GLOBAL GEOSCIENCE

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Global Geoscience Makes Groundbreaking Discovery

Heap Leach Lithium-Boron Extraction at Rhyolite Ridge

Highlights

- In an industry first, Global Geoscience has **successfully demonstrated heap leach processing of Rhyolite Ridge lithium-boron mineralisation** by achieving:
  - **Lithium and boron recoveries of 88-92%**
  - Rapid leach times at ambient temperature with moderate acid consumption rates
- Heap leach processing provides **substantially lower operating and capital costs compared to other forms of acid-leach processing** as grinding, flotation, filtration and leach tanks are not required
- Global's Rhyolite Ridge is **the only lithium deposit in the world that has been demonstrated to be amenable to simple heap leach processing**, reinforcing it as a credible alternative to spodumene and brine deposits as a major, low-cost and long-term source of lithium
- Further metallurgy and mining studies are in progress, with engineering studies about to commence. All are part of the Company's Rhyolite Ridge Pre-Feasibility Study (PFS)

Tuesday, 12 December 2017 – Australian-based lithium/boron developer **Global Geoscience Limited ("Global" or the "Company") (ASX: GSC)** today announced that extensive acid-leach testwork at its 100%-owned Rhyolite Ridge Lithium-Boron Project in Nevada, has shown that lithium and boron can be readily extracted by simple heap leach processing with high recoveries.

Metallurgical testwork conducted by Kappes Cassiday & Associates (Reno) and Hazen Research (Denver) laboratories has shown that simple, low-cost heap leach processes can be used to extract lithium and boron at high recovery rates into a Pregnant Leach Solution ("PLS"). Lithium and boron can then be removed from the PLS through crystallisation and purification steps to produce lithium carbonate and boric acid at the mine.

Heap leach extraction of lithium and boron at modest acid consumption rates means significantly lower capital and operating costs are likely when compared to other forms of acid leaching such as agitation (tank) leaching that require crushing, grinding, filtration and leach tanks. It also means substantially lower capital and operating costs when compared to hard rock lithium deposits (spodumene, mica, clay) that require beneficiation and high temperature conversion or roaster to liberate the lithium prior to the lithium carbonate production process. Rhyolite Ridge – which recently had the high-grade portion of its Mineral Resource doubled - is a large, shallow sedimentary lithium-boron deposit located in southern Nevada, USA.

Global Geoscience's Managing Director, Bernard Rowe said: "This is an exceptional result for GSC shareholders and a very significant breakthrough as we are not aware of any other lithium deposit where heap leach processing has been successfully demonstrated. Rhyolite Ridge's unique combination of minerals and low clay content is the key to efficiently recovering lithium and boron via heap leaching.

What makes the mineralogy so important is that the lithium and boron minerals are very easily dissolved in sulphuric acid – meaning high recoveries and short leach times with acceptable sulphuric acid consumption."

"Our team has made significant progress in uncovering and understanding the unique properties of this deposit, and then applying this knowledge to test and design what is a simple processing flowsheet. These latest results further reinforce our view that we have an economic pathway to make the Rhyolite Ridge resource into a significant, low-cost, near-term producer of lithium carbonate and boric acid in America."

Summary of Heap Leach Results

- High recoveries to PLS: 89-92% for lithium and 88-89% for boron
- Large samples: 150kg to 495kg
- Coarse feed: crushed to minus 150mm
- Rapid leach times: 30 days to get to 80% and 41 days to circa 90%
- Moderate net acid consumption: 413kg per tonne of ore
- High permeability and high percolation rates maintained throughout tests
- Excellent column integrity: low mass loss (21%) and low slumping (<5%)
- PLS can be operated at close to boric acid saturation
- No agglomeration required

The Rhyolite Ridge Advantage

Rhyolite Ridge's unique mineralogy is what sets it apart from other lithium and lithium-boron deposits. Unlike other sedimentary and pegmatite (spodumene, mica) lithium deposits, the lithium (and boron) at Rhyolite Ridge are contained within minerals that are highly soluble in sulphuric acid. Compared to other sedimentary lithium deposits, the lithium-boron mineralisation at Rhyolite Ridge has very low clay content.

These unique characteristics mean that Rhyolite Ridge mineralisation is amenable to simple, low-cost acid leaching – including heap, vat and agitation (tank) leach. Unlike other sedimentary and pegmatite lithium deposits, Rhyolite Ridge does not require roasting prior to acid leaching, meaning significantly lower operating and capital costs.

