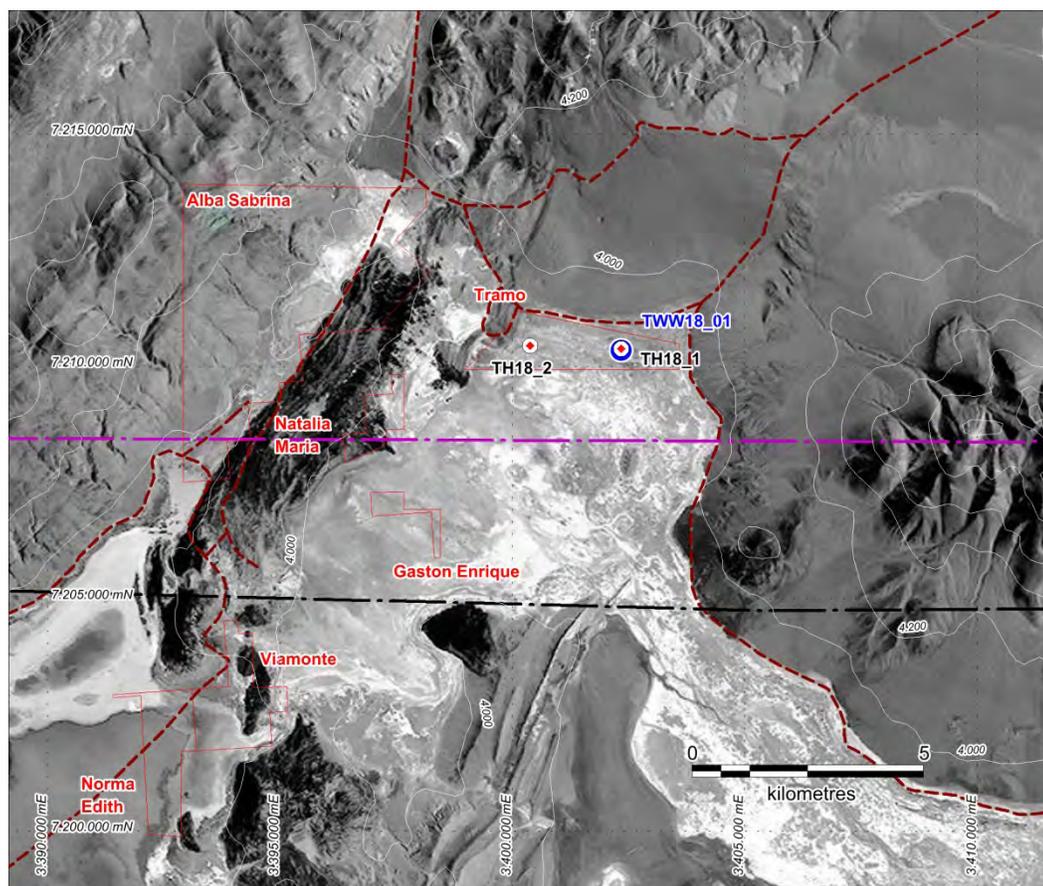


(Source: GEC, 2017)

**Figure 9.6. CSAMT results for W-E section from SHM6 to SHM10**

## 10. DRILLING AND TESTING

Results of the exploration drilling and testing presented in this report are from field work completed as of August 2018. The drilling program including core drilling of two coreholes, TH18-01 and TH18-02, and construction of exploration well TWW18-01. A 72-hour pumping test was conducted at well TWW18-01 using TH18-01 as an observation well. Locations for the wells are shown on **Figure 10.1**. The exploration program was designed to develop a resource estimate, and also to demonstrate that large amounts of brine can be pumped from the salar to eventually support development of a lithium brine extraction project.



**Figure 10.1. Location map for wells**



### **10.2.1 Diamond Drilling Program**

The diamond drilling program included drilling two vertical coreholes, TH18-01 and TH18-02, ranging in depth from 280 to 401 meters (**Figures C-1 and C-2 in Appendix C**). Drilling was done during the period between April 24 and July 13, 2018, by AGV Falcon, based in Salta, Argentina.

The objectives of this diamond drilling program were to obtain the following:

- Continuous cores for mapping and characterization,
- Geologic samples for Brine Release Capacity Test, including Bulk Density, Total Porosity, Field Water Capacity, and Specific Yield and particle density
- Depth-specific brine samples for laboratory chemical analyses
- Information for the construction of observation wells for future sampling and monitoring.

The following represents a brief summary of the equipment and methods utilized.

- AGV Falcon used a HYDX-6 drill rig and supported equipment
- The holes were drilled using triple tube PQ and HQ drilling methods
- For each drill core, recovery percentage is recorded
- Core was described and stored in labeled core boxes
- Once drill was complete, 2-inch schedule 80 PVC, and 2-inch slotted PVC slot (0.75 mm slot size) was installed.
- The wells were completed with steel surface casing, a surface sanitary cement seal, and lockable cap

Location and sample information for the coreholes is given in **Table 10.1**. Preliminary schematic diagrams for coreholes, together with depths for samples, and results of analyses, are shown on **Figures C-1 and C-2 (Appendix C)**. Laboratory analytical results for the drainable porosity samples are given in **Appendix B**.



**Table 10.1. Summary of well locations and samples**

Corehole Identifier	Total Depth (meters)	UTM Easting <sup>1</sup> (meters, POSGAR 94)	UTM Northing <sup>1</sup> (meters, POSGAR 94)	Number of drainable porosity samples collected	Number of drainable porosity samples analyzed	Number of depth-specific brine samples collected and analyzed
TH18-01	401	3,402,349	7,210,113	37	10	33
TH18-02	280.8	3,400,168	7,210,220	10	10	10
	Total = 681			Total = 47	Total = 20	Total = 43

<sup>1</sup> UTM Easting and Northing from hand-held GPS.

NOTE: Includes duplicate brine samples

As can be seen on **Figures C-1 and C-2**, a substantial thickness of clastic sediments occur in the Tramo area to a depth of at least 401 meters at location TH18-01 and the a depth of 280.8 at location TH18-02. Comparison of the lithologic profile for these wells to the hydrogeologic section (**Figure 8.3**) shows that considerably more clastic sediments occur in the Tramo concession than south and southwest in the sub-basin. This is consistent with our conceptualization that toward the edges of the basin, and especially in the area of large fans that bring sediments into the basin, clastic sediments tend to be more abundant than evaporites.

### **10.2.2 Brine Pumping Well TWW18-01**

To date, one exploration/pumping test well, TWW18-01, has been drilled, constructed, and tested. A schematic diagram for well TWW18-01 is shown on **Figure C-3 (Appendix C)**. The drilling contractor was Wichi Toledo S.R.L. based in Salta, Argentina. Location information for the exploration well is given in **Table 10.2**.

**Table 10.2. Location and depth for pumping well TWW18-01**

Exploration Well Identifier	Total Depth (meters)	Easting <sup>1</sup> (meters, POSGAR 94)	Northing <sup>1</sup> (meters, POSGAR 94)
TWW18-01	401	3,402,357	7,210,100

<sup>1</sup> Easting and Northing from a hand-held portable GPS.



The following represents a brief summary of the equipment and methods utilized during construction of the well.

- Drilled using conventional circulation mud rotary. Drilling fluid was polymer mixed with brine.
- Drilled borehole diameter was 12¾ inch from land surface to 174 m depth. 8 inches from 174 m to 393 meters. Once drilled to total depth the borehole was reamed in 1 passes using 17 inches and drilling was extended up to 401 meters with 17 inches:
- Unwashed and washed drill cuttings were described and stored in labelled plastic cutting boxes.
- Once drilling was completed, 10-inch pvc casing and screen was installed from 0 to 174 meters depth; 8-inch pvc casing and well screen was installed from 174 to 401 meters depth (slot size 0.75 mm).
- Gravel pack was installed in the annular space surrounding the well screen.

After installation of casing, gravel pack, and fill materials, clean salty water was used to clean the well during a continuous 24 hours interval.

The pumping test at well TWW18-01 started on July 24, 2018 with an average flow rate of 25 L/s. Testing details are given in **Table 10.3**. Water level was measured in the pumped well with a graduated sounder. During the test, field parameters (pH, temperature (°C), electrical conductivity (EC) and density) were measured, using calibrated EC-meter and pH-meter. Density was measured with a hydrometer. pH values ranged from 6.06 to 6.11, EC from 201 – 214.5 and density from 1.21 – 1.215 g/cm<sup>3</sup>. The pumping test stopped on July 30, 2018 after 72 hours of pumping and 72 hours of recovery measurements.

**Table 10.3. Summary of the pumping test at well TWW18-01**

WELL IDENTIFIER	DATE PUMPING STARTED	PUMPING DURATION (hours)	PRE-PUMPING WATER LEVEL (meters, bls) <sup>1</sup>	AVERAGE PUMPING RATE (L/s) <sup>2</sup>	DRAWDOWN AFTER 24 HOURS OF PUMPING (meters)	SPECIFIC CAPACITY (L/s/m) <sup>3</sup>
TWW18-01	24-Jul-2018	72	3.24	25	12.97	1.9

<sup>1</sup> meters, bls = meters below land surface

<sup>2</sup> L/s = liters per second

<sup>3</sup> L/s/m = liters per second per meter of drawdown



Transmissivity is the rate at which water is transmitted through a unit width of aquifer under a unit hydraulic gradient and has unit of meters squared per day ( $m^2/d$ ). For analysis, drawdown data were analyzed for aquifer transmissivity using the logarithmic graphical method developed by Theis (1935). Water level recovery measurements were analyzed using the Theis (1935) semi-logarithmic graphical recovery method. Both methods were analyzed using Aqtesolv software (HydroSOLVE, 2008) and verified manually.

Logarithmic drawdown and semi-logarithmic recovery graphs for the pumped well, and nearby observation well TH18-01, are given on **Figures D-1 and D-2 (Appendix D)**, with computed aquifer transmissivity. Results are tabulated in **Table 10.4**.

**Table 10.4. Summary of computed aquifer parameters for well TWW18-01**

Pumped Well Identifier	Observation Well Identifier	Distance from Pumped Well (meters) <sup>1</sup>	Average Pumping Rate (L/s) <sup>2</sup>	Theis (1935) Drawdown method Transmissivity ( $m^2d$ ) <sup>3</sup>	Theis (1935) Recovery method Transmissivity ( $m^2d$ )
TWW18-01	---	0	25	Not analyzed	55
	TH18-01	6	---	61	Not analyzed

<sup>1</sup> Measured with calibrated tape

<sup>2</sup> Liters per second

<sup>3</sup> Square meters per day

### **10.2.3 Brine Sample Results from Pumping Well TWW18-02**

NRG Metals has collected and received laboratory results for 15 composite brine samples collected from wells TWW18-01 obtained during the pumping tests at this well during the period July 17 through July 29, 2018. Results are summarized in **Table 10.5**.

**Table 10.5. Summary of laboratory chemical results for brine samples obtained during the pumping test at well TWW18-01**

SAMPLE ID	Date	Li (mg/L)	Mg (mg/L)	K (mg/L)	B (mg/L)	Mg/Li
HMN-50	17/07/2018	793	2,061	7,829	544	2.60
HMN-51	17/07/2018	790	1,873	8,202	582	2.37
HMN-52	17/07/2018	790	1,814	8,365	600	2.30
HMN-53	17/07/2018	783	1,806	8,255	593	2.31
HMN-54	18/07/2018	784	1,818	8,239	594	2.32
HMN-55	18/07/2018	788	1,803	8,427	598	2.29
HMN-56	18/07/2018	774	1,802	7,965	594	2.33
HMN-57	18/07/2018	786	1,806	8,199	597	2.30
HMN-58	25/07/2018	784	1,823	8,113	594	2.33
HMN-59	25/07/2018	783	1,827	8,082	593	2.33
HMN-60	26/07/2018	787	1,806	8,129	599	2.29
HMN-62	27/07/2018	787	1,802	8,145	604	2.29
HMN-63	27/07/2018	792	1,806	8,210	602	2.28
HMN-64	29/07/2018	796	1,823	8,259	608	2.29
HMN-65	29/07/2018	788	1,801	8,199	597	2.29
AVERAGE		787	1,831	8,175	593	2.33

#### **10.2.4 Brine Pumping Well TWW18-02 – In Progress**

Exploration/pumping test well TWW18-02 has been drilled to a depth of 400 meters and as of the release of this report, is being reamed to a larger diameter in order to install large diameter casing similar to well TWW18-01. The drilling contractor is Wichi Toledo S.R.L. based in Salta, Argentina. Location information for the exploration well is given in **Table 10.6**. TWW18-02 is located about 20 meters from corehole TH18-02.



**Table 10.6. Location and depth for pumping well TWW18-02**

Exploration Well Identifier	Total Depth Drilled (meters)	Easting <sup>1</sup> (meters, POSGAR 94)	Northing <sup>1</sup> (meters, POSGAR 94)
TWW18-02	400	3,400,175	7,210,208

<sup>1</sup> Easting and Northing from a hand-held portable GPS.

The following represents a brief summary of the equipment and methods utilized during drilling of the pilot borehole.

- Drilled using conventional circulation mud rotary. Drilling fluid was polymer mixed with brine.
- Drilled borehole diameter was 12<sup>3</sup>/<sub>4</sub> inch from land surface to 190 m depth.
- Drilled borehole diameter as 8.5 inches from 190 to 400 meters.
- Unwashed and washed drill cuttings were described and stored in labelled plastic cutting boxes.



## 11. SAMPLE COLLECTION, PREPARATION, ANALYSES AND SECURITY

The following section applies to the initial surface sampling program, and also to the recent exploration drilling and testing program. Both brine samples and drill core samples were obtained for laboratory analyses. Brine samples were obtained from the following methods:

- depth-specific packer sampling during coring,
- brine samples obtained during the pumping tests at the exploration well.

In addition to brine samples, core samples were also obtained during the program and submitted for drainable porosity laboratory testing.

Neither chemistry samples (brine) nor porosity samples (core) were subjected to any further preparation prior to shipment to participating laboratories. After the samples were sealed on site, they were processed at the NRG office in Salta, and then shipped in sealed containers to the laboratories for analysis.

### **11.1 SURFACE SAMPLE COLLECTION AND PREPARATION**

A surface brine sampling program covering the Project properties was conducted by consulting geologist Sergio Lopez and Nivaldo Rojas during the period October 3 and 4, 2016. A second sampling round was completed by consulting geologist Pedro Ruiz, in coordination with Rojas y Asociados (2017) during the period January 31 to February 2, 2017. A third round of surface sampling was conducted directly by QP Michael Rosko on January 10, 2018. Sampling was conducted by means of shallow, hand dug pits and manual auger drilling (**Figures 11.1 and 11.2**).



**Figure 11.1. Sample pit/auger hole excavated on the salar at Tramo property; the auger tool is about 3 m long**



**Figure 11.2. Hand dug pit excavated on the salar surface, auger borehole and shallow depth to brine level in auger hole**

For the three sampling programs, a total of 27 brine samples (not including duplicate samples) were collected and prepared according to protocols for standard brine sample collection along with lithologic descriptions.



Brine samples were collected from hand dug pits using an auger to depths of 2 to 3 m. Samples correspond to natural brine encountered in the auger hole. At some locations, augering to 6 m depth did not encounter brine.

The brine samples were collected by means of plastic bottles weighted on the bottom and open at the top to allow filling of brine. The bottles were deployed and retrieved using a cord. Once at the surface, the brine in the bottle was poured into a clean collecting container and solids were allowed to settle. Typically, the operation was repeated four to five times for filling of the container. After settling, the brine was decanted into a 1-liter, clean plastic bottle using a funnel. The bottles were properly labeled at both the side and the cap. Samples were kept within controlled temperature containers with a maximum of 12 bottles. Sample containers were stored in secure places while in the field and transported to the assay laboratory by the project geologists.

## **11.2 DEPTH-SPECIFIC PACKER SAMPLE COLLECTION AND PREPARATION**

During the 2018 drilling program, brine samples were obtained via depth-specific packer sampling during core drilling at coreholes TH18-01 and TH18-02. Packer sample were obtained during drilling. Samples were considered acceptable and representative of the interval being sampled when minimal to no traces of drilling mud from the corehole were observed in the sample obtained from the packer. Temperature, electrical conductivity, pH, and density were recorded on internal field sheets. Samples were stored in a cooler until they arrived at the lab. NRG's employees were responsible for delivering them to the lab. Chain of custody forms were used until samples arrived to the laboratory.

## **11.3 AQUIFER TEST BRINE SAMPLE COLLECTION AND PREPARATION**

Brine samples were collected directly from the discharge pipe at regular intervals during the aquifer test at well TWW18-01. The samples were sent to Alex Stewart in sealed plastic bottles



with sample numbers clearly identified. Temperature, electrical conductivity, pH, and density were recorded on internal field sheets. Samples were stored in a cooler until they arrived at the lab. NRG's employees were responsible for delivering them to the lab. Chain of custody forms were used until samples arrived to the laboratory.

#### **11.4 DRAINABLE POROSITY CORE SAMPLE COLLECTION AND PREPARATION**

Porosity samples were collected from intact HQ-3 and PQ-3 core. After core retrieval using a wireline system, the core was inspected and relatively undisturbed samples were taken from the core at selected intervals. Full diameter core with no visible fractures was selected and submitted for laboratory analyses. The selected sleeved core samples were capped with plastic caps, sealed with tape, weighed, and stored for shipment. Typical length of sample is 15 to 40 centimeters (cm). Samples were submitted to GeoSystems Analysis Inc. (GSA) in Tucson, Arizona, USA for Relative Brine Release Capacity, bulk density, total porosity, field water capacity, specific yield, and particle density.

#### **11.5 BRINE ANALYSIS**

Alex Stewart Assayers Inc. (ASA) was the primary laboratory for analysis of brine samples. ASA (Jujuy, Argentina) has their main offices in Mendoza, Argentina and corporate offices in Great Britain. ASA has extensive experience analyzing lithium-bearing brines. The ASA laboratories are ISO 9001 accredited and operate according to Alex Stewart Group international standards, consistent with ISO 17025 standards. Samples were analyzed for metals at the ASA laboratory using the Inductively Coupled Plasma (ICP) spectrometry analytical method and other methods given in **Table 11.1**. Details on laboratory methods are included in the laboratory reports (**Appendix B**).

**Table 11.1 Laboratory methods for brine samples**

Na	ICP	LMMT03
K	ICP	LMMT03
Ba	ICP	LMMT03
Sr	ICP	LMMT03
Fe	ICP	LMMT03
Mn	ICP	LMMT03
Nitrates	UV-vis	LMC100
Cl-	Argentometric	LMC101
SO <sub>4</sub> <sup>2-</sup>	Gravimetric	LMC122
Alkalinity	Volumetric	LMFQ15
CO <sub>3</sub> <sup>2-</sup>	Volumetric	LMFQ16
HCO <sub>3</sub> <sup>-</sup>	Volumetric	LMFQ17
Density	Pycnometer	LMFQ19
TDS	Gravimetric	LMFQ08

Samples were handled with care by geologists until the lab receives them. On site, only geologists fill and store samples and they were stored in a cooler until they arrive at the lab. To prep for transport, remaining space in sample coolers was filled with paper, plastic and other cushioned packing materials to ensure no damage will occur in transit. NRG's employes picks up all samples in person and drives them to the lab or lab's office personally. Chain of custody for these samples was always in the hands of NRG personnel until arrival at the lab.



## **11.6 DRAINABLE POROSITY ANALYSES**

Porosity analyses on selected core sample were conducted by Geosystems Analysis Inc. (GSA), Tucson, Arizona; GSA has worked on many Argentina brine projects during the last several years. Laboratory reports are given in **Appendix B**.

## **11.7 QUALITY CONTROL – 2016 AND 2017 SURFACE SAMPLING**

The laboratory performance was controlled by means of duplicate, blank, and a sample of known chemistry. All control samples were assayed in the ASA's Norlab Laboratory (Jujuy). These control samples include:

- one field duplicate sample collected from a known surface pool at the Salar de Pocitos (NS\_11)
- one laboratory self-control duplicate run by (ASA DUPNS\_10)
- one blank lithium sample inserted by the consulting geologist
- one field duplicate of the samples being assayed inserted by geologists
- one laboratory duplicate inserted as self-control by ASA
- one lithium blank sample

These control samples confirm expected lithium, potassium, magnesium, calcium, boron, sodium as well as other cations, fluid density, and conductivity. Results are given in **Table 11.2** and show that similar results were obtained between the original sample and the duplicate.