Key advantages include:

- Nevada location: one of the world's most favourable mining locations and home to the USA's burgeoning electric vehicle industry. Well-developed infrastructure and skilled mining workforce.
- Unique mineralogy which distinguish it from other sedimentary lithium deposits and allow for a simple, low-cost acid leach extraction process. Unlike sedimentary clay deposits, no roasting or calcining is required.
- Unlike pegmatite (spodumene, mica) deposits, no conversion is required to produce lithium carbonate.
- Dual revenue streams from lithium and boron
- Simple ownership – 100% Global Geoscience with no private royalties
- Large Mineral Resource containing 137 million tonnes of high-grade lithium boron mineralisation within a total Resource (Indicated & Inferred) of 460 million tonnes
- PFS stage - mining studies in progress, engineering studies about to commence
- Management and technical team with proven track record in the development and delivery of lithium and boron projects
- Ideally positioned to supply the lithium and boron markets in the USA and Asia

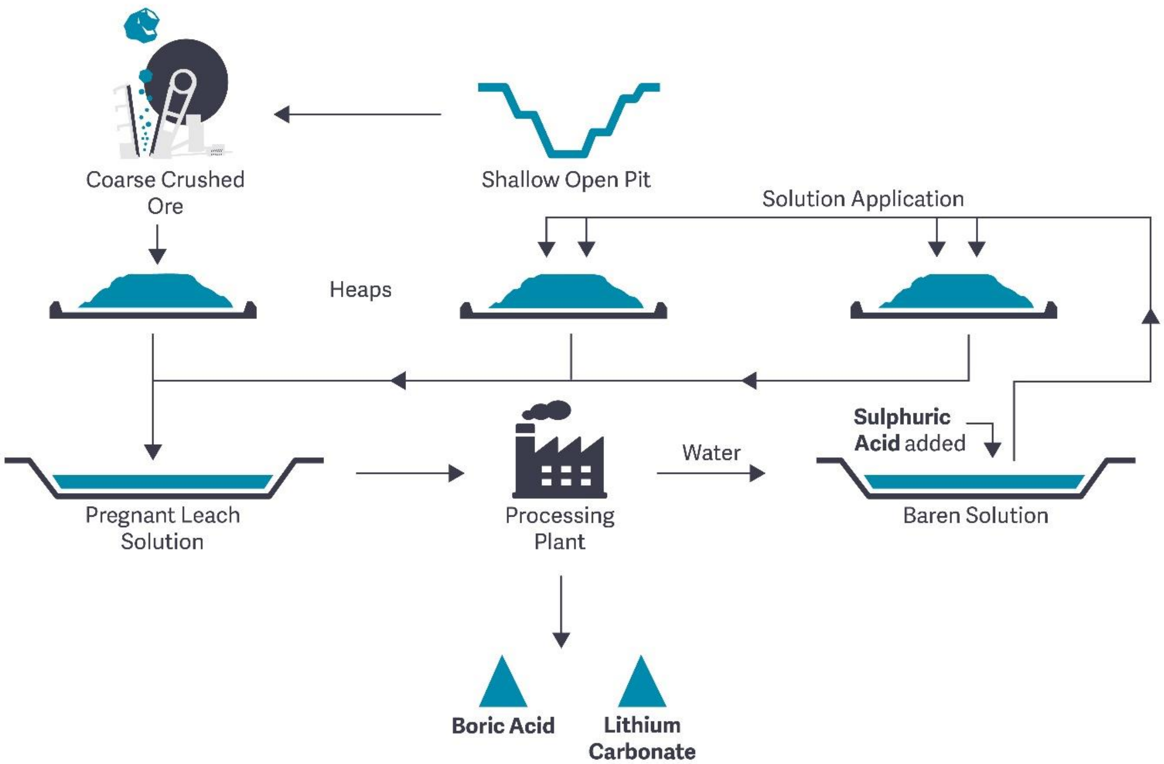
Background on Heap Leach Processing

Heap leach processing is widely used around the world at more than 100 mining operations to extract gold, silver, copper, nickel, uranium and iodine. Gold and silver ores are leached using a dilute cyanide solution. Copper, nickel, uranium, boron, iodine and nitrate ores are leached using sulfuric acid.

The Company believes Rhyolite Ridge is the first lithium project where heap leach has been demonstrated to be an effective processing route. Heap leach processing has significant advantages over other forms of leaching including agitation (tank) leaching, which has been the focus of the Company's previous testwork, including:

- lower capital and operating costs
- simple design and equipment, relatively quick to construct
- minimal to no crushing required, no grinding or other preparation required
- no tailings and therefore less environmental impact
- lower energy requirements
- highly scalable, relatively quick and low cost to increase production rates

An overview of the heap leach flowsheet for Rhyolite Ridge is provided in the diagram below.