**Table 11.2 Results of control samples from 2016 and 2017 sampling rounds**



Sample	Li mg/L	Ca mg/L	Mg mg/L	B mg/L	Na mg/L	K mg/L	Density	Conductivity (mS/cm)	Observations
NS_010	1013	897	1155	438	11343	8593	1.201	193	Original
DUPNS_010	1010	891	1099	442	11370	8710	1.201	194	NS_10 Duplicate run by ASA
NS_011	80	466	883	200	131626	2325	1.219	228	Field control of known pool
NS_012	< 1	44	25	1	20751	10	1.042	72	Blank prepared by geos
<b>NS_20</b>	<b>582</b>	<b>652</b>	<b>1932</b>	<b>76</b>	<b>76214</b>	<b>4803</b>	<b>1.15</b>	<b>173</b>	<b>Original</b>
NS_21	575	661	1841	75	74328	4481	1.151	174	NS_20 Dup by One Borax
<b>NS_24</b>	<b>223</b>	<b>604</b>	<b>1794</b>	<b>50</b>	<b>44507</b>	<b>2106</b>	<b>1.101</b>	<b>123</b>	<b>Original</b>
DUP_NS24	221	597	1805	48	44525	2096	1.1	124	NS_24 Duplicate run by ASA
NS26	< 1	47	14	<1	4416	6	1.014	16	Blank ordered by One Borax

## **11.8 QUALITY CONTROL – 2018 DRILLING AND TESTING**

The QA/QC documented herein addresses brine samples collected during drilling and during pumping. The quality control program included insertion of duplicate samples and field blanks. The laboratory results were compiled by NRG staff for confirmation of the accuracy and precision of the analysis and reviewed by Montgomery & Associates.

### **11.8.1 Duplicate Brine Samples for 2018 Exploration Program**

Duplicate brine samples were submitted to confirm laboratory repeatability. During the 2018 exploration program, a total of 10 duplicate samples were obtained from the two exploration coreholes (TH18-01 and TH18-02) and during the pumping test at well TWW18-01. Laboratory results for the samples and their duplicates are given in **Table 11.3**. A statistical comparison of the duplicate samples is given in **Table 11.4**.



**Table 11.3. Summary of duplicate laboratory analyses, 2018 exploration**

SAMPLE NUMBERS (ORIGINAL AND DUPLICATE)	Li (mg/L) <sup>1</sup>		Mg (mg/L)		SO <sub>4</sub> (mg/L)		K (mg/L)	
	ORIGINAL	DUPLICATE	ORIGINAL	DUPLICATE	ORIGINAL	DUPLICATE	ORIGINAL	DUPLICATE
<b>TH18_01</b>								
HMN-4/HMN-56	942.3	911.4	3026.9	3072.4	9828.7	9752.3	7298.5	6940.8
HMN-8/HMN-9	878.9	880.8	2367.1	2377.7	9227.8	9178.1	7772.4	7787.3
HMN-12/HMN-13	934.8	931.2	3054.9	3054.2	9096.1	9046.2	7323.1	7267.8
HMN-16/HMN-17	917.9	917.0	2837.8	2859.4	9586.5	NA <sup>2</sup>	7089.9	7410.6
HMN-20/HMN-21	879.0	849.6	2535.1	2434.7	9977.2	NA	7939.2	7793.8
HMN-28/HMN-29	865.6	898.6	2551.9	2667.7	10048.1	NA	7889.8	8178.0
<b>TH18_02</b>								
HMN-41/HMN-42	785.0	786.9	1,704.0	1,687.0	9457.8	NA	9181.2	9071.4
<b>TWW18_01</b>								
HMN-52/HMN-53	790.0	783.0	1814.0	1806.0	NA <sup>2</sup>	NA <sup>2</sup>	8365.0	8255.0
HMN-56/HMN-57	774.0	786.0	1802.0	1806.0	NA <sup>2</sup>	NA <sup>2</sup>	7965.0	8199.0
HMN-64/HMN-65	796.0	788.0	1823.0	1801.0	NA <sup>2</sup>	NA <sup>2</sup>	8259.0	8199.0

<sup>1</sup> mg/L = milligrams per liter

<sup>2</sup>NA = not analyzed

Comparison of the duplicate samples suggests that the samples are being analyzed similarly; large differences between the results for the duplicate samples do not occur. Average error for the lab results for the duplicate samples is given in **Table 11.4**.

**Table 11.4. Percent difference between original and duplicate samples, 2017 and 2018 exploration program**

Average lithium value for 10 original samples (mg/L)	Average lithium value for 10 duplicate samples (mg/L)	Percent average difference between original and duplicate for lithium	Average potassium value for 10 original samples (mg/L)	Average potassium value for 10 duplicate samples (mg/L)	Percent average difference between original and duplicate for potassium
856.4	853.3	-0.4%	7908.3	7910.3	0.025%

## **11.8.2 Field Blanks**



During the 2018 exploration drilling and testing program, a total of three blank samples were submitted to the laboratories for chemical analyses. The blank samples consisted of fresh water. The laboratory did not detect any lithium in the samples.

### **11.8.3 QA/QC Conclusions and Recommendations**

The field sampling of brines from the pumping tests was done in accordance with generally accepted industry standards. The quality control data, based upon the insertion of field blanks and analysis of duplicates indicate that the analytical data are accurate and repeatable. As a result, the author is confident that the reported results are representative of the brine chemistry in the aquifer.

### **11.9 SAMPLE SECURITY**

All samples were labeled with permanent marker, sealed with tape and stored at a secure site, both in the field, and in Salta, Argentina, until transported to the laboratory for analysis. Samples were packed into secured boxes with chain of custody forms and then shipped to the laboratory.



## 12. DATA VERIFICATION

Michael Rosko (independent QP) conducted the following forms of data verification:

- Visits to the Project site, obtaining independent samples, and approving drill hole locations.
- Inspection of original laboratory results;
- Review of publicly available information from adjacent properties in Salar de Hombre Muerto.

Michael Rosko and Montgomery & Associates employees have been to site to verify field operations, have reviewed core and cuttings descriptions, were on-site during commencement of drilling operations, and have checked summary chemistry tables against original laboratory reports.

### **12.1 Data Management During Drilling and Testing Program**

- Field notes: The field geologists and hydrogeologists record field notes concurrently with the recorded observation.
- Physical parameters: At the time of sampling, field physical parameters are measured and recorded for all fluid samples.
- Lithological description: Drill core and drill cuttings are described by NRG geologists using standard forms and checked by a Montgomery & Associates hydrogeologist.
- Sample description and Chain of Custody (COC): Sediment and brine samples are described before shipping and are submitted to laboratories using COC documentation.
- Project Database: Lithologic data are entered into the project database designed and maintained by NRG. All sample data for both porosity and brine samples are entered into the same database.
- Daily activity logs: NRG geologists in the field prepare and summarize the field activities at each work site on a daily basis. It is kept in the main computer and backup in an external hard drive. Daily activity logs are sent to Project personnel and consultants as needed.



### **13. MINERAL PROCESSING AND METALLURGICAL TESTING**

Mineral processing and metallurgical testing has not been done at this early stage of the Project.



## 14. MINERAL RESOURCE ESTIMATES FOR LITHIUM AND POTASSIUM

An initial resource calculation for Salar del Hombre Muerto Norte Project is presented for the first time here. The key parameters of brine mineral grade and drainable porosity were used to compute the estimated resource. The method consisted of constructing polygonal blocks surrounding each corehole, bounded by the property concession boundary, and divided into horizontal layers by hydrogeologic units. Only laboratory results from depth-specific samples were used (i.e. drainable porosity values from core, and brine chemistry from packer samples). Although important for demonstrating that the brine can be pumped, composite brine samples obtained during the pumping tests were not used in the resource calculation.

Additional lithium and potassium resources are likely to occur at the other concessions of the Project (**Figure 4.2**) but are not documented here because exploration drilling has not yet been done at these concessions. For example, the Enrique Gaston concession occurs within a Measured resource polygon reported by Galaxy (M&A and GAI, 2012), and supports the logical argument that if drilled, a Measured lithium and potassium resource would also occur at this concession.

### 14.1 DEFINITION OF POLYGONS BLOCKS

Total area of the two polygon blocks used in resource calculation is 3.87 km<sup>2</sup>, as shown on **Figure 14.1**. The eastern polygon contains corehole TH18-01 and pumping well TWW18-01; the west polygon contains corehole TH18-02 and *in progress* well TWW18-02. The boundary between the two polygons is equidistant from the diamond drill holes.

The deeper unit encountered at well TWW18-02 allowed for additional Indicated Resource to be added to the TH18-02 polygon (**Figure 14.1**). The initial Measured Resource for the polygon was based on a maximum-drilled depth of 280.8 meters; the pilot borehole at TWW18-02 was drilled to a maximum depth of 400 meters, for an extra 119.2 meters of Indicated Resource. The estimated resource in the polygon for TH18-01 is considered by the



QP to be Measured. Reasonably good stratigraphic correlation is observed between coreholes TH18-01 and TH18-02 (**Figures C-1 and C-2 in Appendix C**), although more evaporite deposits are observed at corehole TH18-02.

## **14.2 DEFINITION OF HYDROGEOLOGIC UNITS**

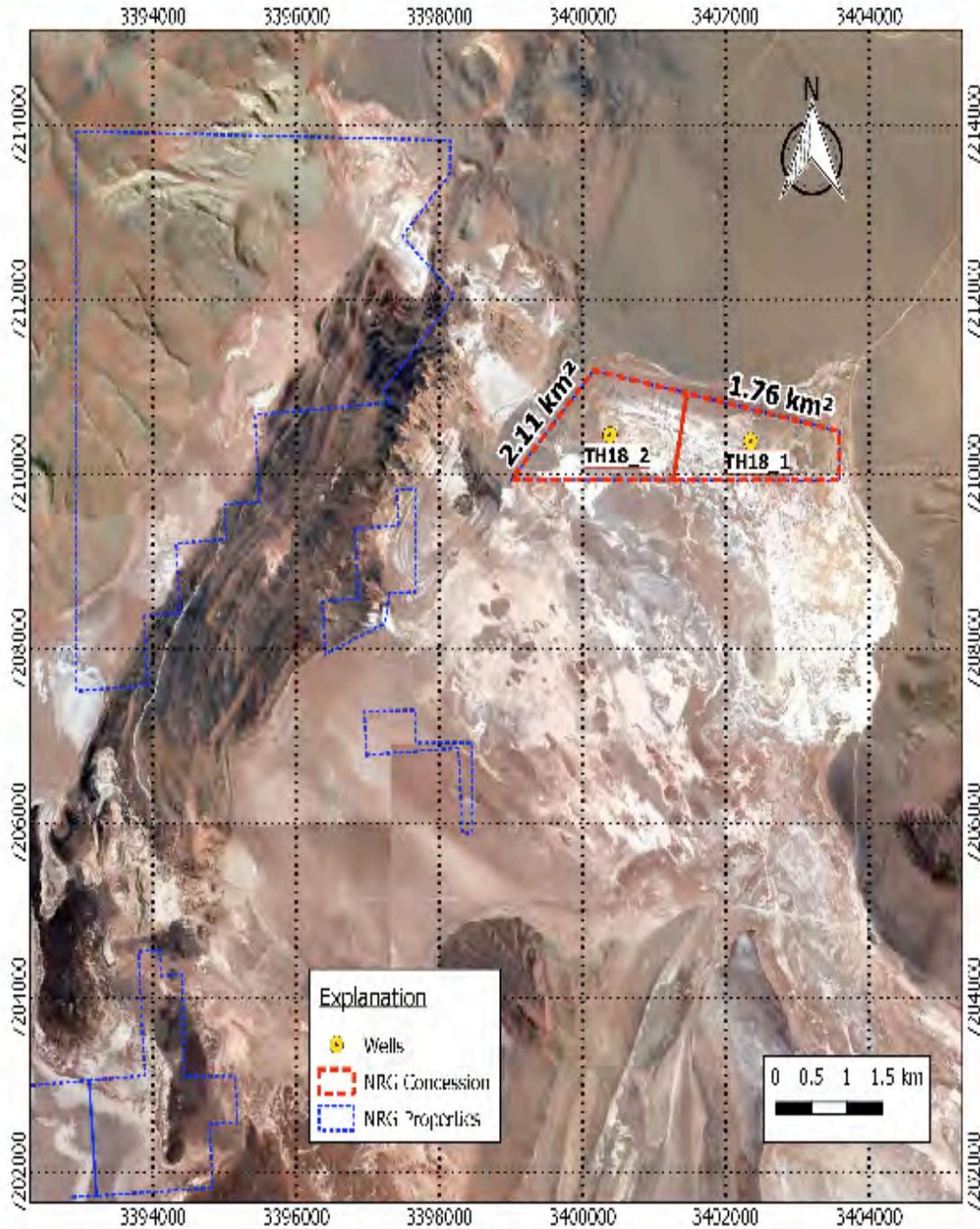
Results of diamond drilling indicate that basin-fill deposits in Salar del Hombre Muerto can be divided into hydrogeologic units that are dominated by three lithologies, all of which have been sampled and analyzed for drainable porosity and brine chemistry. Meters described and number of samples obtained for each unit is given in **Table 14.1**. Predominant lithology, number of analyses and statistical parameters for drainable porosity of these units are given in **Table 14.2**. Locations for porosity and brine samples in each corehole are shown on **Figures C-1 and C-2 in Appendix C**.

**Table 14.1. Meters described and number of samples**

Predominant Lithology of Conceptual Hydrogeologic Unit	Meters of Core Described	Number of Drainable Porosity Values	Number of Brine Chemistry Values
Unit 1: Sand and silty sand	204.5	8	13
Unit 2: Interbedded halite, sand, and silty sand	177.8	7	8
Unit 3: Sandy conglomerate	245.2	5	14

**Table 14.2. Summary of drainable porosity values**

Predominant Lithology of Conceptual Hydrogeologic Unit	Number of Analyses	Mean Drainable Porosity	Median Drainable Porosity	Standard Deviation
Unit 1: Sand and silty sand	8	0.108	0.084	0.060
Unit 2: Interbedded halite, sand, and silty sand	7	0.083	0.083	0.038
Unit 3: Sandy conglomerate	5	0.087	0.063	0.050



**Figure 14.1. Polygons used for resource calculations**



### **14.3 TOTAL RESOURCE ESTIMATION**

Each corehole was divided into hydrogeologic units using the three predominant lithologies given above. Drainable porosity values for each hydrogeologic unit within a single polygon were computed by averaging the available drainable porosity data from within the hydrogeologic unit at the polygon corehole. Laboratory analyses for drainable porosity and brine chemistry were used for each of the hydrogeologic units used to estimate the Resource.

Drainable porosity and lithium content are weighted by hydrogeologic unit thickness. Hydrogeologic units are shown for each well on **Figures C-1 and C-2 (Appendix C)**. Thickness of the lowermost hydrogeologic unit is limited by total depth of the core hole, or the adjacent exploration water well. The TH18-02 estimated resource includes the deeper unit observed at adjacent well TWW18-02. It is assumed that the properties at the corehole for hydrogeologic unit thickness, drainable porosity, lithium, and potassium extend continuously throughout the entire polygon. The resource computed for each polygon is independent of the other polygon. The computed resource for each polygon was the sum of the products of saturated hydrogeologic unit thickness, polygon area, drainable porosity, and lithium and potassium content.

#### **14.3.1 Support for Measured and Indicated Status**

Reasonably good correlation of lithologic units exists between the east and west sides of the Tramo concession. Our conceptual model of the hydrogeologic nature of northern Salar del Hombre Muerto and observed results are consistent with anticipated stratigraphic and hydrogeologic conditions associated with mature, closed-basin, high altitude salar systems. The relative lack of halite units in the Tramo concession is consistent with the unfaulted basin edges where clastic sediments tend to be more dominant.



We have assigned all of the estimated Resource defined by the coreholes TH18-01 and TH18-02 as Measured. This is consistent with recommendations by Houston et al. (2011) where they suggest that well spacing required to estimate a Measured Resource be no farther than 3-4 kilometers apart from each other. Given the relatively small size of the Tramo concession, the relatively good stratigraphic understanding of the hydrogeologic units, and the relative uniformity of the brine chemistry, we believe that a Measured category is justified.

In addition, based on completed drilling to date, we have assigned the lower part of TWW18-02 as an Indicated resource because it is consistent with sediments observed in the Tramo concession at that depth that demonstrated good drainable porosity and brine chemistry values (**Figure C-1, Appendix C**) even though depth-specific core and brine samples were not obtained or analyzed at a laboratory. The interval from 228.5 to 370 meters consists of interbedded halite and sand and appears to be very similar to the zone in corehole TH18-02 from 166.5 to 228.5 meters (**Figure C-2 in Appendix C**). From a depth of 370 to 400 meters in well TWW18-02, the lithology consists of a clayey unit with interbedded fine sand with some halite. This unit is described similarly to the unit observed at corehole TH18-01 from 107-155.8 meters (**Figure C-1 in Appendix C**).

### **14.3.2 Summary of Measured and Indicated Resource**

The location map for the project showing the resource polygons is shown on **Figure 14.1**. Results of the calculations for estimating the Measured and Indicated Resource for the Tramo concession are summarized in **Table 14.3**.

**Table 14.3. Summary of measured and indicated resource**



Resource Category	Brine Volume (m <sup>3</sup> )	Avg. Li (mg/L)	In situ Li (tonnes)	Avg. K (mg/L)	In situ K (tonnes)
Measured	119,862,077	797	95,556	7,039	843,671
Indicated	21,936,404	534	11,714	5,517	121,023
M+I	141,798,481	756	107,270	6,803	964,694

*Cutoff grade: 500 mg/L lithium – No laboratory results were less than 500 mg/L*

*The reader is cautioned that mineral resources are not mineral reserves and do not have demonstrated economic viability.*

### **14.3.3 Resource Average Grade and Ratios**

All of the estimated drainable volume of brine within the polygons (**Table 14.3**) contains lithium concentration exceeding 500 mg/L. The following averages and ratios have been computed as weighted averages using all depth-specific brine samples obtained and analyzed from coreholes TH18-01 and TH18-02, and extrapolated values from the lower part of well TWW18-02.

#### **MEASURED RESOURCE**

- average lithium grade is approximately 797 mg/L as lithium
- average potassium grade is about 7,039 mg/L as potassium
- average magnesium:lithium (Mg/Li) ratio is about 2.7
- average sulfate:lithium (SO<sub>4</sub>/Li) ratio is about 11.0

#### **MEASURED AND INDICATED RESOURCE COMBINED**

- average lithium grade is approximately 756 mg/L as lithium
- average potassium grade is about 6,803 mg/L as potassium
- average magnesium:lithium (Mg/Li) ratio is about 2.6
- average sulfate:lithium (SO<sub>4</sub>/Li) ratio is about 11.7

### **14.3.4 Conversion of Li and K to Equivalents**

It is common in the lithium and potassium industries to report lithium and potassium metals as equivalents. Lithium carbonate (Li<sub>2</sub>CO<sub>3</sub>) is a commonly reported equivalent for lithium; potassium chloride (KCl) is a commonly reported equivalent for potassium. The conversion



used to calculate the equivalents from their metal ions is based on the molar weight for the elements added to generate the equivalent. The equations are as follows:

**Li x 5.3228 = lithium carbonate equivalent**

**K x 1.907 = potassium chloride equivalent**

Results of the breakdown for lithium and potassium equivalents resources in each category are summarized in **Table 14.4**.

**Table 14.4. Summary of lithium carbonate and potassium chloride equivalents**

<b>Resource Category</b>	<b>In situ Li (tonnes)</b>	<b>Li<sub>2</sub>CO<sub>3</sub> Equivalent (tonnes)</b>	<b>In situ K (tonnes)</b>	<b>KCl Equivalent (tonnes)</b>
Measured	95,556	508,627	843,671	1,608,881
Indicated	11,714	62,351	121,023	230,791
M+I	107,270	570,979	964,694	1,839,672

*Cutoff grade: 500 mg/L lithium*



### **15. MINERAL RESERVE ESTIMATES**

No mineral reserves have been estimated at this early stage of the Project.

### **16. MINING METHODS**

Mining methods have not been established at this early stage of the Project.

### **17. RECOVERY METHODS**

Recovery methods have not been established at this early stage of the Project.

### **18. PROJECT INFRASTRUCTURE**

Project infrastructure has not been designed at this early stage of the Project.

### **19. MARKET STUDIES AND CONTRACTS**

Market studies and contracts have not yet been realized at this early stage of the Project.



## **20. ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT**

On July 4, 2017, NRG submitted an Environmental Impact Study to the provincial mining authorities for its exploration activities on the Project. The report was prepared by EC & Asociados of Salta, Argentina. According to the Title Opinion dated June 28, 2017 issued by Sr. Jorge Vargas of the Vargas-Galíndez law firm of Mendoza, Argentina (**Appendix A**), the properties of the Project are not subject to known environmental liabilities, nor legal or administrative encumbrances.

As of the date of this report, NRG has received a provisional permit for camp installation. Aside from this, no other permitting has been applied for. No social or community studies have been conducted.

## **21. CAPITAL AND OPERATING COSTS**

No capital costs or operating costs have been established at this early stage of the Project.

## **22. ECONOMIC ANALYSIS**

No economic analyses have been realized at this early stage of the Project.

## **23. ADJACENT PROPERTIES**

Adjacent properties to the Hombre Muerto North Lithium Project include the following:

- Galaxy Resources Ltd. holds large tenements in both Catamarca and Salta provinces (Sal de Vida Project). These areas are mainly south and southeast of the Project properties.
- Orocobre Ltd. conducts borate mining operations at Tincalayu mine, between the Alba Sabrina and Viamonte properties.
- Santa Rita and Maktub operate ulexite production for borates south of the Project properties.
- FMC Lithium Corp. operates lithium brine production and processing southwest of Project properties at the Fenix mine.

Despite the proximity of these projects to the Hombre Muerto North Project, the size and other characteristics of the Project, which is at an early stage, are different, and there is no assurance that the Project will be similar.

### **23.1 GALAXY RESOURCES SAL DE VIDA PROJECT**

Galaxy Resources' Sal de Vida Project covers approximately 38,500 hectares over most of the eastern part of the Salar del Hombre Muerto in Catamarca and Salta provinces. The Sal de Vida brines average about 780 mg/L lithium and 8,700 mg/L potassium. Regarding impurities, magnesium (Mg:Li ratio of 2.2) and sulfate (SO<sub>4</sub>:Li ratio of 11.5) are considered low by industry standards.

In April 2013, Galaxy prepared a Definitive Feasibility Study (DFS) for the Sal de Vida Project. According to the DFS, Galaxy estimates a pre-tax net present value of US\$645 Million (US\$380 Million post tax) at 10% discount rate. Sal de Vida reportedly has the potential to generate total annual revenues in the region of US\$215 million and operating cash flow before



interest and tax of US\$118 Million per annum at full production rates. The DFS supports the development of Sal de Vida, which when completed will include evaporation ponds, a battery grade lithium carbonate plant and a potash plant.

A maiden JORC-compliant Reserve estimate of 1.1 Million tonnes of retrievable lithium carbonate equivalent and 4.2 million tonnes of potassium chloride (potash or KCl) equivalent supports total annual production over a 40-year period (Tables 23.1 and 23.2) (M&A and GAI, 2012).

**Table 23.1. Summary of 2012 mineral resource estimate, Sal de Vida project**

Phase II Resource Category	Brine Volume (m <sup>3</sup> )	Avg. Li (mg/L)	KCl Equivalent (tonnes)	Li <sub>2</sub> CO <sub>3</sub> Equivalent (tonnes)	Avg. K (mg/l)	In situ K (tonnes)	KCl Equivalent (tonnes)
Measured	7.2 x 10 <sup>8</sup>	787	565,000	3,005,000	8,695	6,241,000	11,902,000
Indicated	2.6 x 10 <sup>8</sup>	768	197,000	1,048,000	8,534	2,186,000	4,169,000
Measured + Indicated	9.8 x 10 <sup>8</sup>	782	762,000	4,053,000	8,653	8,427,000	16,071,000
Inferred	8.3 x 10 <sup>8</sup>	718	597,000	3,180,000	8,051	6,692,000	12,762,000
<b>Total</b>	<b>18.1 x 10<sup>8</sup></b>	<b>753</b>	<b>1,359,000</b>	<b>7,233,000</b>	<b>8,377</b>	<b>15,119,000</b>	<b>28,833,000</b>

assumes cutoff grade of 500 mg/L Lithium

Total tonnages for the economic reserve values account for anticipated leakage and process losses of lithium and potassium and provide Proven and Probable Reserve estimates from Southwest and East brine production wellfields. With percent estimated processing losses factored in, the average brine extraction rate is assumed to be on the order of 30,000 m<sup>3</sup>/d.

**Table 23.2. Summary of probable and proven reserve statement (April 2013), Sal de Vida Project**

Reserve Category	Time Period (Years)	Tonnes Li Total Mass	Tonnes Equivalent Li <sub>2</sub> CO <sub>3</sub>	Tonnes Equivalent KCl	Tonnes K Total Mass
Proven	1 - 6	34,000	181,000	633,000	322,000
Probable	7 - 40	180,000	985,000	3,564,000	1,869,000
Total	40 years total	214,000	1,139,000	4,197,000	2,201,000

assumes cutoff grade of 500 mg/L Lithium



## **23.2 TINCALAYU OROCOBRE BORATE OPERATION**

Tincalayu is an uplifted and structurally folded borate deposit, where mineralization is predominantly hosted in sandy units that were deposited in a Miocene salt lake formed approximately 6 million years before present. Borate mineralization is predominantly hosted within the middle member of the Sijes Formation. The principal borate mineral at Tincalayu is Tincal (Borax), with lesser amounts of ulexite and kernite.

Exploration includes 462 diamond holes drilled at the deposit with an average of 75 m at hole spacing of approximately 42 m. **Table 23.3** shows ore resources (Brooker, 2014).

**Table 23.3. Ore resources at Tincalayu, effective date 12/31/2014**

	Current production 30 Ktpa			Expanded Production 100 Ktpa		
	Cut-off	Tonnes (Mt)	Soluble B <sub>2</sub> O <sub>3</sub> (%)	Cut-off	Tonnes (Mt)	Soluble B <sub>2</sub> O <sub>3</sub> (%)
<b>Global Resource (not limited to a pit shell) - with Marginal Cut-off</b>						
Indicated	5.6	6.9	13.9	2.8	6.9	13.8
Inferred	5.6	9.9	10.2	2.8	13.8	8.5
Indicated + Inferred	5.6	16.8	11.7	2.8	20.7	10.3
<b>Maximum DCF In-pit Resource - with Marginal Cut-off</b>						
Indicated	5.6	5.1	14.7	2.8	6.8	13.8
Inferred	5.6	1.4	11.0	2.8	11.0	9.3
Indicated + Inferred	5.6	6.5	13.9	2.8	17.8	11.0

(Source: Orocobre Ltd., from Brooker, 2014)

## **23.3 MAKTUB-SANTA RITA VENTURE**

South of the Sal de Vida property, several mining concessions in the Salar del Hombre Muerto have been producing borates for the Maktub-Minera Santa Rita venture. Santa Rita is a local company from Salta dedicated to borax mining and boric and sulfuric acid production.



#### **23.4 FMC LITHIUM FENIX MINE**

The western part of the Salar del Hombre Muerto is occupied by large concessions on lithium-potash resources held by FMC Lithium's Fenix Mine. This operation has been producing lithium from brine since from 1997. According to the FMC Lithium website, the lithium brine deposit has a mine life over 75 years.

Lithium production in Argentina significantly increased in 2016, reaching 5,700 metric tonnes, an increase from 3,600 metric tonnes in 2015 (USGS, 2017). The USGS notes that the increase was largely due to a new brine operations and increased production at the Fenix Mine.

#### **24. OTHER RELEVANT DATA AND INFORMATION**

No other relevant data are known to exist.



## 25. INTERPRETATION AND CONCLUSIONS

The Hombre Muerto North Lithium Project is at an early stage of exploration. It shares the same hydrogeological basin as the existing FMC Lithium Fenix Mine that has been producing lithium carbonate during the past 20 years. It is also adjacent to the Galaxy's Sal de Vida Project.

The results of lithium and potassium concentrations from the shallow brine sampling rounds are favorable when compared with FMC Lithium and Galaxy projects concentrations, as well as other on-going projects in the Puna. Except for the Alba Sabrina property samples, the results of magnesium to lithium ratios (Mg/Li) are comparatively low for the region, and thus should be favorable for traditional processing treatment.

Geophysical CSAMT sections covering the Alba Sabrina, Natalia Maria and Tramo properties define two large resistivity anomalies that may represent deep lithium-bearing brine zones.

**The Tramo Anomaly:** This is the largest low-resistivity anomaly (0.1 to 10 ohm/m), extending over the Tramo and Natalia Maria properties along a distance of at least 6,000 m in an east-west direction. Recent diamond drilling exploration in 2017 and 2018 provide support that the Tramo concession has abundant lithium and potassium resources in the sub-surface. Recently-drilled well TWW18-01 in Tramo demonstrated that high-quality brine can be pumped from the aquifer at a relatively large rate.

**The Alba Sabrina Anomaly:** This low-resistivity anomaly (0.1 to 19 ohm/m) is 700 to 1,000 m wide and extends along a length of 8,000 m in a northeast-southwest direction along the "Tincalayu Gulf". The northeast part of the anomaly has a length of over 6,000 m, a width of 700 to 1,000 m and thicknesses of 20 to 60 m. Over the southwest border of the Alba Sabrina property, the anomaly is interpreted to thicken to as much as 280 m.



No geophysical measurements have been completed to date over the southern properties (Gaston Enrique, Viamonte and Norma Edith).

In summary, the surface brine chemistry sampling results for the Project reveal high values of lithium, when compared with other projects in the salars of the Puna region, and are consistent with previously-reported results for the Sal de Vida project (Houston and Jaacks, 2010; M&A and GAI, 2012). Laboratory results for depth-specific brine samples and depth-specific drainable porosity demonstrate favorable conditions allowing extraction of lithium-rich brine from the Tramo concession. Pumping tests results from well TWW18-01 confirmed this.

Given these factors, and the acknowledgement of long-term lithium brine production in the salar by FMC Lithium at their Fenix Mine and the brine mineral Resource and Reserve estimates by Galaxy Resources, M&A judges the Project as a property of merit and warrants additional investigations, including the drilling, testing and sampling and studies described in Section 26, in order to advance to a phase of additional exploration drilling, testing, and sampling and a level for Preliminary Economic Assessment (PEA).

## 26. RECOMMENDATIONS

Based on the results of the recent exploration, NRG plans to continue with development of the Project and believes that it has future economic potential for development. Following conversations with NRG, we are recommending that NRG focus on the further assessment and development of the Tramo concession. Therefore, we recommend that the ongoing chemical process test work (not documented in this report) be completed. In addition, we recommend two new courses of action: 1) Development of a Preliminary Economic Assessment (PEA), and 2) Determine the potential of the Tramo concession to provide a sustainable source of brine from a small wellfield, and estimate a Reserve.

A PEA report would provide an initial estimate of the economic viability of the project and would help support decisions to move forward with estimation of an economic Reserve using a numerical groundwater flow model. The PEA should include information on what will be required to bring the project into production, details on processing and production methods and rates, and estimates of how much lithium carbonate and cash it will produce. It should include information on pre-production capital costs, life-of-mine sustaining capital, mine life and cash flow, and closure costs.

The total cost of the above recommended activities would be approximately US\$ 30,000 for completion of the ongoing test work, US\$ 250,000 for the PEA report, and US\$ 50,000 for other consulting and legal fees; total estimated costs are US\$ 330,000. These costs do not include the conversion of Resources to Reserves that could be a sustainable source of brine from the Tramo wellfield, which is work that would be carried out after completion of a successful PEA.

Assuming that the PEA is favorable and supports moving forward with additional effort, a numerical groundwater flow model should be prepared in the Tramo area to be able to upgrade the current Resource to an economic Reserve. To prepare a reliable groundwater flow model,



additional information is needed for the basin boundaries and aquifer in that part of the basin. Because NRG has drilled several exploration wells in the Tramo concession, these will be able to function as calibration points for recommended geophysical surveys. When additional wells have been drilled and tested in the other concessions, the groundwater flow model would be modified to include other areas.

Finally, in addition to modeling, an investigation into sources of fresh water needed for future processing is also recommended if processing of brine is to occur on site. Currently, details on future processing are not known, but based on the author's experience and understanding of the Tramo area and other concessions currently held by NRG, this would be a logical and pragmatic next step if the PEA is favorable.

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## 28. ABBREVIATIONS IN THE TEXT

<b>Abbreviation</b>	<b>Meaning</b>
%	Percentage, per cent
°	Degrees
°C	Degrees Celsius
APVC	Altiplano-Puna magmatic volcanic arc complex
CIM	Canadian Institute of Mining
CSAMT	Controlled Source Audiofrequency Magnetotellurics
DGFM	Dirección General de Fabricaciones Militares
E	East
FAusIMM	Fellow of the Australasian Institute of Mining and Metallurgy
EIA	Environmental Impact Assessment
K/Ar	Potassium/Argon
Ka	Thousand years (annum)
Kh	Hydraulic conductivity (horizontal)
Kv	Hydraulic conductivity (vertical)
ICP	Inductively coupled plasma
km	Kilometers
km <sup>2</sup>	Square kilometers
Kv	Kilovolts
Ma	Million years (annum)
m	Meters
m <sup>3</sup> /d	Cubic meters per day
masl	Meters above sea level
mg/L	Milligrams per liter
Mw	Megawatts
N	North
NI	National Instrument
PEA	Preliminary Economic Assessment
QA/QC	Quality Assurance/Quality Control
QP	Qualified Person
Rb-Sr	Rubidium-Strontium
S	South
tpa	Tonnes per year (annum)
US\$	US dollar
W	West



## 29. CERTIFICATE OF AUTHOR

### **Certificate of Qualified Person: Michael J. Rosko**

As an author and reviewer of the Technical Report, dated November 7, 2018, with an effective date of October 6, 2018 I, Michael J. Rosko, MSc., P.G., do hereby certify that:

- I am a principal hydrogeologist and general manager with Montgomery & Associates, Consultores, Ltda., Avenida Vitacura 2771, Of. 404, Las Condes, Santiago de Chile.
- I graduated with a Bachelor of Science degree in Geology from University of Illinois in 1983.
- I graduated with a Master of Science in Geology (Sedimentary Petrology focus) from University of Arizona in 1986.
- I am a registered professional geologist in the states of Arizona (25065), California (5236), and Texas (6359).
- I am a registered member of Society for Mining, Metallurgy, and Exploration (#4064687), and a member of the National Ground Water Association, Arizona Hydrological Society, and International Association of Hydrogeologists.
- I have practiced hydrogeology for more than 30 years, with much of this time working in salar basins in Chile and Argentina similar to the Project.
- 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.
- I have previously visited the Salar de Hombre Muerto basin during the period 2011 to 2013 and recently visited the Property on July 7, 2017, January 10, 2018, and April 13, 2018. A senior hydrogeologist working for Mr. Rosko visited the site near the beginning of the most recent drilling and testing program May 2-5, 2018.
- 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.
- I assume responsibility for all Sections of the report.
- I am independent of the issuer applying all of the tests in Section 1.5 of National Instrument 43-101. I am independent of NRG Metals Inc, and independent of any current or past groups associated with the Property.
- I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.



Dated the 16th day of November, 2018.

A handwritten signature in blue ink, appearing to read "Michael J. Rosko", is written in a cursive style.

Signature of Qualified Person

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Michael J. Rosko  
Print name of Qualified Person

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## 30. APPENDICES



## **APPENDIX A**

### **LEGAL OPINION BY VARGAS (2017)**

Mendoza, June 28, 2017

**BY E-MAIL ONLY**

NRG Metals Inc.

Att.: Mr. Adrian Hobkirk

**Re: Title opinion of mining claims of  
Hombre Muerto Norte project.**

Dear Sirs:

We have been asked to provide a title opinion regarding good standing of the mining claims optioned from Mr. Jorge Moreno and Ms. Alba Silvia Sala, listed on Exhibit A, named Hombre Muerto Norte project.

We are attorneys duly licensed to practice law in Argentina. Our opinion contained herein is limited to the laws of Argentina, and we are expressing no opinion as to the effect of the laws of any other jurisdiction.

We have based our analysis of the legal status of the mining claims on the following documents:

- Original Dossier #18.993, mining claim "Tramo" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).
- Original Dossier #18.830, mining claim "Natalia María" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).
- Original Dossier #18.824, mining claim "Gastón Enrique" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).
- Original Dossier #18.829, mining claim "Norma Edit" currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).

- Original Dossier #18.823, mining claim “Alba Sabrina” currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).
- Original Dossier #13.408, mining claim “Viamonte” currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).
- Original Dossier #13.849, Easement of Camp in favor of mining claim “Viamonte” currently under process before the Juzgado de Minas y Comercial de Registro, province of Salta (provincial mining authority).

#### Background on Tenure

There are two types of tenure under Argentine mining regulations; *Cateos* (Exploration Claims) and *Minas* (Mining Claims). Exploration Claims 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 Claim for 1 unit (500 hectares) has a period of 150 days. For each additional unit (500 hectares) the period is extended by 50 days. The largest Claim is 20 units (10,000 hectares) and has a period of 1,100 days. The period starts 30 days after the grant of the claim. The canon rent payable is AR\$3,200 per 100 hectares starting three years after grant.

Mining Claims are licenses which allow the holder to exploit the property subject to regulatory environmental approval. Only the Exploration Claim holder may apply for a Mining Claim as a consequence of a discovery made within an Exploration Claim area but anyone can apply for a Mining Claim over vacant ground. New mining claims may also be awarded for mines that were abandoned or for which their original mining claims were declared to have expired. In such cases, the first person claiming an interest in the property will have priority. If more than one person claims at the same time for such claim, the provincial mining authority has to grant it by a drawing.

Mining Claims are unlimited in duration so long as the holder meets its obligations under the Mining Code (“MC”) which includes paying the annual canon payments, completing the survey and submitting a mining investment plan (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 to mineral occurrence.

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

It is worth mentioning that under the *MC* anyone is allowed to explore, even if an exploration right is not granted. The main condition to explore is to have an environmental impact report (“EIR”) approved. Approval of the EIR is not a condition to maintain the claim title in good standing but is a pre-requisite to carrying out activities on the properties. An EIR must be submitted for every type of mining activity (prospecting, exploration, exploitation, development, extraction, etc.) and must be updated every two years. In addition, specific registrations and authorizations must be applied for depending on the activities to be carried out on the claims (for example, water usage and waste disposal).

#### Surface Access

Pursuant to Argentina legislation, except for a few minerals that belong to the surface owner, most minerals belong to the Provinces which grant exploration and exploitation claims to the applicants.

Due to the likely coexistence of two different rights within the same area, and in order to solve likely problems between the surface owner and the owner of an exploration or exploitation claim, article 13 of the *MC* states that *“the exploitation of mines, their exploration, concession and other consequent acts, have the nature of public benefit”*. Based on this principle, the Exploration and Mining Claims have primacy over the surface rights provided certain legal requirements are met, basically consisting of due compensation for damages or the posting of a bond when the amount of the compensation is not agreed with the surface owner or when the works to be done are urgent.

The owner of an Exploration Claim has the right to explore and therefore to access the area from the moment that the Exploration Permit has been granted subject to approval of an Environment Impact report. The Exploration Claim guarantees its owner the access and exclusivity of the area that has been granted even to the extent of obligating the police to enforce the miner’s rights<sup>1</sup>.

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<sup>1</sup> Pigretti, Eduardo, “Codigo de Minería y Legislación de Hidrocarburos”, ed la ley, pag 46). Date??

Similarly, the owner of a Mining Claim has the right to start works and to access the mining property from the moment that the mining concession has been granted.

Regarding surface owners, they have the right to require either from the licensor due compensation for the damages caused by the exploration and mining activities and the occupation of the land or request to the Mining Judge that the licensor post a bond guarantying that likely damages will be compensated. None of these claims or requirements could stop the exploration or exploitation works if the licensor agrees to pay the compensation or damages claimed by the surface owner or, if there is no agreement, if the explorer/miner posts a bond with the mining authorities.

#### Zone of Overlapping Jurisdiction

The mining claims listed on Exhibit A are partially located within a zone of overlapping jurisdiction between Salta and Catamarca provinces. The northern border of Catamarca province overlaps the southern border of Salta province, and both provinces claim this area as part of their territory. In this area, the mining claims applied for earlier prevail with respect to newer applications, regardless of which province the mining claims are requested in.

In the latest ruling of the Supreme Court of Justice of the Republic of Argentina (“Supreme Court”), in 2015, in the case “Catamarca, Provincia de c/ Salta, Provincia de p/ ordinario”, the Supreme Court ruled that this dispute must be resolved by a law of the National Congress, pursuant to Article 75, Section 15 of the National Constitution.

As of the date of this legal opinion, both provincial governments are trying to resolve this issue in order to promote mineral development within the zone. Currently other companies are operating in the area.

In consideration of the aforementioned we can conclude that:

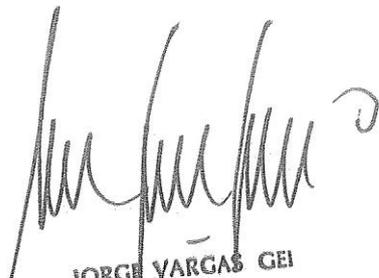
- a) Mr. Jorge E. Moreno and Ms. Alba Silvia Sala have good and valid, legal and beneficial title to the mining claims listed on Exhibit A.
- b) The mining claims listed on Exhibit A are in good standing and comply with applicable regulations. Property coordinates (corners) are found on Exhibit A.
- c) The mining claims listed on Exhibit A are subject to the Moreno Option Agreement between NRG Metals Argentina S.A. and Mr. Moreno and Ms.