A heap leach operation at Rhyolite Ridge would likely involve the following:

- Run-of-mine ore is crushed to between 50mm and 150mm
- The crushed ore is placed on a lined pad
- The ore is irrigated with sulphuric acid/water solution (10% acid/90% water) via drip feeder pipes
- The metals are dissolved into solution, forming a pregnant leach solution ("PLS")
- The PLS is collected in a pond or tank
- Boron and lithium are recovered from the PLS and converted into boric acid and lithium carbonate by a combination of crystallisation and purification process steps
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Heap Leach Testwork

Testwork was conducted on samples collected from outcrop (424750E, 4185750N NAD27 Z11) from within the Rhyolite Ridge Mineral Resource. The samples are considered to be representative of the high-grade lithium-boron mineralisation across the Resource. Three large samples (150kg to 495kg) were prepared as follows:

- Coarse crush (minus 150mm)
- Blended with sulphuric acid to initiate the leach process
- Loaded into 37cm diameter columns of height 1.2m (150kg) and 4.4m (495kg)
- Dilute sulphuric acid solution was then applied to the top of the column using a continuously drained drip method at the rate of 10-20 litres per hour per square metre at ambient temperature
- PLS recovered at the base of the column was measured, sampled and analysed daily for lithium, boron and a suite of other elements.

Tall (4.4m) column containing 495kg sample that was leached for a total of 164 days with recoveries of 89% lithium and 89% boron.

Short (1.5m) column containing 150kg sample that was leached for a total of 41 days with recoveries of 92% lithium and 89% boron.

		
Short column viewed from above	Dripper coil is connected to grate	Short column viewed from above showing leach rock

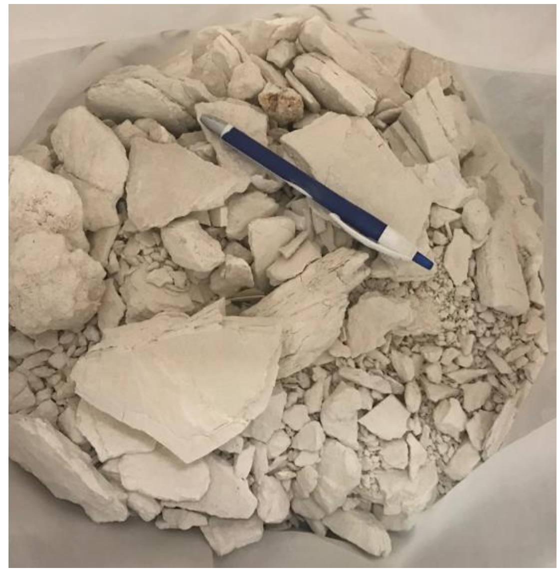
For the tall (4.4m) column, a 495 kg sample was blended with 15 kg of sulphuric acid (representing 3% of the sample weight) mixed with 50 litres of water. The acid-blending was done to initiate the leaching process and counteract the initial buffering of the acid from the carbonate minerals. The treated material was loaded into a 0.37 metre diameter column, yielding an initial height of 4.43 metres. Fresh barren acid/water solution was added daily to the column. Initially, lower acid concentrations were applied to the column to avoid blocking or slumping and to allow for close monitoring of the PLS. The acid concentration was gradually increased in order to lower the solution pH to ensure efficient leaching of the boron and lithium. The column was allowed to run for 164 days. At the end of the leach period, three batches of tap water were utilised to rinse the column before dumping the material.

For the first of the short (1.5m) columns, a 150 kg sample was blended with 15 kg of sulphuric acid (representing 10% of the sample weight) mixed with 7 litres of water. The treated material was loaded into a 0.37 metre diameter column, yielding an initial height of 1.22 metres. With the information gained from the tall column, higher acid concentrations were applied from day one, resulting in a much shorter leach period. Each day fresh barren 10% acid/ 90% water solution was added to the top of the column. At the end of the 41-day leach period, three batches of tap water were utilised to rinse the column before dumping the material.

For the second of the short columns, a 150 kg sample was blended with 22.5 kg of sulphuric acid (representing 15% of the sample weight). The acid was added directly to the material and no water was added. The treated material was loaded into a 0.37 metre diameter column, yielding an initial height of 1.35 metres. Each day fresh barren 10% acid/ 90% water solution was added to the column. At the end of the 41-day leach period, three batches of tap water were utilised to rinse the column before dumping the material.

At the conclusion of leaching, each column was allowed to drain for 24 hours for the final pregnant solution.

Sample before column leach test
Lightly crushed to minus 150mm
Coarse material with low percentage of fines



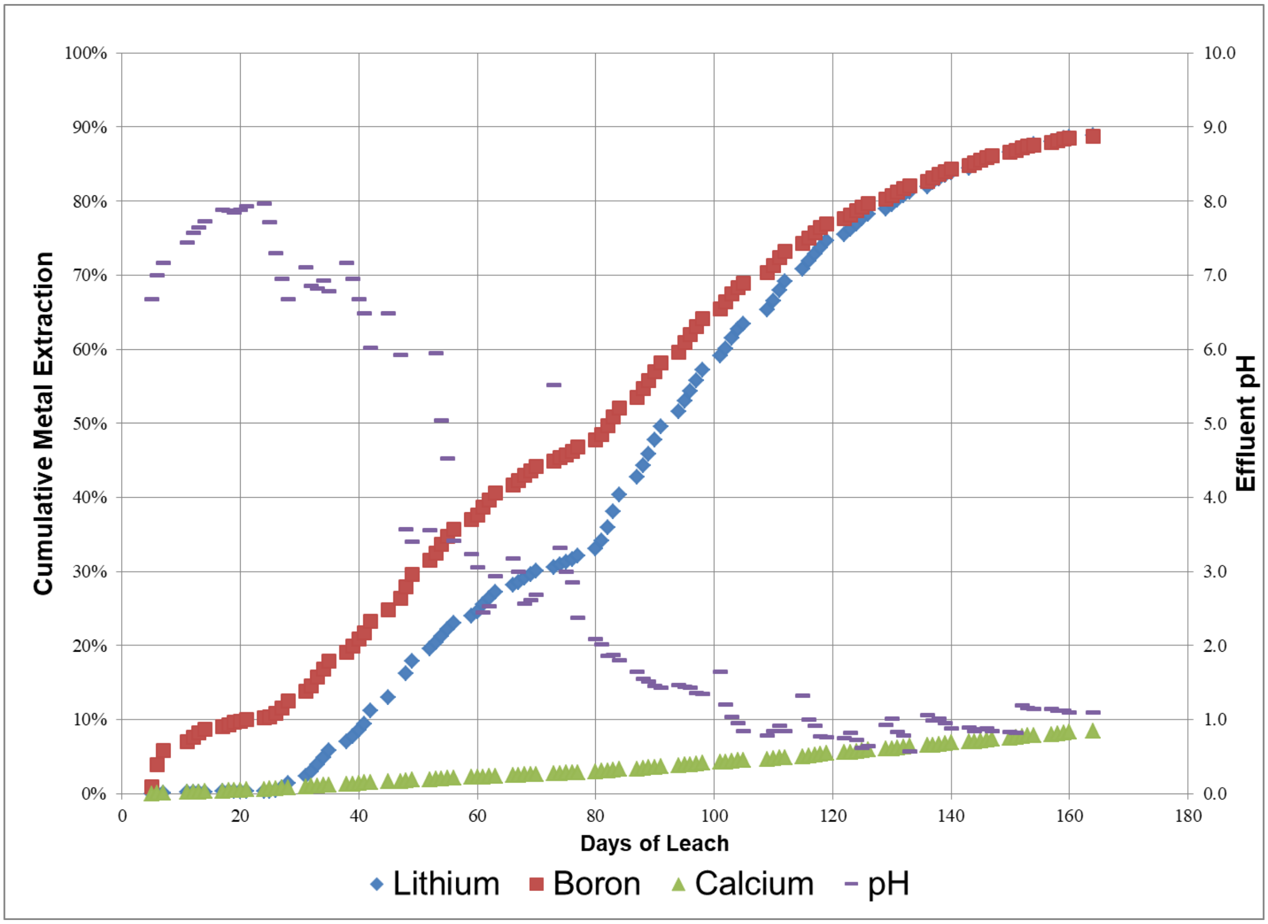
Sample after column leach test
90% of Li and B removed
Integrity of the rock remains
Very favourable characteristics for heap leaching

Results of Heap Leach Testwork

The table below compares the heap leach column tests and agitation (tank) leach tests.