Sala dated May 17, 2017 (Exhibit B). Other than the obligations arising out of the Moreno Option Agreement, the mining claims listed on Exhibit A are free and clear from any liens, charges or encumbrances, recorded in the relevant registries.

- d) The mining “fees” (“*canon*”) of the mining claims listed on Exhibit A are up to date.
- e) Upon exercise of the purchase option by NRG Metals Argentina S.A. under the Moreno Option Agreement, Mr. Moreno and Ms. Sala have the obligation to transfer the mining claims to NRG Metals Argentina S.A.

Please do not hesitate to contact us should you require any further information.

Regards,



JORGE VARGAS GEI  
ABOGADO  
MAT. 5448  
MAT. FED. Tº 77 Fº 612

Jorge Vargas Gei  
Vargas Galíndez Abogados

### Exhibit A

Name	File #	Application Year	Area (has)	Property Coordinates	
				Y	X
Alba Sabrina	18.823	2007	2.089	3396745.63	7213857.40
				3398151.06	7213830.65
				3398150.81	7213456.32
				3397478.55	7212728.84
				3398215.08	7212048.20
				3397204.42	7210940.69
				3397334.99	7210820.12
				3395420.09	7210685.04
				3395488.53	7209689.37
				3394990.70	7209655.15
				3395017.65	7209256.85
				3394319.62	7209210.33
				3394372.76	7208412.21
				3393873.83	7208379.09
				3393926.71	7207581.42
3392926.74	7207514.94				
3392926.74	7213929.36				
Tramo	18.993	2007	383	3400153.49	7211193.41
				3403581.75	7210496.92
				3403582.30	7209935.26
				3399000.83	7209940.11
Natalia Maria	18.830	2007	115	3396365.98	7208544.74
				3396865.67	7208578.22
				3396812.76	7209376.47
				3397428.68	7209417.55
				3397401.69	7209822.28
				3397663.94	7209839.76
				3397663.91	7208655.67
				3397303.47	7208642.43
				3397242.42	7208295.88
				3396406.25	7207939.52
3396392.58	7208145.31				
Gastón Enrique	18.824	2007	55	3396950.52	7207289.71
				3397663.94	7207298.43
				3397663.94	7206923.60
				3398454.95	7206923.60
				3398454.95	7205885.50
				3398321.79	7205887.17
				3398304.10	7206195.77
				3398259.97	7206866.22
3396984.09	7206781.87				
Viamonte	13.408	1988	310	3393107.85	7203055.41
				3393207.30	7201730.86
				3394832.45	7201826.53
				3394788.32	7202557.72
				3395170.12	7202578.18
				3395150.66	7203102.78
				3394425.41	7203094.14
				3394411.39	7204270.76
				3394111.53	7204251.49
3394091.79	7204550.80				

				3393792.46	7204531.16
				3393886.00	7203108.57
Norma Edit	18.829	2007	285	3391416.63	7202939.87
				3393107.85	7203055.41
				3393207.11	7201733.38
				3392874.00	7201718.00
				3392869.78	7199877.59
				3392174.46	7199930.59
				3392004.94	7202910.55
				3391421.20	7202872.27

## Exhibit B

### Main terms of the Moreno Option Agreement

- The Moreno Option Agreement was entered into on May 17, 2017, between Mr. Jorge Enrique Moreno, Ms. Alba Silvia Sala and NRG Metals Argentina S.A.
- NRG Metals Argentina S.A. has the exclusive right to explore on the mining claims.
- The Moreno Option Agreement has the following payment schedule. In addition, NRG Metals Inc. will issue shares according to the following schedule:

	Cash payments	Shares issued
On signing	US\$ 50,000	nil
On approval of NI 43-101 by TSX-V	US\$100,000	1,000,000
6 months after approval of NI 43-101	US\$250,000	1,000,000
12 months after approval of NI 43-101	US\$250,000	1,000,000
18 months after approval of NI 43-101	US\$1,000,000	1,000,000
30 months after approval of NI 43-101	US\$1,000,000	2,000,000
42 months after approval of NI 43-101	US\$1,000,000	2,000,000
54 months after approval of NI 43-101	US\$2,000,000	2,000,000
Total cash payments and shares issued	US\$5,650,000	10,000,000

- On completion of payment schedule by NRG Metals Argentina S.A., Mr. Moreno and Ms. Sala have the obligation to transfer the mining claims to NRG Metals Argentina S.A.
- Mr. Moreno and Ms. Sala retain a 3% royalty on the production of lithium carbonate. Fifty percent (50%) of this royalty can be purchased by NRG Metals Argentina S.A. for the amount of USD3,000,000 for a period of six months after approval of NI 43-101 by TSX Venture Exchange.
- Upon the first issuance of shares, Mr. Moreno will be appointed to the board of directors of NRG Metals Argentina S.A.
- Upon approval of NI 43-101 by TSX Venture Exchange, NRG Metals Argentina S.A. has a priority in the negotiation of all the mining claims that Mr. Moreno and Ms. Sala currently own, or may own in the future, in the province of Jujuy, Argentina.



## **APPENDIX B**

### **LABORATORY RESULTS**



**Alex Stewart  
Argentina S.A.**  
Official ASIC Member

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(M5516BBX) Luzurtagá, Mepi, Mendoza  
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F: +54 261 4531603  
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W: www.alexstewart.com.ar



## INFORME DE ANALISIS

### SECCION GENERAL

Nº DE INFORME:

NOA168633

CLIENTE: JORGE MORENO  
DIRECCION: RUTA 68 KM 173 CERRILLOS SALTA  
SOLICITANTE: JORGE MORENO  
PROYECTO: Nueva Sal  
Nº DE ENVIO:

ANALISIS: 0002NLMCI28\_NOA LMFQ19\_NOA LMFQ01\_NOA LMFQ16\_NOA LMMT03\_NOA DFR\_NOA 0002NLMCI01\_NOA

Nº DE COTIZACION: QE-445-1  
TOTAL DE MUESTRAS: 12  
PREPARACION DE MUESTRA:

FECHA RECEPCION DE MUESTRAS:  
FECHA RECEPCION DE INSTRUCCIONES:  
FECHA INGRESO AL LABORATORIO:  
FECHA EMISION DE INFORME:

#### OBSERVACIONES

#### ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA	OTRAS
Bl. Blanco de Procedimiento	STD (Standard)	Fun. Jurisd.	Tr. Triplicado
Bl. M. Blanco de muestra	M. Valor nominal	Exp. Duplicado	Rep. Triplicado
Bl. P. Blanco de referencia	SD (Desviación estándar)	Dup. C. Duplicado de cuantificación	Com. Compuesto
			SL: Sucesos mínimos
			LC5: Límite de cuantificación superior
			LC: Límite de cuantificación
			IC: Identificación
			COQ: Cálculo
			LD: Límite de Detección

#### NOTAS

- Muestreo • Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
  - Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina, y a partir de la fecha de recepción de las instrucciones.
- Almacenaje • Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
  - Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
  - El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo el responsable absoluto de la disposición final de las muestras devueltas.
  - Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al cliente carecen de la adición de cualquier sustancia o material que atente al medio ambiente.
- Informe • Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
  - El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorización a Alex Stewart Argentina.
  - Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
  - Escape a la responsabilidad de Alex Stewart Argentina la evaluación que puede surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
  - Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente Informe analítico final.
  - Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LC5 y a los destinatarios que él explícitamente autorice.
  - Para Au-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
  - Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
  - Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.
- QA / QC • Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
  - Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
  - Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R<sup>2</sup> superiores a 0.99.

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CDN  
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mmta



## SECCION RESULTADOS

				DETERMINACION							
				UNIDAD							
				COD. DE ANALISIS							
				TECNICA							
				LD							
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna		Li mg/L	Ca mg/L	Mg mg/L	B mg/L	Na mg/L	K mg/L	Ba mg/L
					LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
					ICP	ICP	ICP	ICP	ICP	ICP	ICP
					0.05	0.025	0.05	0.05	0.1	0.25	0.01
345652	NS001	Salmuera (líq.)	Ambiental	SOC	864	1042	2515	311	98485	5866	<0,2
345653	NS002	Salmuera (líq.)	Ambiental		1064	2594	4385	216	92559	6727	<0,2
345654	NS003	Salmuera (líq.)	Ambiental		322	1084	1537	212	71389	2451	<0,2
345655	NS004	Salmuera (líq.)	Ambiental		958	986	2038	589	106339	7314	<0,2
345656	NS005	Salmuera (líq.)	Ambiental		1021	676	1549	646	116588	7758	<0,2
345657	NS006	Salmuera (líq.)	Ambiental		568	778	1112	503	124940	4912	<0,2
345658	NS007	Salmuera (líq.)	Ambiental		543	534	3432	381	106382	3758	<0,2
345659	NS008	Salmuera (líq.)	Ambiental		347	569	3087	248	88023	2559	<0,2
345660	NS009	Salmuera (líq.)	Ambiental		415	912	861	432	128409	3391	<0,2
345661	NS010	Salmuera (líq.)	Ambiental		1013	897	1155	438	113437	8593	<0,2
345662	NS011	Salmuera (líq.)	Ambiental		80	466	883	200	131626	2325	<0,2
345663	NS012	Salmuera (líq.)	Ambiental		< 1	44	25	1	20751	10	<0,2

## SECCION RESULTADOS

				DETERMINACION							
				UNIDAD							
				COD. DE ANALISIS							
				TECNICA							
				LD							
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna		Sr mg/L	Cu mg/L	Mn mg/L	Cl- mg/L	CO3= mg/L	pH UpH	Densidad g/mL
					LMMT03	LMMT03	LMMT03	LMCI01	LMFQ16	LMCI28	LMFQ19
					ICP	ICP	ICP	Argentometría	Volumetría	Potenciometría	Picnometría
					0.005	0.01	0.05	250	10		
345652	NS001	Salmuera (líq.)	Ambiental	SOC	27	0.33	3.2	159545	N.D.	6.73	1.180
345653	NS002	Salmuera (líq.)	Ambiental		40	0.28	1.7	169427	N.D.	6.33	1.183
345654	NS003	Salmuera (líq.)	Ambiental		26	0.32	6.5	114574	N.D.	7.16	1.134
345655	NS004	Salmuera (líq.)	Ambiental		26	0.28	<1,0	173723	N.D.	7.55	1.196
345656	NS005	Salmuera (líq.)	Ambiental		15	0.27	<1,0	190194	N.D.	7.51	1.211
345657	NS006	Salmuera (líq.)	Ambiental		18	0.31	<1,0	195636	N.D.	7.36	1.216
345658	NS007	Salmuera (líq.)	Ambiental		21	0.34	<1,0	164128	N.D.	7.35	1.194
345659	NS008	Salmuera (líq.)	Ambiental		22	0.33	<1,0	136057	N.D.	7.40	1.163
345660	NS009	Salmuera (líq.)	Ambiental		26	0.32	<1,0	192199	N.D.	7.75	1.216
345661	NS010	Salmuera (líq.)	Ambiental		29	0.27	3.8	180311	N.D.	7.79	1.201
345662	NS011	Salmuera (líq.)	Ambiental		13	<0,2	<1,0	190050	N.D.	7.63	1.219
345663	NS012	Salmuera (líq.)	Ambiental		5	<0,2	<1,0	34802	N.D.	7.56	1.042

# SECCION RESULTADOS

DETERMINACION

UNIDAD

COD. DE

ANALISIS

TECNICA

LD

Conductividad  
mS/cm

LMFQ01  
Potenciometria

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	
345652	NS001	Salmuera (líq.)	Ambiental	229
345653	NS002	Salmuera (líq.)	Ambiental	237
345654	NS003	Salmuera (líq.)	Ambiental	188
345655	NS004	Salmuera (líq.)	Ambiental	227
345656	NS005	Salmuera (líq.)	Ambiental	240
345657	NS006	Salmuera (líq.)	Ambiental	242
345658	NS007	Salmuera (líq.)	Ambiental	225
345659	NS008	Salmuera (líq.)	Ambiental	208
345660	NS009	Salmuera (líq.)	Ambiental	230
345661	NS010	Salmuera (líq.)	Ambiental	193
345662	NS011	Salmuera (líq.)	Ambiental	228
345663	NS012	Salmuera (líq.)	Ambiental	72

SOC

## SECCION QA-QC

DETERMINACION

UNIDAD

COD. DE

ANALISIS

TECNICA

LD

Fe<sup>2+</sup>  
mg/L

LMMT03  
IC<sup>+</sup>  
0.005

Cl<sup>-</sup>  
mg/L

LMMT03  
IC<sup>+</sup>  
0.07

Mn<sup>2+</sup>  
mg/L

LMMT03  
IC<sup>+</sup>  
0.02

Cl<sup>-</sup>  
mg/L

LMC01  
Argentometria  
200

COO<sup>-</sup>  
mg/L

LMFQ16  
Volumetrica  
10

pH  
Upp

LMC20  
Potenciometria

Densidad  
g/mL

LMFQ13  
Rheometria

Preparado:

Identificado:

RESULTADO:

DUP-NS010

NS010

28

0.27

3.8

18080

N.D.

7.7

1.2012

# SECCION QA-QC

DETERMINACION  
MUESTRA  
COD. DE  
ANALISIS  
TECNICA  
LAB

Li  
mg/L  
LIMITOS  
ICP  
0.00

Ca  
mg/L  
LIMITOS  
ICP  
0.020

Mg  
mg/L  
LIMITOS  
ICP  
0.05

B  
mg/L  
LIMITOS  
ICP  
0.05

Na  
mg/L  
LIMITOS  
ICP  
0.1

K  
mg/L  
LIMITOS  
ICP  
0.25

Sr  
mg/L  
LIMITOS  
ICP  
0.01

Proyecto:

Determinacion:

ESTUADOC

DUR-NS010

NS010

1010

891

1099

420

113700

8710

<0.2

# SECCION QA-QC

DETERMINACION  
MUESTRA  
COD. DE  
ANALISIS  
TECNICA  
LAB

Conductividad  
mg/cm  
LIMITOS  
Potenciometria

Proyecto:

Determinacion:

DUR-NS010

NS010

194



**Alex Stewart  
Argentina S.A.**  
Official ASIC Member

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## INFORME DE ANALISIS

### SECCION GENERAL

Nº DE INFORME:

NOA179224

ANÁLISIS:		LMFQ12_NOA	LMFQ01_NOA	LAC13_NOA	LMMT03_NOA	LMFQ20_NOA	LMFQ30_NOA	0002NLM001_NOA	LMC122_NOA
CLIENTE:	One Box S.A.								
DIRECCION:	Ruta Nacional 56, Km 173, Carilós (CP-4403) Salta								
SOLICITANTE:	Jorge Moreno								
PROYECTO:	na								
Nº DE ENVÍO:	salto del hombre muerto								
				Nº DE COTIZACIÓN:	QC-897-1			FECHA RECEPCION DE MUESTRAS:	09/02/2017
				TOTAL DE MUESTRAS:	12			FECHA RECEPCION DE INSTRUCCIONES:	09/02/2017
				PREPARACION DE MUESTRA:				FECHA INGRESO AL LABORATORIO:	09/02/2017
								FECHA EMISION DE INFORME:	24/02/2017

#### OBSERVACIONES

CLASIFICACION	ESTANDAR	TIPO DE MUESTRA	ABREVIATURAS	OTRAS
SI: Muestra de Envío de control	STD: Standard	Fls: polvo	Fl: Trípode	ND: No Detectado
SI.M: Muestra de muestra	VPS: Valor nominal	Dsp: Duplicado	Res: Residuo	LCR: Límite de cuantificación superior
SI.K: Muestra de rechazo	SD: Desviación estándar	Dsp.C: Duplicado de muestra	CCM: Contaminado	CCD: Código
				LD: Límite de Detección

#### NOTAS

- Muestra - Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras estráidas por el cliente, pertenecen sólo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.
- Atmósfera - Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de sedimentos al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precio de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo el responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al cliente carecen de la edición de cualquier sustancia o material que altere el medio ambiente.
- Informe - Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorización a Alex Stewart Argentina.
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que puede surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de Informe quedan reemplazados por el presente Informe analítico final.
- Se procede a informar solamente los resultados que están enmarcados dentro del rango de validación o entre el LD y el LCR y a los desastrosos que el explícitamente autorice.
- Para Au-30 el Límite de Cuantificación es: LC = 0,06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP. Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.
- DA / QC - Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R<sup>2</sup> superiores a 0,99.

Ing. María de los Milagros Ojeda  
Directora Técnica  
Alex Stewart INQA

## SECCION RESULTADOS

### DETERMINACION

UNIDAD  
COD. DE  
ANALISIS  
TECNICA  
LD

Li	Ca	Mg	B	Na	K	Ba
mg/L						
LMMT03						
ICP						
0.05	0.025	0.05	0.05	0.1	0.25	0.01

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Li	Ca	Mg	B	Na	K	Ba
345652	NS001	Salmuera (liq.)	Ambiental	864	1042	2515	311	98485	5866	<0,2
345653	NS002	Salmuera (liq.)	Ambiental	1064	2594	4385	216	92559	6727	<0,2
345654	NS003	Salmuera (liq.)	Ambiental	322	1084	1537	212	71389	2451	<0,2
345655	NS004	Salmuera (liq.)	Ambiental	958	986	2038	589	106339	7314	<0,2
345656	NS005	Salmuera (liq.)	Ambiental	1021	676	1549	646	116588	7758	<0,2
345657	NS006	Salmuera (liq.)	Ambiental	568	778	1112	503	124940	4912	<0,2
345658	NS007	Salmuera (liq.)	Ambiental	543	534	3432	381	106382	3758	<0,2
345659	NS008	Salmuera (liq.)	Ambiental	347	569	3087	248	88023	2559	<0,2
345660	NS009	Salmuera (liq.)	Ambiental	415	912	861	432	128409	3391	<0,2
345661	NS010	Salmuera (liq.)	Ambiental	1013	897	1155	438	113437	8593	<0,2
345662	NS011	Salmuera (liq.)	Ambiental	80	466	883	200	131626	2325	<0,2
345663	NS012	Salmuera (liq.)	Ambiental	< 1	44	25	1	20751	10	<0,2

SOC

## SECCION RESULTADOS

### DETERMINACION

UNIDAD  
COD. DE  
ANALISIS  
TECNICA  
LD

Sr	Cu	Mn	Cl-	CO3=	pH	Densidad
mg/L	mg/L	mg/L	mg/L	mg/L	UpH	g/mL
LMMT03	LMMT03	LMMT03	LMCI01	LMFQ16	LMCI28	LMFQ19
ICP	ICP	ICP	Argentometria	Volumetria	Potenciometria	Picnometria
0.005	0.01	0.05	250	10		

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Sr	Cu	Mn	Cl-	CO3=	pH	Densidad
345652	NS001	Salmuera (liq.)	Ambiental	27	0.33	3.2	159545	N.D.	6.73	1.180
345653	NS002	Salmuera (liq.)	Ambiental	40	0.28	1.7	169427	N.D.	6.33	1.183
345654	NS003	Salmuera (liq.)	Ambiental	26	0.32	6.5	114574	N.D.	7.16	1.134
345655	NS004	Salmuera (liq.)	Ambiental	26	0.28	<1,0	173723	N.D.	7.55	1.196
345656	NS005	Salmuera (liq.)	Ambiental	15	0.27	<1,0	190194	N.D.	7.51	1.211
345657	NS006	Salmuera (liq.)	Ambiental	18	0.31	<1,0	195636	N.D.	7.36	1.216
345658	NS007	Salmuera (liq.)	Ambiental	21	0.34	<1,0	164128	N.D.	7.35	1.194
345659	NS008	Salmuera (liq.)	Ambiental	22	0.33	<1,0	136057	N.D.	7.40	1.163
345660	NS009	Salmuera (liq.)	Ambiental	26	0.32	<1,0	192199	N.D.	7.75	1.216
345661	NS010	Salmuera (liq.)	Ambiental	29	0.27	3.8	180311	N.D.	7.79	1.201
345662	NS011	Salmuera (liq.)	Ambiental	13	<0,2	<1,0	190050	N.D.	7.63	1.219
345663	NS012	Salmuera (liq.)	Ambiental	5	<0,2	<1,0	34802	N.D.	7.56	1.042

SOC

# SECCION RESULTADOS

DETERMINACION

UNIDAD

COD. DE

ANALISIS

TECNICA

LD

Conductividad  
mS/cm

LMFQ01  
Potenciometria

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	
345652	NS001	Salmuera (líq.)	Ambiental	229
345653	NS002	Salmuera (líq.)	Ambiental	237
345654	NS003	Salmuera (líq.)	Ambiental	188
345655	NS004	Salmuera (líq.)	Ambiental	227
345656	NS005	Salmuera (líq.)	Ambiental	240
345657	NS006	Salmuera (líq.)	Ambiental	242
345658	NS007	Salmuera (líq.)	Ambiental	225
345659	NS008	Salmuera (líq.)	Ambiental	208
345660	NS009	Salmuera (líq.)	Ambiental	230
345661	NS010	Salmuera (líq.)	Ambiental	193
345662	NS011	Salmuera (líq.)	Ambiental	228
345663	NS012	Salmuera (líq.)	Ambiental	72

SOC

## SECCION QA-QC

DETERMINACION

UNIDAD

COD. DE

ANALISIS

TECNICA

LD

SP

mg/L

LMMT03

Cl<sup>-</sup>

0.005

Cl<sup>-</sup>

mg/L

LMMT03

Cl<sup>-</sup>

0.07

Mg

mg/L

LMMT03

Cl<sup>-</sup>

0.05

Cl<sup>-</sup>

mg/L

LMC01

Argentometria

250

CO<sub>3</sub>

mg/L

LMFQ16

Voluntaria

10

pH

Upp

LMC20

Potenciometria

Densidad

g/mL

LMFQ15

Roncimetria

Preparado:

Identificado:

RESULTADO:

DUP-NS010

NS010

28

0.27

3.8

180860

N.D.

7.7

1.2012

# SECCION QA-QC

DETERMINACION  
 VISUAL  
 COO DE  
 ANALISIS  
 TECNICA  
 LB

Li  
 mg/L  
 LIMITE  
 COO  
 0.00

Ca  
 mg/L  
 LIMITE  
 COO  
 0.020

Mg  
 mg/L  
 LIMITE  
 COO  
 0.05

B  
 mg/L  
 LIMITE  
 COO  
 0.05

Fe  
 mg/L  
 LIMITE  
 COO  
 0.1

K  
 mg/L  
 LIMITE  
 COO  
 0.25

SO  
 mg/L  
 LIMITE  
 COO  
 0.01

PROBACION

IDENTIFICACION

RESULTADO

PROBACION	IDENTIFICACION	Li	Ca	Mg	B	Fe	K	SO
DUP-NS010	NS010	1010	691	1099	420	113700	6710	4.2



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## INFORME DE ANALISIS

### SECCION GENERAL

**Nº DE INFORME:**

**NOA1811058**

**ANALISIS:** 0002NLMC128\_NOA LMFQ19\_NOA LMFQ01\_NOA LMFQ15\_NOA LMFQ16\_NOA LMFQ17\_NOA LMMT03\_NOA LMFQ08\_NOA  
0002NLMC101\_NOA LMC122\_NOA LMFQ09\_NOA DFR-17\_NOA LMIS01\_NOA

**CLIENTE:** NRG METAL ARGENTINA SA en formacion  
**DIRECCION:** San Martin 924 - 3º piso - Ciudad - Mendoza  
**SOLICITANTE:** Sergio Lopez  
**PROYECTO:** NRG METAL ARGENTINA SA  
**Nº DE ENVIO:**

**Nº DE COTIZACION:** QE-631-1  
**TOTAL DE MUESTRAS:** 11  
**PREPARACION DE MUESTRA:**

**FECHA RECEPCION DE MUESTRAS:** 12/01/2018  
**FECHA RECEPCION DE INSTRUCCIONES:** 12/01/2018  
**FECHA INGRESO AL LABORATORIO:** 12/01/2018  
**FECHA EMISION DE INFORME:** 23/01/2018

#### OBSERVACIONES

#### ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA	OTRAS
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarteo	Com: Compuesta
			N.D : No Detecta
			LCS: Limite de cuantificacion superior
			LC: Limite de cuantificación
			ID: Identificación
			COD: Código
			LD: Limite de Detección

#### NOTAS

- Muestreo • Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Almacenaje • Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.
- Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
  - Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
  - El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
  - Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier sustancia o material que atente al medio ambiente.
- Informe • Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorización a Alex Stewart Argentina
  - Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
  - Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
  - Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
  - Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
  - Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
  - Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
  - Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.
- QA / QC • Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
  - Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R<sup>2</sup> superiores a 0.99.

Ing. María de las Mercedes Otaiza  
Directora Técnica  
Alex Stewart NOA

# SECCION RESULTADOS

DETERMINACION

UNIDAD

COD. DE  
ANALISIS

TECNICA

LD

LCS

Li

Ca

Mg

B

Na

K

Ba

mg/L

mg/L

mg/L

mg/L

mg/L

mg/L

mg/L

LMMT03

LMMT03

LMMT03

LMMT03

LMMT03

LMMT03

LMMT03

ICP-OES

ICP-OES

ICP-OES

ICP-OES

ICP-OES

ICP-OES

ICP-OES

0,05

0,025

0,05

0,05

0,1

0,25

0,01

RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Li	Ca	Mg	B	Na	K	Ba
434753	SHMN-001	Salmuera (líq.)	Ambiental	1120	978	3594	255	91495	8554	<0,20
434754	SHMN-002	Salmuera (líq.)	Ambiental	792	940	2392	277	86552	6049	<0,20
434755	SHMN-003	Salmuera (líq.)	Ambiental	<0,50	28	13	1	28	3	<0,20
434756	SHMN-004	Salmuera (líq.)	Ambiental	1011	1105	2378	396	96202	9236	<0,20
434757	SHMN-005	Salmuera (líq.)	Ambiental	1008	1104	2379	395	96393	9539	<0,20
434758	SHMN-006	Salmuera (líq.)	Ambiental	1216	1381	3718	177	98220	10368	<0,20
434759	SHMN-007	Salmuera (líq.)	Ambiental	353	737	2674	244	80373	3059	<0,20
434760	SHMN-008	Salmuera (líq.)	Ambiental	<0,50	27	12	1	29	3	<0,20
434761	SHMN-009	Salmuera (líq.)	Ambiental	911	944	1300	435	109391	8857	<0,20
434762	SHMN-010	Salmuera (líq.)	Ambiental	913	943	1297	432	109943	8861	<0,20
434763	SHMN-011	Salmuera (líq.)	Ambiental	793	1018	1075	399	106828	8870	<0,20

# SECCION RESULTADOS

DETERMINACION	Sr	Fe	Mn	Cl-	SO4=	Alcalinidad	CO3=
UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ15	LMFQ16
TECNICA	ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Volumetría
LD	0,005	0,01	0,05	250	10	20	10
LCS	-----	-----	-----	-----	-----	-----	-----

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS						
434753	SHMN-001	Salmuera (líq.)	Ambiental	26,34	5,88	1,83	158304	9158	217	N.D
434754	SHMN-002	Salmuera (líq.)	Ambiental	25,96	1,39	3,91	142784	9627	173	N.D
434755	SHMN-003	Salmuera (líq.)	Ambiental	0,31	<0,20	<1,00	<250	<100	155	N.D
434756	SHMN-004	Salmuera (líq.)	Ambiental	22,90	2,21	<1,00	165711	7441	256	N.D
434757	SHMN-005	Salmuera (líq.)	Ambiental	23,00	1,97	<1,00	169874	7236	259	N.D
434758	SHMN-006	Salmuera (líq.)	Ambiental	32,62	1,87	<1,00	176505	5316	111	N.D
434759	SHMN-007	Salmuera (líq.)	Ambiental	21,13	1,85	<1,00	130791	10388	413	N.D
434760	SHMN-008	Salmuera (líq.)	Ambiental	0,30	<0,20	<1,00	<250	<100	156	N.D
434761	SHMN-009	Salmuera (líq.)	Ambiental	23,75	1,08	<1,00	179468	8528	410	N.D
434762	SHMN-010	Salmuera (líq.)	Ambiental	23,72	1,09	<1,00	179750	8524	410	N.D
434763	SHMN-011	Salmuera (líq.)	Ambiental	26,35	0,86	<1,00	179468	7985	477	N.D

# SECCION RESULTADOS

DETERMINACION	HCO3-	pH	Densidad	Conductividad	STD (180°)
UNIDAD	mg/L	UpH	g/mL	mS/cm	mg/L
COD. DE ANALISIS	LMFQ17	LMCI28	LMFQ19	LMFQ01	LMFQ08
TECNICA	Volumetría	Potenciometría	Picnometría	Potenciometría	Gravimetría
LD	10	-----	-----	-----	2500
LCS	-----	-----	-----	-----	-----

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS				
434753	SHMN-001	Salmuera (líq.)	Ambiental	265	6,40	1,163	189	296500
434754	SHMN-002	Salmuera (líq.)	Ambiental	211	6,64	1,151	181	266500
434755	SHMN-003	Salmuera (líq.)	Ambiental	184	8,17	0,987	0,35	3900
434756	SHMN-004	Salmuera (líq.)	Ambiental	312	6,44	1,169	192	299700
434757	SHMN-005	Salmuera (líq.)	Ambiental	316	6,46	1,169	193	300300
434758	SHMN-006	Salmuera (líq.)	Ambiental	135	6,76	1,175	193	317700
434759	SHMN-007	Salmuera (líq.)	Ambiental	504	6,83	1,134	171	240000
434760	SHMN-008	Salmuera (líq.)	Ambiental	187	8,28	0,987	0,39	3900
434761	SHMN-009	Salmuera (líq.)	Ambiental	500	7,23	1,181	195	318000
434762	SHMN-010	Salmuera (líq.)	Ambiental	500	7,24	1,181	195	317800
434763	SHMN-011	Salmuera (líq.)	Ambiental	582	7,40	1,178	194	315600

# SECCION QA-QC

DETERMINACION	Li	Ca	Mg	B	Na	K	Ba	Sr
UNIDAD	mg/L							
COD. DE ANALISIS	LMMT03							
TECNICA	ICP-OES							
LD	0,05	0,025	0,05	0,05	0,1	0,25	0,01	0,005
LCS	-----	-----	-----	-----	-----	-----	-----	-----

Prefijo (ASA)	Identificación	RESULTADO							
DUP	SHMN-010	906	942	1295	435	110416	8889	<0,20	23,67

# SECCION QA-QC

DETERMINACION	Fe	Mn	Cl-	SO4=	Alcalinidad	CO3=	HCO3-	pH
UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	UpH
COD. DE ANALISIS	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ15	LMFQ16	LMFQ17	LMCI28
TECNICA	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Volumetría	Volumetría	Potenciometría
LD	0,01	0,05	250	10	20	10	10	-----
LCS	-----	-----	-----	-----	-----	-----	-----	-----

Prefijo (ASA)	Identificación	RESULTADO							
DUP	SHMN-010	1,03	<1,00	179327	8575	416	N.D	501	7,24

# SECCION QA-QC

DETERMINACION	Densidad	Conductividad	STD (180°)
UNIDAD	g/mL	mS/cm	mg/L
COD. DE ANALISIS	LMFQ19	LMFQ01	LMFQ08
TECNICA	Picnometría	Potenciometría	Gravimetría
LD	-----	-----	2500
LCS	-----	-----	-----

Prefijo (ASA)	Identificación	Densidad	Conductividad	STD (180°)
DUP	SHMN-010	1,181	197	319600



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## INFORME DE ANALISIS

### SECCION GENERAL

**N° DE INFORME:**

**NOA1811826**

**ANALISIS:**  
LMCI22\_NOA

0002NLMCI28\_NOA  
0001NLMFQ19\_NO

LMFQ01\_NOA  
DFR-17\_NOA

LMFQ15\_NOA

LMFQ16\_NOA

LMFQ17\_NOA

LMCI13\_NOA

LMMT03\_NOA

0002NLMCI01\_NOA

**N° DE COTIZACION:**

QE-814-1

**TOTAL DE MUESTRAS:**

13

**PREPARACION DE MUESTRA:**

**FECHA RECEPCION DE MUESTRAS:**

09-05-2018

**FECHA RECEPCION DE INSTRUCCIONES:**

09-05-2018

**FECHA INGRESO AL LABORATORIO:**

09-05-2018

**FECHA EMISION DE INFORME:**

17-05-2018

**CLIENTE:** NRG METAL ARGENTINA SA en formacion  
**DIRECCION:** San Martín 924 - 3 piso - Ciudad - Mendoza  
**SOLICITANTE:** Sergio Lopez  
**PROYECTO:** NRG METAL ARGENTINA SA  
**N° DE ENVIO:**

#### OBSERVACIONES

#### ABREVIATURAS

#### BLANCOS

BL: Blanco de limpieza de cuarzo  
BK M: Blanco de muestra  
BK R: Blanco de reactivo

#### ESTANDARES

STD: Standard  
VN: Valor nominal  
SD: Desviación standard

#### TIPO DE MUESTRA

Pun: puntual  
Dup: Duplicado  
Dup C: Duplicado de cuarteo

#### OTRAS

Tri: Triplicado  
Rep: Repetición  
Com: Compuesta  
N D : No Detecta  
LCS: Límite de cuantificación superior  
LC: Límite de cuantificación  
ID: Identificación  
COD: Código  
LD: Límite de Detección

#### NOTAS

- Muestreo • Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
  - Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.
- Almacenaje • Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
  - Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
  - El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
  - Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier sustancia o material que atente al medio ambiente.
- Informe • Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
  - El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorización a Alex Stewart Argentina
  - Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
  - Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
  - Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
  - Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
  - Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
  - Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
  - Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.
- QA / QC • Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
  - Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
  - Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R<sup>2</sup> superiores a 0.99.

# SECCION RESULTADOS

## DETERMINACION

UNIDAD
COD. DE ANALISIS
TECNICA
LD
LCS

Li	Ca	Mg	B	Na	K	Ba
mg/L						
LMMT03						
ICP-OES						
0.05	0.025	0.05	0.05	0.1	0.25	0.01
-----	-----	-----	-----	-----	-----	-----

## RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Li	Ca	Mg	B	Na	K	Ba
463004	HMN-1	Salmuera (líq.)	Ambiental	< 0,50	30	13	0.7	30	3	<0,20
463005	HMN-2	Salmuera (líq.)	Ambiental	929	991	2974	331	89425	7263	< 0,20
463006	HMN-3	Salmuera (líq.)	Ambiental	895	960	2678	382	97685	7399	< 0,20
463007	HMN-4	Salmuera (líq.)	Ambiental	942	1036	3027	329	91639	7299	< 0,20
463008	HMN-5	Salmuera (líq.)	Ambiental	911	1039	3072	311	91492	6941	< 0,20
463009	HMN-6	Salmuera (líq.)	Ambiental	962	1036	3113	318	91478	7343	< 0,20
463010	HMN-7	Salmuera (líq.)	Ambiental	939	996	2925	355	91231	7430	< 0,20
463011	HMN-8	Salmuera (líq.)	Ambiental	879	972	2367	445	96697	7772	< 0,20
463012	HMN-9	Salmuera (líq.)	Ambiental	881	979	2378	444	96606	7787	< 0,20
463013	HMN-10	Salmuera (líq.)	Ambiental	782	873	1548	585	104192	8177	< 0,20
463014	HMN-11	Salmuera (líq.)	Ambiental	879	1217	3035	373	92758	7135	< 0,20
463015	HMN-12	Salmuera (líq.)	Ambiental	935	1123	3055	342	92833	7323	< 0,20
463016	HMN-13	Salmuera (líq.)	Ambiental	931	1104	3054	339	92047	7268	< 0,20

# SECCION RESULTADOS

## DETERMINACION

UNIDAD
COD. DE ANALISIS
TECNICA
LD
LCS

Sr	Fe	Mn	SO4=	Densidad	Conductividad
mg/L	mg/L	mg/L	mg/L	g/mL	mS/cm
LMMT03	LMMT03	LMMT03	LMCI22	LMFQ19	LMFQ01
ICP-OES	ICP-OES	ICP-OES	Gravimetría	Picnometría	Potenciometría
0.005	0.01	0.05	10	-----	-----
-----	-----	-----	-----	-----	-----

## RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Sr	Fe	Mn	SO4=	Densidad	Conductividad
463004	HMN-1	Salmuera (líq.)	Ambiental	0.26	< 0,20	< 1,00	< 100	0.980	0.35
463005	HMN-2	Salmuera (líq.)	Ambiental	27.36	9.17	3.58	9573	1.158	206
463006	HMN-3	Salmuera (líq.)	Ambiental	24.65	4.39	3.15	9664	1.180	209
463007	HMN-4	Salmuera (líq.)	Ambiental	27.87	10.44	3.65	9829	1.158	207
463008	HMN-5	Salmuera (líq.)	Ambiental	26.41	9.03	3.69	9752	1.159	208
463009	HMN-6	Salmuera (líq.)	Ambiental	28.41	8.84	3.67	9598	1.157	206
463010	HMN-7	Salmuera (líq.)	Ambiental	26.96	17.33	3.44	9703	1.160	207
463011	HMN-8	Salmuera (líq.)	Ambiental	24.14	7.50	2.85	9228	1.164	210
463012	HMN-9	Salmuera (líq.)	Ambiental	24.15	7.61	2.90	9178	1.164	209
463013	HMN-10	Salmuera (líq.)	Ambiental	18.69	1.48	2.12	8512	1.171	212
463014	HMN-11	Salmuera (líq.)	Ambiental	31.92	4.18	4.14	8002	1.157	206
463015	HMN-12	Salmuera (líq.)	Ambiental	30.05	15.36	4.18	9096	1.158	206
463016	HMN-13	Salmuera (líq.)	Ambiental	29.99	15.40	4.10	9046	1.158	207

# SECCION QA-QC

DETERMINACION
UNIDAD
COD. DE ANALISIS
TECNICA
LD
LCS

Li	Ca	Mg	B	Na	K	Ba	Sr
mg/L							
LMMT03							
ICP-OES							
0.05	0.025	0.05	0.05	0.1	0.25	0.01	0.005
-----	-----	-----	-----	-----	-----	-----	-----

Prefijo (ASA)	Identificación
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## RESULTADO

DUP	HMN-10	787	860	1571	586	103986	8140	< 0,20	18.63
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# SECCION QA-QC

DETERMINACION	Fe	Mn	SO4=	Densidad	Conductividad
UNIDAD	mg/L	mg/L	mg/L	g/mL	mS/cm
COD. DE ANALISIS	LMMT03	LMMT03	LMCI22	LMFQ19	LMFQ01
TECNICA	ICP-OES	ICP-OES	Gravimetría	Picnometría	Potenciometría
LD	0.01	0.05	10	-----	-----
LCS	-----	-----	-----	-----	-----

Prefijo (ASA)	Identificación	RESULTADO				
DUP	HMN-10	1.51	2.11	8660	1.171	215



**Alex Stewart  
Argentina S.A.**  
Official ASIC Member

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## INFORME DE ANALISIS

### SECCION GENERAL

**N° DE INFORME:**

**NOA1811941**

**ANALISIS:**  
LMCI22\_NOA

**0002NLMCI28\_NOA**

**LMFQ01\_NOA**

**LMFQ15\_NOA**

**LMFQ16\_NOA**

**LMFQ17\_NOA**

**LMCI13\_NOA**

**LMMT03\_NOA**

**0002NLMCI01\_NOA**

**CLIENTE:** NRG METAL ARGENTINA SA en formacion  
**DIRECCION:** San Martin 924 - 3 piso - Ciudad - Mendoza  
**SOLICITANTE:** Marcelo Olaneta  
**PROYECTO:** NRG METAL ARGENTINA SA  
**N° DE ENVIO:**

**N° DE COTIZACION:** QE-814-1  
**TOTAL DE MUESTRAS:** 17  
**PREPARACION DE MUESTRA:**

**FECHA RECEPCION DE MUESTRAS:** 28-05-2018  
**FECHA RECEPCION DE INSTRUCCIONES:** 28-05-2018  
**FECHA INGRESO AL LABORATORIO:** 28-05-2018  
**FECHA EMISION DE INFORME:** 05-06-2018

#### OBSERVACIONES

#### ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA	OTRAS
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarto	Com: Compuesta
			BIS: Nuevo informe
			LCS: Limite de cuantificación superior
			LC: Limite de cuantificación
			ID: Identificación
			COD: Código
			LD: Limite de Detección

#### NOTAS

- Muestreo • Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.
- Almacenaje • Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
  - Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
  - El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier sustancia o material que atente al medio ambiente.
- Informe • Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
  - El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorización a Alex Stewart Argentina
  - Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
  - Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
  - Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
  - Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
  - Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
  - Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
  - Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.
- QA / QC • Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
  - Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
  - Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R<sup>2</sup> superiores a 0.99.

# SECCIÓN RESULTADOS

## DETERMINACIÓN

UNIDAD  
COD. DE  
ANÁLISIS  
TÉCNICA  
LD  
LCS

Li	Ca	Mg	B	Na	K	Ba
mg/L						
LMMT03						
ICP-OES						
0.05	0.025	0.05	0.05	0.1	0.25	0.01

## RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Área Interna	Li	Ca	Mg	B	Na	K	Ba
467808	HMN-14	Salmuera (liq.)	Ambiental	815	842	2440	329	98296	5887	0.21
467809	HMN-15	Salmuera (liq.)	Ambiental	925	977	2882	292	93686	6985	0.28
467810	HMN-16	Salmuera (liq.)	Ambiental	918	959	2838	317	93922	7090	0.23
467811	HMN-17	Salmuera (liq.)	Ambiental	917	960	2859	319	94784	7411	0.21
467812	HMN-18	Salmuera (liq.)	Ambiental	869	882	2603	374	97684	7240	< 0,20
467813	HMN-19	Salmuera (liq.)	Ambiental	917	968	2885	289	88430	7164	< 0,20
467814	HMN-20	Salmuera (liq.)	Ambiental	879	842	2535	385	96790	7939	< 0,20
467815	HMN-21	Salmuera (liq.)	Ambiental	850	807	2435	372	95400	7794	0.22
467816	HMN-22	Salmuera (liq.)	Ambiental	939	978	2925	303	93151	7438	0.21
467817	HMN-23	Salmuera (liq.)	Ambiental	927	961	2910	298	92683	7122	< 0,20
467818	HMN-24	Salmuera (liq.)	Ambiental	923	844	2544	458	98108	7645	< 0,20
467819	HMN-25	Salmuera (liq.)	Ambiental	< 0,50	30	14	1	29	3	< 0,20
467820	HMN-26	Salmuera (liq.)	Ambiental	835	789	2371	408	99171	8489	< 0,20
467821	HMN-27	Salmuera (liq.)	Ambiental	819	761	2287	413	102315	8057	< 0,20
467822	HMN-28	Salmuera (liq.)	Ambiental	866	844	2552	360	101188	7890	< 0,20
467823	HMN-29	Salmuera (liq.)	Ambiental	899	883	2668	376	102224	8178	< 0,20
467824	HMN-30	Salmuera (liq.)	Ambiental	891	894	2678	337	94211	7618	< 0,20

(\*) : No es posible la medida de densidad porque el fluido filtrado presenta un sólido coloidal

# SECCIÓN RESULTADOS

## DETERMINACIÓN

UNIDAD
COD. DE
ANÁLISIS
TÉCNICA
LD
LCS

Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	g/mL
LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19
ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría
0.005	0.01	0.05	250	10	10	-----
-----	-----	-----	-----	-----	-----	-----

## RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Área Interna	Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad
467808	HMN-14	Salmuera (liq.)	Ambiental	20.43	62.12	3.63	167954	9126	620	(*)
467809	HMN-15	Salmuera (liq.)	Ambiental	25.26	89.66	4.40	-----	-----	-----	(*)
467810	HMN-16	Salmuera (liq.)	Ambiental	24.32	64.46	4.16	161256	9586	445	(*)
467811	HMN-17	Salmuera (liq.)	Ambiental	24.30	64.37	4.17	-----	-----	-----	(*)
467812	HMN-18	Salmuera (liq.)	Ambiental	21.37	53.58	3.48	165875	9899	531	(*)
467813	HMN-19	Salmuera (liq.)	Ambiental	25.07	57.96	4.10	-----	-----	-----	(*)
467814	HMN-20	Salmuera (liq.)	Ambiental	20.93	33.93	3.06	166073	9977	492	(*)
467815	HMN-21	Salmuera (liq.)	Ambiental	20.21	27.43	2.93	-----	-----	-----	(*)
467816	HMN-22	Salmuera (liq.)	Ambiental	25.65	52.75	4.12	159210	9683	449	(*)
467817	HMN-23	Salmuera (liq.)	Ambiental	25.13	35.70	3.81	-----	-----	-----	(*)
467818	HMN-24	Salmuera (liq.)	Ambiental	20.29	33.30	2.84	169307	9543	521	(*)
467819	HMN-25	Salmuera (liq.)	Ambiental	0.30	< 0,20	< 1,00	-----	-----	-----	(*)
467820	HMN-26	Salmuera (liq.)	Ambiental	19.00	30.20	2.52	169934	9801	511	(*)
467821	HMN-27	Salmuera (liq.)	Ambiental	18.21	24.87	2.45	-----	-----	-----	(*)
467822	HMN-28	Salmuera (liq.)	Ambiental	21.23	30.03	3.13	173134	10048	494	(*)
467823	HMN-29	Salmuera (liq.)	Ambiental	22.18	37.85	3.26	-----	-----	-----	(*)
467824	HMN-30	Salmuera (liq.)	Ambiental	22.78	41.08	3.44	164522	9708	466	(*)

(\*) : No es posible la medida de densidad porque el fluido filtrado presenta un sólido coloidal

# SECCIÓN RESULTADOS

DETERMINACIÓN

UNIDAD  
COD. DE  
ANÁLISIS  
TÉCNICA  
LD  
LCS

Conductividad  
mS/cm  
LMFQ01  
Potenciometría

STD (180°)  
mg/L  
LMFQ08  
Gravimetría  
2500

SUMA DE IONES  
mg/L

%CV

Li  
meq/L

Ca  
meq/L

Mg  
meq/L

RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Área Interna	Conductividad mS/cm LMFQ01 Potenciometría	STD (180°) mg/L LMFQ08 Gravimetría 2500	SUMA DE IONES mg/L	%CV	Li meq/L	Ca meq/L	Mg meq/L
467808	HMN-14	Salmuera (liq.)	Ambiental	205	300600	286396	3%	117	42	201
467809	HMN-15	Salmuera (liq.)	Ambiental	207	-----	-----	-----	-----	-----	-----
467810	HMN-16	Salmuera (liq.)	Ambiental	206	288400	277424	3%	132	48	234
467811	HMN-17	Salmuera (liq.)	Ambiental	209	-----	-----	-----	-----	-----	-----
467812	HMN-18	Salmuera (liq.)	Ambiental	215	298500	286036	3%	125	44	214
467813	HMN-19	Salmuera (liq.)	Ambiental	208	-----	-----	-----	-----	-----	-----
467814	HMN-20	Salmuera (liq.)	Ambiental	200	290900	285971	1%	127	42	209
467815	HMN-21	Salmuera (liq.)	Ambiental	203	-----	-----	-----	-----	-----	-----
467816	HMN-22	Salmuera (liq.)	Ambiental	197	283500	275160	2%	135	49	241
467817	HMN-23	Salmuera (liq.)	Ambiental	197	-----	-----	-----	-----	-----	-----
467818	HMN-24	Salmuera (liq.)	Ambiental	203	301800	289949	3%	133	42	209
467819	HMN-25	Salmuera (liq.)	Ambiental	0.36	-----	-----	-----	-----	-----	-----
467820	HMN-26	Salmuera (liq.)	Ambiental	212	305300	292361	3%	120	39	195
467821	HMN-27	Salmuera (liq.)	Ambiental	212	-----	-----	-----	-----	-----	-----
467822	HMN-28	Salmuera (liq.)	Ambiental	210	307100	297430	2%	125	42	210
467823	HMN-29	Salmuera (liq.)	Ambiental	212	-----	-----	-----	-----	-----	-----
467824	HMN-30	Salmuera (liq.)	Ambiental	208	292100	281393	3%	128	45	220

(\*) : No es posible la medida de densidad porque el fluido filtrado presenta un sólido coloidal

# SECCIÓN RESULTADOS

DETERMINACIÓN

BALANCE IÓNICO

UNIDAD  
COD. DE  
ANÁLISIS  
TÉCNICA  
LD  
LCS

B  
meq/L

Na  
meq/L

K  
meq/L

Ba  
meq/L

Sr  
meq/L

Fe  
meq/L

Mn  
meq/L

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Área Interna	RESULTADOS						
467808	HMN-14	Salmuera (liq.)	Ambiental	4	4276	151	0.00	0.5	3	0.1
467809	HMN-15	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
467810	HMN-16	Salmuera (liq.)	Ambiental	4	4085	181	0.00	0.6	3	0.2
467811	HMN-17	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
467812	HMN-18	Salmuera (liq.)	Ambiental	5	4249	185	0.00	0.5	3	0.1
467813	HMN-19	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
467814	HMN-20	Salmuera (liq.)	Ambiental	5	4210	203	0.00	0.5	2	0.1
467815	HMN-21	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
467816	HMN-22	Salmuera (liq.)	Ambiental	4	4052	190	0.00	0.6	3	0.2
467817	HMN-23	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
467818	HMN-24	Salmuera (liq.)	Ambiental	6	4267	196	0.00	0.5	2	0.1
467819	HMN-25	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
467820	HMN-26	Salmuera (liq.)	Ambiental	5	4314	217	0.00	0.4	2	0.1
467821	HMN-27	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
467822	HMN-28	Salmuera (liq.)	Ambiental	5	4401	202	0.00	0.5	2	0.1
467823	HMN-29	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
467824	HMN-30	Salmuera (liq.)	Ambiental	4	4098	195	0.00	0.5	2	0.1

(\*) : No es posible la medida de densidad porque el fluido filtrado presenta un sólido coloidal

# SECCIÓN RESULTADOS

DETERMINACIÓN

UNIDAD  
COD. DE  
ANÁLISIS  
TÉCNICA  
LD  
LCS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Área Interna	Cl- meq/L	SO4= meq/L	HCO3- meq/L	Suma Cationes Δ + meq/L	Suma Aniones Δ - meq/L	% Balance Iónico
467808	HMN-14	Salmuera (liq.)	Ambiental	4737	190	10	4795	4938	-3
467809	HMN-15	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
467810	HMN-16	Salmuera (liq.)	Ambiental	4548	200	7	4689	4755	-1
467811	HMN-17	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
467812	HMN-18	Salmuera (liq.)	Ambiental	4679	206	9	4826	4894	-1
467813	HMN-19	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
467814	HMN-20	Salmuera (liq.)	Ambiental	4684	208	8	4798	4900	-2
467815	HMN-21	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
467816	HMN-22	Salmuera (liq.)	Ambiental	4491	202	7	4674	4700	-1
467817	HMN-23	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
467818	HMN-24	Salmuera (liq.)	Ambiental	4776	199	9	4856	4983	-3
467819	HMN-25	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
467820	HMN-26	Salmuera (liq.)	Ambiental	4793	204	8	4893	5006	-2
467821	HMN-27	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
467822	HMN-28	Salmuera (liq.)	Ambiental	4883	209	8	4987	5101	-2
467823	HMN-29	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
467824	HMN-30	Salmuera (liq.)	Ambiental	4641	202	8	4693	4850	-3

RESULTADOS

(\*) : No es posible la medida de densidad porque el fluido filtrado presenta un sólido coloidal

# SECCION QA-QC

DETERMINACION	Li	Ca	Mg	B	Na	K	Ba
UNIDAD	mg/L						
COD. DE ANALISIS	LMMT03						
TECNICA	ICP-OES						
LD	0.05	0.025	0.05	0.05	0.1	0.25	0.01
LCS							

Prefijo (ASA)	Identificación	RESULTADO						
DUP	HMN-23	925	981	2962	304	93331	7675	< 0,20

# SECCION QA-QC

DETERMINACION
UNIDAD
COD. DE ANALISIS
TECNICA
LD
LCS

Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad	Conductividad	STD (180°)
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	g/mL	mS/cm	mg/L
LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19	LMFQ01	LMFQ08
ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría	Potenciometría	Gravimetría
0.005	0.01	0.05	250	10	10	-----	-----	2500
-----	-----	-----	-----	-----	-----	-----	-----	-----

Prefijo (ASA) Identificación

## RESULTADO

DUP	HMN-23	25.75	40.40	4.07	-----	-----	-----	(*)	198	-----
-----	--------	-------	-------	------	-------	-------	-------	-----	-----	-------



**Alex Stewart  
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Official ASIC Member

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## INFORME DE ANALISIS

### SECCION GENERAL

**N° DE INFORME:**

**NOA1812014**

**ANALISIS:** 0002NLMCI28\_NOA  
0002NLMCI01\_NOA LMC122\_NOA

LMFQ01\_NOA  
0001NLMFQ19\_NO

LMFQ15\_NOA LMFQ16\_NOA LMFQ17\_NOA  
DFR-17\_NOA LMIS01\_NOA U48HLI-NOA

LMC113\_NOA

LMMT03\_NOA

LMFQ08\_NOA

**CLIENTE:** NRG METAL ARGENTINA SA en formacion  
**DIRECCION:** San Martin 924 - 3 piso - Ciudad - Mendoza  
**SOLICITANTE:** Marcelo Olaneta  
**PROYECTO:** NRG METAL ARGENTINA SA  
**N° DE ENVIO:**

**N° DE COTIZACION:** QE-814-3  
**TOTAL DE MUESTRAS:** 12  
**PREPARACION DE MUESTRA:**

**FECHA RECEPCION DE MUESTRAS:** 06-06-2018  
**FECHA RECEPCION DE INSTRUCCIONES:** 06-06-2018  
**FECHA INGRESO AL LABORATORIO:** 06-06-2018  
**FECHA EMISION DE INFORME:** 21-06-2018

#### OBSERVACIONES

#### ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA	OTRAS
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarteo	LCS: Límite de cuantificación superior
			LC: Límite de cuantificación
			ID: Identificación
			COD: Código
			LD: Límite de Detección

#### NOTAS

- Muestreo • Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
  - Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.
- Almacenaje • Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
  - Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
  - El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
  - Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier sustancia o material que atente al medio ambiente.
- Informe • Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
  - El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorización a Alex Stewart Argentina
  - Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
  - Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
  - Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
  - Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
  - Para Au4-30 el Límite de Cuantificación es: LC = 0,06 mg/kg
  - Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
  - Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.
- QA / QC • Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
  - Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
  - Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R<sup>2</sup> superiores a 0.99.

# SECCION RESULTADOS

## DETERMINACION

UNIDAD	Li	Ca	Mg	B	Na	K	Ba
COD. DE ANALISIS	mg/L						
TECNICA	LMMT03						
LD	ICP-OES						
LCS	0.05	0.025	0.05	0.05	0.1	0.25	0.01

## RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Li	Ca	Mg	B	Na	K	Ba
470998	HMN-31	Salmuera (liq.)	Ambiental	< 0,50	< 0,50	< 0,5	1	< 1,00	< 2,5	< 0,20
470999	HMN-32	Salmuera (liq.)	Ambiental	933	1001	2929	330	93657	6932	< 0,20
471000	HMN-33	Salmuera (liq.)	Ambiental	952	1008	3016	332	93693	6988	< 0,20
471001	HMN-34	Salmuera (liq.)	Ambiental	912	884	2641	425	98420	7976	< 0,20
471002	HMN-35	Salmuera (liq.)	Ambiental	912	893	2615	422	99749	7946	< 0,20
471003	HMN-36	Salmuera (liq.)	Ambiental	899	853	2497	449	103222	8176	< 0,20
471004	HMN-37	Salmuera (liq.)	Ambiental	894	850	2496	439	102582	8032	< 0,20
471005	HMN-38	Salmuera (liq.)	Ambiental	< 0,50	< 0,50	< 0,5	1	< 1,00	< 2,5	< 0,20
471006	HMN-39	Salmuera (liq.)	Ambiental	625	1298	2077	374	100687	6362	< 0,20
471007	HMN-40	Salmuera (liq.)	Ambiental	748	814	1587	539	116135	8994	< 0,20
471008	HMN-41	Salmuera (liq.)	Ambiental	785	731	1704	547	108841	9181	< 0,20
471009	HMN-42	Salmuera (liq.)	Ambiental	787	726	1687	543	108859	9071	< 0,20

# SECCION RESULTADOS

## DETERMINACION

UNIDAD	
COD. DE ANALISIS	
TECNICA	
LD	
LCS	

Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	g/mL
LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19
ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría
0.005	0.01	0.05	250	10	10	-----
-----	-----	-----	-----	-----	-----	-----

## RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad
470998	HMN-31	Salmuera (liq.)	Ambiental	< 0,05	< 0,20	< 1,00	-----	-----	-----	0.999
470999	HMN-32	Salmuera (liq.)	Ambiental	25.82	13.94	3.79	160969	9977	445	1.184
471000	HMN-33	Salmuera (liq.)	Ambiental	26.05	13.54	3.86	-----	-----	-----	1.185
471001	HMN-34	Salmuera (liq.)	Ambiental	22.44	10.84	2.98	169868	10281	478	1.195
471002	HMN-35	Salmuera (liq.)	Ambiental	22.28	10.67	2.97	-----	-----	-----	1.201
471003	HMN-36	Salmuera (liq.)	Ambiental	20.78	8.51	2.67	175824	10450	511	1.201
471004	HMN-37	Salmuera (liq.)	Ambiental	20.87	14.76	2.81	-----	-----	-----	1.185
471005	HMN-38	Salmuera (liq.)	Ambiental	< 0,05	0.22	< 1,00	-----	-----	-----	1.000
471006	HMN-39	Salmuera (liq.)	Ambiental	27.93	1.04	11.20	164449	6397	337	1.209
471007	HMN-40	Salmuera (liq.)	Ambiental	16.08	4.96	1.90	-----	-----	-----	1.209
471008	HMN-41	Salmuera (liq.)	Ambiental	14.57	3.14	2.33	184544	9458	255	1.210
471009	HMN-42	Salmuera (liq.)	Ambiental	14.46	2.93	2.32	-----	-----	-----	1.209

# SECCION RESULTADOS

				DETERMINACION	Conductividad	STD (180°)					
				UNIDAD	mS/cm	mg/L					
				COD. DE ANALISIS	LMFQ01	LMFQ08	SUMA DE IONES	%CV	Li	Ca	Mg
				TECNICA	Potenciometría	Gravimetría	mg/L		meq/L	meq/L	meq/L
				LD	-----	2500					
				LCS	-----	-----					
Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS	0.02	-----	-----	-----	-----	-----	-----
470998	HMN-31	Salmuera (liq.)	Ambiental		226	283100	277215	1%	134.4	49.9	241.1
470999	HMN-32	Salmuera (liq.)	Ambiental		224	-----	-----	-----	-----	-----	-----
471000	HMN-33	Salmuera (liq.)	Ambiental		225	302100	291921	2%	131.4	44.1	217.4
471001	HMN-34	Salmuera (liq.)	Ambiental		226	-----	-----	-----	-----	-----	-----
471002	HMN-35	Salmuera (liq.)	Ambiental		229	312400	302914	2%	129.5	42.6	205.5
471003	HMN-36	Salmuera (liq.)	Ambiental		227	-----	-----	-----	-----	-----	-----
471004	HMN-37	Salmuera (liq.)	Ambiental		0.03	-----	-----	-----	-----	-----	-----
471005	HMN-38	Salmuera (liq.)	Ambiental		229	292700	282646	2%	90.0	64.8	170.9
471006	HMN-39	Salmuera (liq.)	Ambiental		230	-----	-----	-----	-----	-----	-----
471007	HMN-40	Salmuera (liq.)	Ambiental		231	317200	316065	0%	113.1	36.5	140.2
471008	HMN-41	Salmuera (liq.)	Ambiental		230	-----	-----	-----	-----	-----	-----
471009	HMN-42	Salmuera (liq.)	Ambiental								

# SECCION RESULTADOS

DETERMINACION

UNIDAD  
COD. DE  
ANALISIS  
TECNICA  
LD  
LCS

BALANCE IÓNICO

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	B meq/L	Na meq/L	K meq/L	Ba meq/L	Sr meq/L	Fe meq/L	Mn meq/L
470998	HMN-31	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
470999	HMN-32	Salmuera (liq.)	Ambiental	4.2	4073.8	177.3	0.0	0.6	0.7	0.1
471000	HMN-33	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
471001	HMN-34	Salmuera (liq.)	Ambiental	5.5	4281.0	204.0	0.0	0.5	0.6	0.1
471002	HMN-35	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
471003	HMN-36	Salmuera (liq.)	Ambiental	5.8	4489.9	209.1	0.0	0.5	0.5	0.1
471004	HMN-37	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
471005	HMN-38	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
471006	HMN-39	Salmuera (liq.)	Ambiental	4.8	4379.7	162.7	0.0	0.6	0.1	0.4
471007	HMN-40	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----
471008	HMN-41	Salmuera (liq.)	Ambiental	7.0	4734.3	234.8	0.0	0.3	0.2	0.1
471009	HMN-42	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----	-----

RESULTADOS

# SECCION RESULTADOS

DETERMINACION

UNIDAD  
COD. DE  
ANALISIS  
TECNICA  
LD  
LCS

Cl-  
meq/L

SO4=  
meq/L

HCO3-  
meq/L

Suma Cationes  
Δ +  
meq/L

Suma Aniones  
Δ -  
meq/L

%  
Balance Iónico

RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Cl- meq/L	SO4= meq/L	HCO3- meq/L	Suma Cationes Δ + meq/L	Suma Aniones Δ - meq/L	% Balance Iónico
470998	HMN-31	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
470999	HMN-32	Salmuera (liq.)	Ambiental	4540.3	207.7	7.3	4678	4760	-2
471000	HMN-33	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
471001	HMN-34	Salmuera (liq.)	Ambiental	4791.3	214.0	7.8	4879	5019	-3
471002	HMN-35	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
471003	HMN-36	Salmuera (liq.)	Ambiental	4959.4	217.6	8.4	5078	5191	-2
471004	HMN-37	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
471005	HMN-38	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
471006	HMN-39	Salmuera (liq.)	Ambiental	4638.5	133.2	5.5	4869	4782	2
471007	HMN-40	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----
471008	HMN-41	Salmuera (liq.)	Ambiental	5205.3	196.9	4.2	5260	5413	-3
471009	HMN-42	Salmuera (liq.)	Ambiental	-----	-----	-----	-----	-----	-----

# SECCION QA-QC

DETERMINACION
UNIDAD
COD. DE ANALISIS
TECNICA
LD
LCS

Li	Ca	Mg	B	Na	K	Ba	Sr
mg/L							
LMMT03							
ICP-OES							
0.05	0.025	0.05	0.05	0.1	0.25	0.01	0.005
-----	-----	-----	-----	-----	-----	-----	-----

Prefijo (ASA)                      Identificación

## RESULTADO

DUP	HMN-40	761	815	1584	535	116129	9096	< 0,20	16.06
-----	--------	-----	-----	------	-----	--------	------	--------	-------

# SECCION QA-QC

DETERMINACION
UNIDAD
COD. DE ANALISIS
TECNICA
LD
LCS

Fe	Mn	Cl-	SO4=	HCO3-	Densidad	Conductividad	STD (180°)
mg/L	mg/L	mg/L	mg/L	mg/L	g/mL	mS/cm	mg/L
LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19	LMFQ01	LMFQ08
ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría	Potenciometría	Gravimetría
0.01	0.05	250	10	10	-----	-----	2500
-----	-----	-----	-----	-----	-----	-----	-----

Prefijo (ASA)	Identificación	RESULTADO							
DUP	HMN-40	4.26	1.91	-----	-----	-----	1.209	231	-----



**Alex Stewart  
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## INFORME DE ANALISIS

### SECCION GENERAL

**N° DE INFORME:**

**NOA1812385**

**ANALISIS:** 0002NLMCI28\_NOA  
0002NLMCI01\_NOA LMC122\_NOA

LMFQ01\_NOA  
0001NLMFQ19\_NO

LMFQ15\_NOA LMFQ16\_NOA LMFQ17\_NOA  
DFR-17\_NOA LMIS01\_NOA U48HLI-NOA

LMC113\_NOA

LMMT03\_NOA

LMFQ08\_NOA

**CLIENTE:** NRG METAL ARGENTINA SA en formacion  
**DIRECCION:** San Martin 924 - 3 piso - Ciudad - Mendoza  
**SOLICITANTE:** Marcelo Olaneta  
**PROYECTO:** NRG METAL ARGENTINA SA  
**N° DE ENVIO:**

**N° DE COTIZACION:**

QE-814-3

**FECHA RECEPCION DE MUESTRAS:**

17-07-2018

**TOTAL DE MUESTRAS:**

7

**FECHA RECEPCION DE INSTRUCCIONES:**

17-07-2018

**PREPARACION DE MUESTRA:**

**FECHA INGRESO AL LABORATORIO:**

17-07-2018

**FECHA EMISION DE INFORME:**

02-08-2018

#### OBSERVACIONES

#### ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA	OTRAS
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarteo	N D: No Detecta
			LCS: Límite de cuantificación superior
			LC: Límite de cuantificación
			ID: Identificación
			COD: Código
			LD: Límite de Detección

#### NOTAS

- Muestreo • Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.
- Almacenaje • Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier sustancia o material que atente al medio ambiente.
- Informe • Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorización a Alex Stewart Argentina
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
- Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.
- QA / QC • Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R<sup>2</sup> superiores a 0.99.

# SECCION RESULTADOS

## DETERMINACION

UNIDAD	Li	Ca	Mg	B	Na	K	Ba
COD. DE ANALISIS	mg/L						
TECNICA	LMMT03						
LD	ICP-OES						
LCS	0.05	0.025	0.05	0.05	0.1	0.25	0.01

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS	Li	Ca	Mg	B	Na	K	Ba
485074	HMN-43	Salmuera (líq.)	Ambiental		779	879	1801	439	106092	8074	< 0,20
485075	HMN-44	Salmuera (líq.)	Ambiental		507	1074	1538	232	104274	4631	0.38
485076	HMN-45	Salmuera (líq.)	Ambiental		521	1071	1554	241	103901	4751	0.29
485077	HMN-46	Salmuera (líq.)	Ambiental		525	1061	1547	243	103853	4829	0.25
485078	HMN-47	Salmuera (líq.)	Ambiental		607	981	1749	290	106167	5718	0.21
485079	HMN-48	Salmuera (líq.)	Ambiental		534	1091	1305	376	93423	5517	< 0,20
485080	HMN-49	Salmuera (líq.)	Ambiental		< 0,50	26	14	1	31	3	< 0,20

# SECCION RESULTADOS

## DETERMINACION

UNIDAD
COD. DE ANALISIS
TECNICA
LD
LCS

Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	g/mL
LMMT03	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19
ICP-OES	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría
0.005	0.01	0.05	250	10	10	-----
-----	-----	-----	-----	-----	-----	-----

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS	Sr	Fe	Mn	Cl-	SO4=	HCO3-	Densidad
485074	HMN-43	Salmuera (líq.)	Ambiental		17.94	6.94	2.68	-----	-----	-----	1.223
485075	HMN-44	Salmuera (líq.)	Ambiental		15.50	36.45	3.48	169043	7302	508	1.237
485076	HMN-45	Salmuera (líq.)	Ambiental		15.68	32.79	3.67	-----	-----	-----	1.215
485077	HMN-46	Salmuera (líq.)	Ambiental		15.72	34.05	3.60	169367	7384	508	1.215
485078	HMN-47	Salmuera (líq.)	Ambiental		15.91	30.48	4.29	-----	-----	-----	1.215
485079	HMN-48	Salmuera (líq.)	Ambiental		13.53	12.77	1.45	152597	8882	384	1.192
485080	HMN-49	Salmuera (líq.)	Ambiental		0.24	< 0,20	< 1,00	-----	-----	-----	1.011

# SECCION RESULTADOS

DETERMINACION	Conductividad	STD (180°)						
UNIDAD	mS/cm	mg/L						
COD. DE ANALISIS	LMFQ01	LMFQ08	SUMA DE IONES	%CV	Li	Ca	Mg	
TECNICA	Potenciometría	Gravimetría	mg/L		meq/L	meq/L	meq/L	
LD	-----	2500	-----	-----	-----	-----	-----	-----
LCS	-----	-----	-----	-----	-----	-----	-----	-----

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	RESULTADOS	Conductividad	STD (180°)	SUMA DE IONES	%CV	Li	Ca	Mg	
485074	HMN-43	Salmuera (líq.)	Ambiental		213	-----	-----	-----	-----	-----	-----	-----
485075	HMN-44	Salmuera (líq.)	Ambiental		217	291300	289164	1%	73.0	53.6	126.6	
485076	HMN-45	Salmuera (líq.)	Ambiental		214	-----	-----	-----	-----	-----	-----	
485077	HMN-46	Salmuera (líq.)	Ambiental		220	297300	289369	2%	75.6	53.0	127.3	
485078	HMN-47	Salmuera (líq.)	Ambiental		211	-----	-----	-----	-----	-----	-----	
485079	HMN-48	Salmuera (líq.)	Ambiental		208	273600	264137	2%	76.9	54.4	107.4	
485080	HMN-49	Salmuera (líq.)	Ambiental		0.34	-----	-----	-----	-----	-----	-----	

# SECCION RESULTADOS

DETERMINACION

UNIDAD  
COD. DE  
ANALISIS  
TECNICA  
LD  
LCS

BALANCE IÓNICO

B	Na	K	Ba	Sr	Fe	Mn
meq/L						
-----	-----	-----	-----	-----	-----	-----

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna
485074	HMN-43	Salmuera (líq.)	Ambiental
485075	HMN-44	Salmuera (líq.)	Ambiental
485076	HMN-45	Salmuera (líq.)	Ambiental
485077	HMN-46	Salmuera (líq.)	Ambiental
485078	HMN-47	Salmuera (líq.)	Ambiental
485079	HMN-48	Salmuera (líq.)	Ambiental
485080	HMN-49	Salmuera (líq.)	Ambiental

RESULTADOS

-----	-----	-----	-----	-----	-----	-----
10.7	4535.7	118.4	0.0	0.4	2.0	0.1
-----	-----	-----	-----	-----	-----	-----
11.2	4517.3	123.5	0.0	0.4	1.8	0.1
-----	-----	-----	-----	-----	-----	-----
17.4	4063.7	141.1	0.0	0.3	0.7	0.1
-----	-----	-----	-----	-----	-----	-----

# SECCION RESULTADOS

## DETERMINACION

UNIDAD  
COD. DE  
ANALISIS  
TECNICA  
LD  
LCS

Cl-  
meq/L

SO4=  
meq/L

HCO3-  
meq/L

Suma Cationes  
Δ +  
meq/L

Suma Aniones  
Δ -  
meq/L

%  
Balance Iónico

## RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Cl- meq/L	SO4= meq/L	HCO3- meq/L	Suma Cationes Δ + meq/L	Suma Aniones Δ - meq/L	% Balance Iónico
485074	HMN-43	Salmuera (líq.)	Ambiental	-----	-----	-----	-----	-----	-----
485075	HMN-44	Salmuera (líq.)	Ambiental	4768.1	152.0	8.3	4910	4939	-1
485076	HMN-45	Salmuera (líq.)	Ambiental	-----	-----	-----	-----	-----	-----
485077	HMN-46	Salmuera (líq.)	Ambiental	4777.2	153.7	8.3	4899	4951	-1
485078	HMN-47	Salmuera (líq.)	Ambiental	-----	-----	-----	-----	-----	-----
485079	HMN-48	Salmuera (líq.)	Ambiental	4304.2	184.9	6.3	4445	4513	-2
485080	HMN-49	Salmuera (líq.)	Ambiental	-----	-----	-----	-----	-----	-----

# SECCION QA-QC

DETERMINACION	Li	Ca	Mg	B	Na	K	Ba	Sr
UNIDAD	mg/L							
COD. DE ANALISIS	LMMT03							
TECNICA	ICP-OES							
LD	0.05	0.025	0.05	0.05	0.1	0.25	0.01	0.005
LCS	-----	-----	-----	-----	-----	-----	-----	-----

Prefijo (ASA)	Identificación	RESULTADO							
DUP	HMN-49	< 0,50	26	14	1	31	3	< 0,20	0.24

# SECCION QA-QC

DETERMINACION	Fe	Mn	Cl-	SO4=	HCO3-	Densidad	Conductividad	STD (180°)
UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	g/mL	mS/cm	mg/L
COD. DE ANALISIS	LMMT03	LMMT03	LMCI01	LMCI22	LMFQ17	LMFQ19	LMFQ01	LMFQ08
TECNICA	ICP-OES	ICP-OES	Argentometría	Gravimetría	Volumetría	Picnometría	Potenciometría	Gravimetría
LD	0.01	0.05	250	10	10	-----	-----	2500
LCS	-----	-----	-----	-----	-----	-----	-----	-----

Prefijo (ASA)	Identificación	RESULTADO							
DUP	HMN-49	< 0,20	< 1,00	-----	-----	-----	1.011	0.34	-----



**Alex Stewart  
Argentina S.A.**  
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W: www.alexstewart.com.ar



## INFORME DE ANALISIS

### SECCION GENERAL

**N° DE INFORME:**

**NOA1812601**

**ANALISIS:**  
0002NLMCI01\_NOA

0002NLMCI28\_NOA  
LMCI22\_NOA

LMFQ01\_NOA  
0001NLMFQ19\_NO

LMFQ15\_NOA LMFQ16\_NOA LMFQ17\_NOA  
DFR-17\_NOA LMIS01\_NOA U48HLI-NOA

LMCI13\_NOA LMMT03\_NOA

LMFQ08\_NOA

**CLIENTE:** NRG METAL ARGENTINA SA en formacion  
**DIRECCION:** San Martin 924 - 3 piso - Ciudad - Mendoza  
**SOLICITANTE:** Marcelo Olaneta  
**PROYECTO:** NRG METAL ARGENTINA SA  
**N° DE ENVIO:**

**N° DE COTIZACION:**  
**TOTAL DE MUESTRAS:** 17  
**PREPARACION DE MUESTRA:**

**FECHA RECEPCION DE MUESTRAS:** 10-08-2018  
**FECHA RECEPCION DE INSTRUCCIONES:** 10-08-2018  
**FECHA INGRESO AL LABORATORIO:** 10-08-2018  
**FECHA EMISION DE INFORME:** 16-08-2018

#### OBSERVACIONES

#### ABREVIATURAS

BLANCOS	ESTANDARES	TIPO DE MUESTRA	OTRAS
BL: Blanco de limpieza de cuarzo	STD: Standard	Pun: puntual	Tri: Triplicado
BK M: Blanco de muestra	VN: Valor nominal	Dup: Duplicado	Rep: Repetición
BK R: Blanco de reactivo	SD: Desviación standard	Dup C: Duplicado de cuarto	Com: Compuesta
			N.D : No Detecta
			LCS: Limite de cuantificación superior
			LC: Limite de cuantificación
			ID: Identificación
			COD: Código
			LD: Limite de Detección

#### NOTAS

- Muestreo • Alex Stewart Argentina no se hace responsable por cualquier aspecto vinculado a las muestras antes de su entrega al laboratorio, en caso de que Alex Stewart no sea el extractor de las mismas.
- Los resultados de los análisis de las muestras extraídas por el cliente, pertenecen solo a las muestras en el estado de las mismas al momento de su ingreso a Alex Stewart Argentina y a partir de la fecha de recepción de las instrucciones.
- Almacenaje • Los rechazos de muestras sólidas recibidas en ASA Argentina serán almacenadas sin costo durante 3 meses. Para muestras líquidas de salmueras al cabo de 45 días de reportadas las muestras se devolverán al cliente a costo de este.
- Para muestras sólidas, a partir de esa fecha se cobrará el almacenaje (precios de P-40), salvo que se reciban instrucciones contrarias.
- El cliente puede retirar las muestras de nuestras instalaciones o solicitar su eliminación según procedimientos ambientales aceptados a costo al cliente, siendo él responsable absoluto de la disposición final de las muestras devueltas.
- Alex Stewart Argentina no se responsabiliza por alteraciones o daños que naturalmente puedan ocurrirle a las muestras. Las muestras devueltas al clientes carecen de la adición de cualquier sustancia o material que atente al medio ambiente.
- Informe • Alex Stewart Argentina no se hace cargo por el uso que se de a los resultados obtenidos de nuestros servicios.
- El Cliente puede publicar los informes solo en forma completa y aclarando quien es el emisor de los mismos. Para su reproducción parcial deberá solicitar autorización a Alex Stewart Argentina
- Alex Stewart Argentina podrá usar para fines estadísticos los resultados de los informes de análisis.
- Escapa a la responsabilidad de Alex Stewart Argentina la evaluación que pueda surgir sobre la aplicación de los resultados emitidos en nuestros Informes de Ensayos.
- Los informes preliminares previamente emitidos bajo este mismo número de informe quedan reemplazados por el presente informe analítico final.
- Se procede a informar solamente los resultados que estén enmarcados dentro del rango de validación o entre el LD y el LCS y a los destinatarios que él explícitamente autorice.
- Para Au4-30 el Límite de Cuantificación es: LC = 0.06 mg/kg
- Los valores informados por debajo del LC tienen estadísticamente un grado de confiabilidad menor.
- Para lecturas de Cr, Cu, Fe, Mn, Mo y Ni por ICP: Los límites de detección declarados son solo instrumentales, no involucran el tratamiento de la muestra.
- QA / QC • Aspectos concernientes a las validaciones metodológicas, sesgo, precisión e incertidumbres asociadas, pueden ser solicitados por el cliente a Alex Stewart Argentina.
- Los Límites de cuantificación informados corresponden a los obtenidos en los procesos de validación del método, pueden variar según la matriz y concentración de la muestra.
- Las Curvas de Calibración empleadas en las metodologías de análisis tienen coeficientes R<sup>2</sup> superiores a 0.99.

# SECCION RESULTADOS

DETERMINACION	Li	Ca	Mg	B	Na	K
UNIDAD	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD	0.05	0.025	0.05	0.05	0.1	0.25
LCS	-----	-----	-----	-----	-----	-----

## RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Li	Ca	Mg	B	Na	K
494062	HMN-50	Salmuera (líq.)	Ambiental	793	882	2061	544	103712	7829
494063	HMN-51	Salmuera (líq.)	Ambiental	790	778	1873	582	107347	8202
494064	HMN-52	Salmuera (líq.)	Ambiental	790	741	1814	600	108620	8365
494065	HMN-53	Salmuera (líq.)	Ambiental	783	736	1806	593	108984	8255
494066	HMN-54	Salmuera (líq.)	Ambiental	784	746	1818	594	109147	8239
494067	HMN-55	Salmuera (líq.)	Ambiental	788	740	1803	598	109333	8427
494068	HMN-56	Salmuera (líq.)	Ambiental	774	738	1802	594	109059	7965
494069	HMN-57	Salmuera (líq.)	Ambiental	786	737	1806	597	109099	8199
494070	HMN-58	Salmuera (líq.)	Ambiental	784	744	1823	594	109403	8113
494071	HMN-59	Salmuera (líq.)	Ambiental	783	746	1827	593	109475	8082
494072	HMN-60	Salmuera (líq.)	Ambiental	787	735	1806	599	110958	8129
494073	HMN-61	Salmuera (líq.)	Ambiental	< 0,50	28	14	1	28	3
494074	HMN-62	Salmuera (líq.)	Ambiental	787	732	1802	604	110419	8145
494075	HMN-63	Salmuera (líq.)	Ambiental	792	736	1806	602	112029	8210
494076	HMN-64	Salmuera (líq.)	Ambiental	796	744	1823	608	111240	8259
494077	HMN-65	Salmuera (líq.)	Ambiental	788	734	1801	597	111646	8199
494078	HMN-66	Salmuera (líq.)	Ambiental	788	738	1808	592	111407	8128

# SECCION RESULTADOS

DETERMINACION	Ba	Sr	Fe	Mn
UNIDAD	mg/L	mg/L	mg/L	mg/L
COD. DE ANALISIS	LMMT03	LMMT03	LMMT03	LMMT03
TECNICA	ICP-OES	ICP-OES	ICP-OES	ICP-OES
LD	0.01	0.005	0.01	0.05
LCS	-----	-----	-----	-----

## RESULTADOS

Nº MUESTRA (Interna)	Nº MUESTRA (Cliente)	Tipo de Muestra	Area Interna	Ba	Sr	Fe	Mn
494062	HMN-50	Salmuera (líq.)	Ambiental	< 0,20	19.97	0.90	2.61
494063	HMN-51	Salmuera (líq.)	Ambiental	< 0,20	16.68	0.79	2.13
494064	HMN-52	Salmuera (líq.)	Ambiental	< 0,20	15.61	0.69	1.97
494065	HMN-53	Salmuera (líq.)	Ambiental	< 0,20	15.47	0.66	1.92
494066	HMN-54	Salmuera (líq.)	Ambiental	< 0,20	15.58	0.84	1.95
494067	HMN-55	Salmuera (líq.)	Ambiental	< 0,20	15.53	0.85	2.00
494068	HMN-56	Salmuera (líq.)	Ambiental	< 0,20	15.33	0.69	1.91
494069	HMN-57	Salmuera (líq.)	Ambiental	< 0,20	15.50	0.72	1.97
494070	HMN-58	Salmuera (líq.)	Ambiental	< 0,20	15.75	0.73	2.00
494071	HMN-59	Salmuera (líq.)	Ambiental	< 0,20	15.55	0.76	1.89
494072	HMN-60	Salmuera (líq.)	Ambiental	< 0,20	15.36	0.78	1.90
494073	HMN-61	Salmuera (líq.)	Ambiental	< 0,20	0.25	< 0,20	< 1,00
494074	HMN-62	Salmuera (líq.)	Ambiental	< 0,20	15.33	0.80	1.87
494075	HMN-63	Salmuera (líq.)	Ambiental	< 0,20	15.46	0.73	1.97
494076	HMN-64	Salmuera (líq.)	Ambiental	< 0,20	15.54	0.85	1.92
494077	HMN-65	Salmuera (líq.)	Ambiental	< 0,20	15.36	0.91	1.94
494078	HMN-66	Salmuera (líq.)	Ambiental	< 0,20	15.40	1.12	2.01

# SECCION QA-QC

DETERMINACION
UNIDAD
COD. DE ANALISIS
TECNICA
LD
LCS

Li	Ca	Mg	B	Na	K	Ba	Sr	Fe	Mn
mg/L									
LMMT03									
ICP-OES									
0.05	0.025	0.05	0.05	0.1	0.25	0.01	0.005	0.01	0.05

Prefijo (ASA) Identificación

RESULTADO

RESULTADO

DUP	HMN-59	784	742	1819	595	111538	8151	< 0,20	15.59	0.74	1.89
-----	--------	-----	-----	------	-----	--------	------	--------	-------	------	------



3393 N Dodge Blvd  
Tucson, AZ 85716  
520-628-9330  
Fax: 520-628-1122  
www.gsanalysis.com

**DATE:** August 27, 2018  
**Project #** **91834**  
**Project Name** **NRG Metals Argentina Brine Release Testing**  
**TO:** NRG Metals  
 Carlos Pellegrini 1373 10rd Floor A - C1011  
 Buenos Aires, Argentina  
**Project Contact** José de Castro  
 Enclosed are results for: Brine Release Capacity Test

<i>Test</i>	<i>Method</i>	<i>Qty</i>
Bulk Density	ASTM D 2937 - 00	20
Total Porosity, Field Water Capacity, and Specific Yield	MOSA Part 4 Ch. 2, 2.3.2.1, Ch. 3, 3.3.3.2 and 3.3.3.5/Horton et al	20

Thank you for choosing GeoSystems Analysis for your material testing needs. We look forward to working with you again. If you have any questions or require additional information, please contact us at 1-520-628-9330

Sincerely,

Prepared By: Katherine Heydorn  
Laboratory Project Manager

Reviewed By: Mike Yao  
Laboratory Technical Director



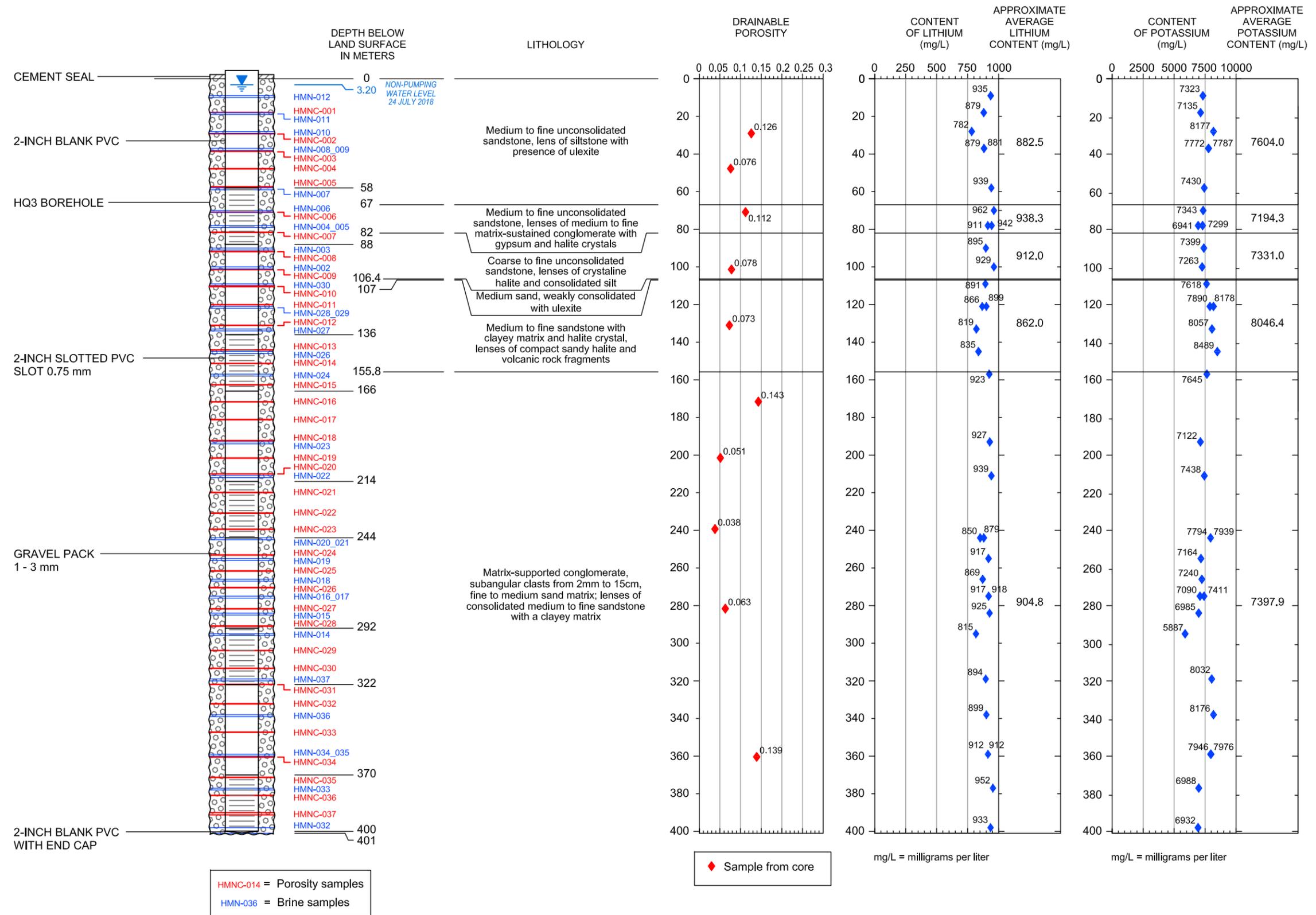




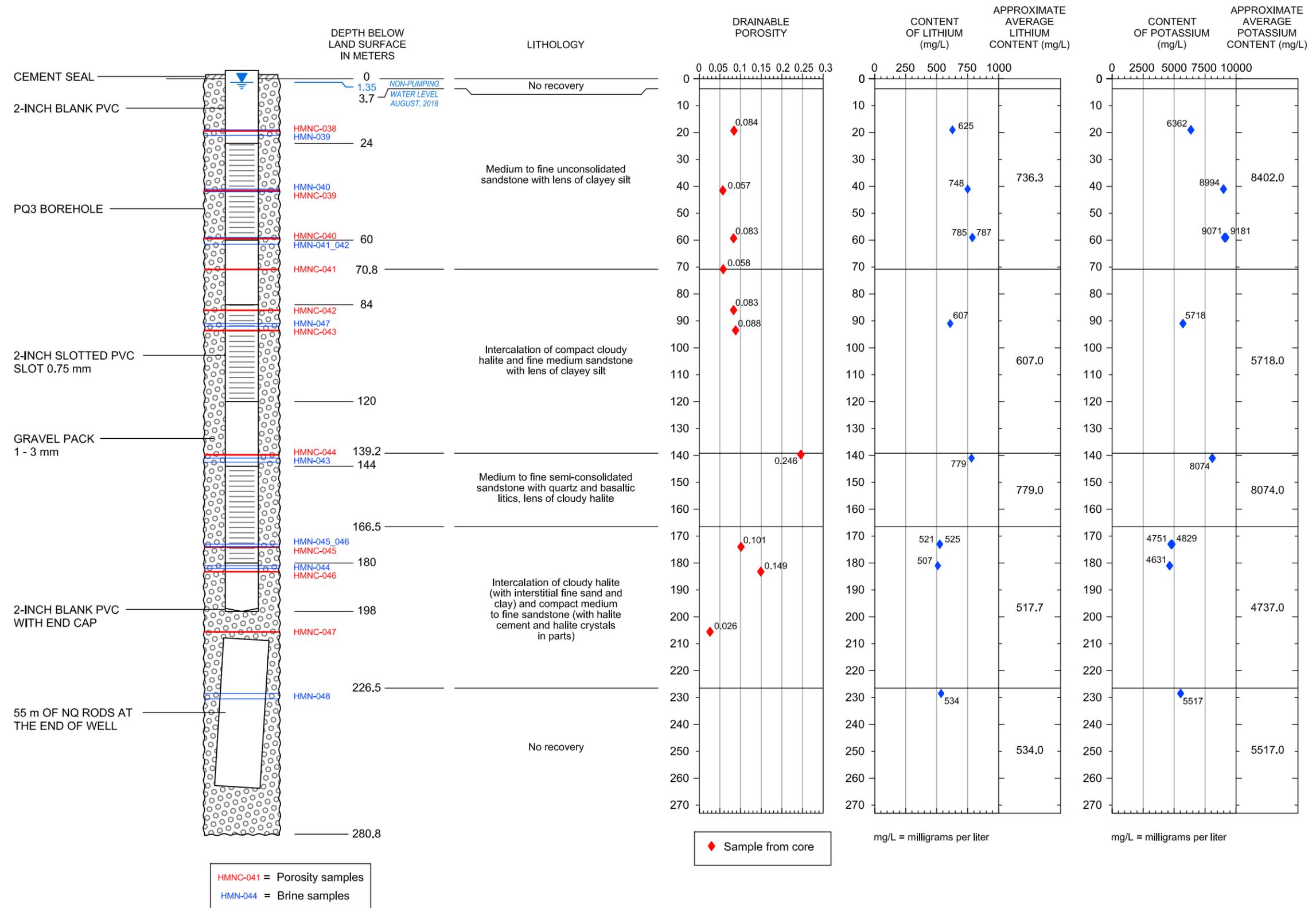


## **APPENDIX C**

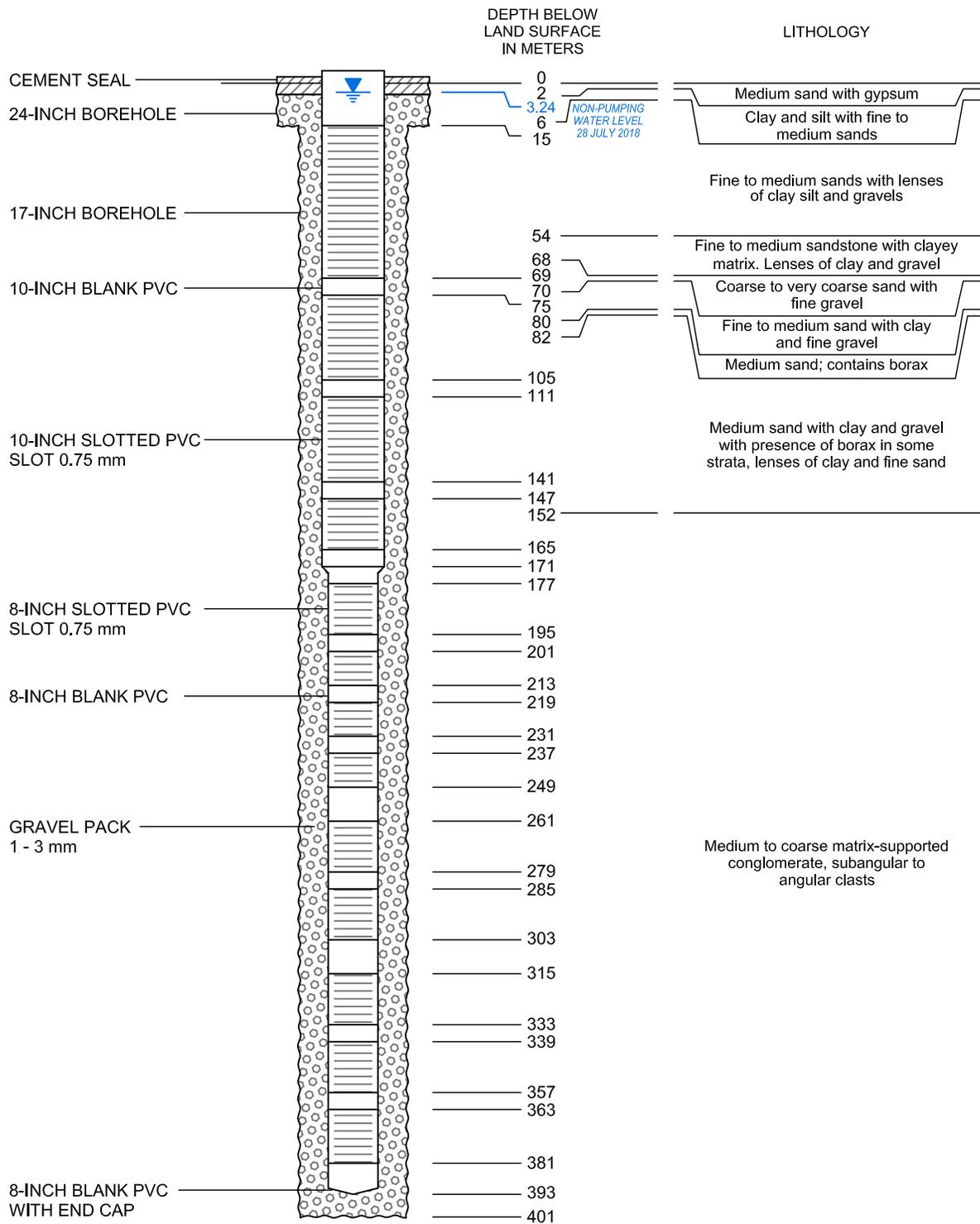
### **WELL SCHEMATICS**



**FIGURE C-1. SCHEMATIC DIAGRAM OF CONSTRUCTION OF EXPLORATION WELL TH18-01**



**FIGURE C-2. SCHEMATIC DIAGRAM OF CONSTRUCTION OF EXPLORATION WELL TH18-02**

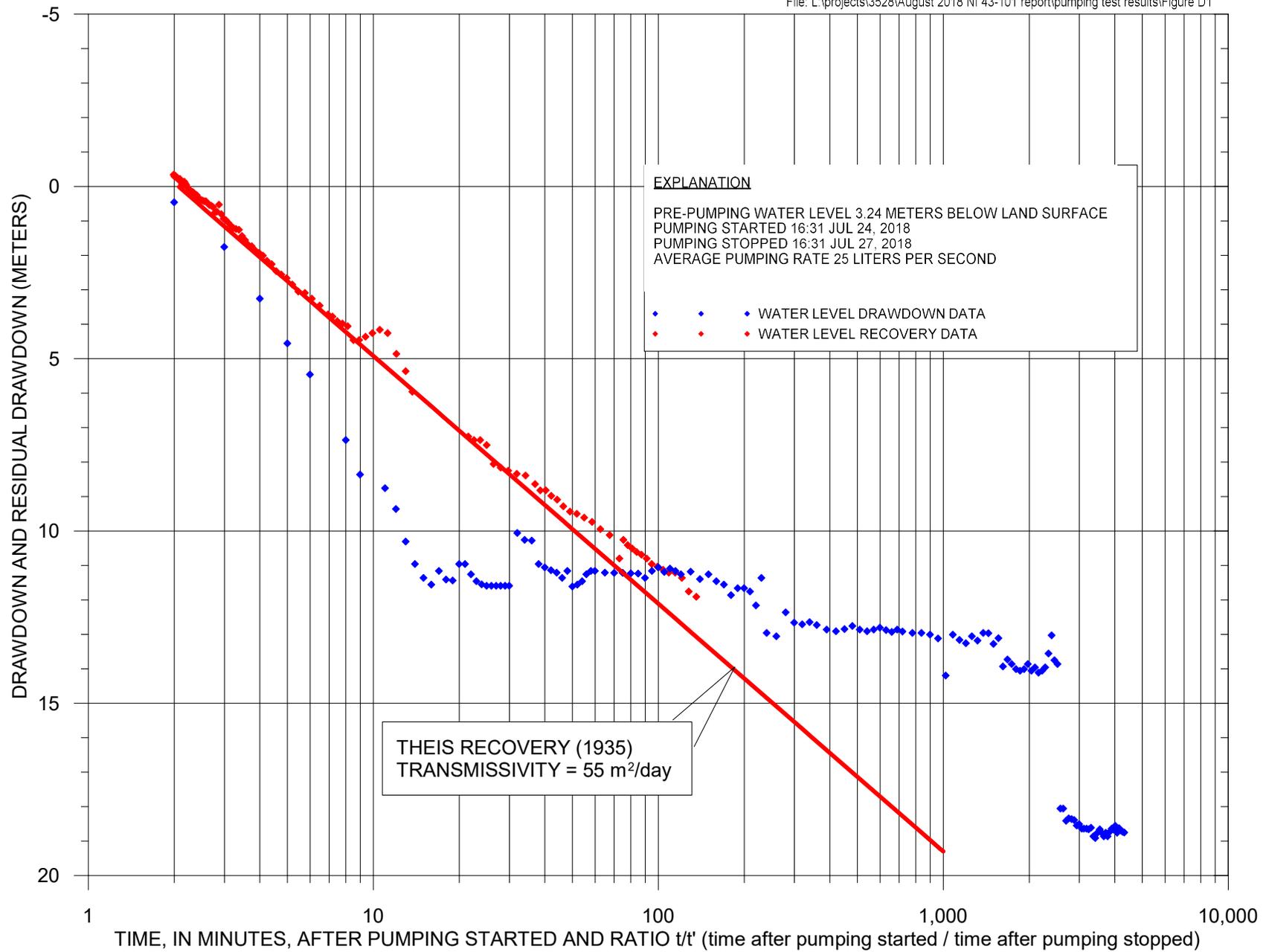


**FIGURE C-3. SCHEMATIC DIAGRAM OF CONSTRUCTION OF EXPLORATION PUMPING WELL TWW18-01**

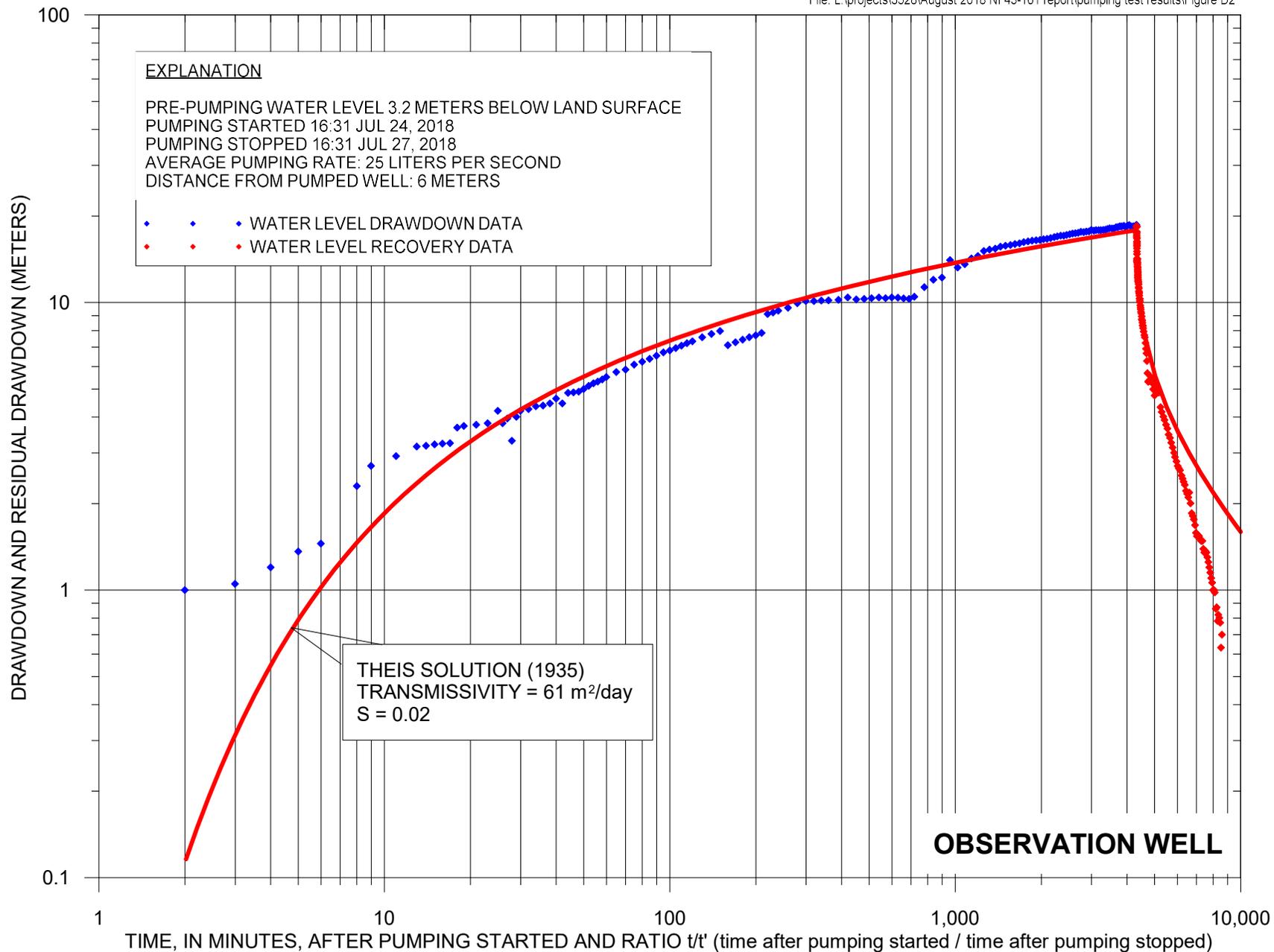


## **APPENDIX D**

### **PUMPING TEST GRAPHS**



**FIGURE D1. DRAWDOWN AND RECOVERY GRAPH FOR PUMPED WELL TWW18\_01 DURING 72-HOUR CONSTANT-DISCHARGE PUMPING TEST**



**FIGURE D2. DRAWDOWN AND RECOVERY GRAPH FOR OBSERVATION WELL TH18\_01 DURING 72-HOUR CONSTANT-DISCHARGE PUMPING TEST AT PUMPED WELL TWW18\_01**