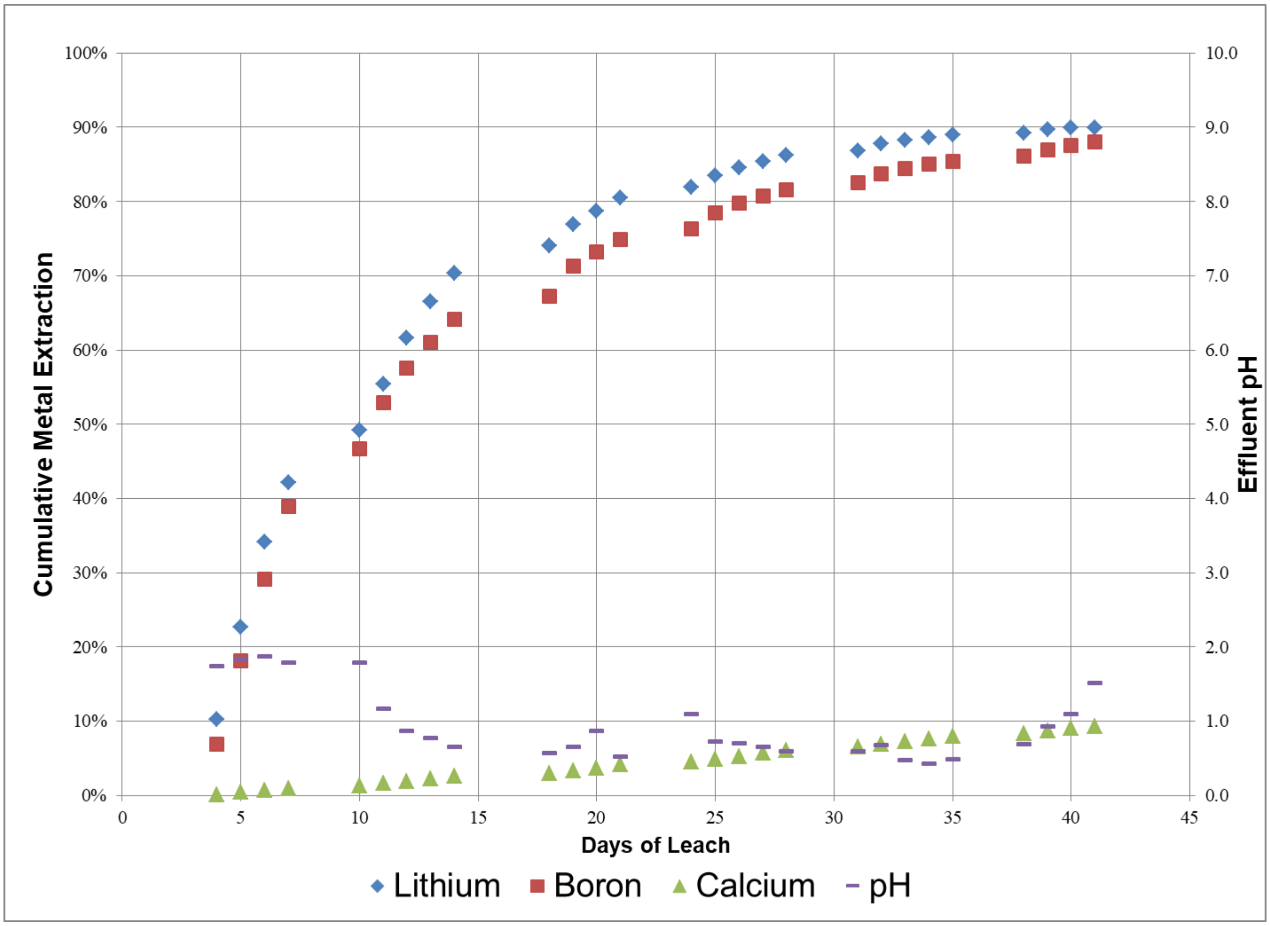
	Heap Leach Column 1	**Heap Leach Column 2**	**Heap Leach Column 3**	**Agitation Leach Comparison**
Sample Size (kg)	495	150	150	Multiple 1kg samples
Sample Head Grade	1,353ppm Li 2.30% B	1,303ppm Li 2.14% B	1,303ppm Li 2.14% B	1,500 ppm Li 2.12% B-
Crush	-150mm	-150mm	-150mm	Yes
Column Height (m)	4.4	1.5	1.5	N.A.
Grind	No	No	No	Yes
Flotation to remove carbonate	No	No	No	Yes with 5% loss of Li & B
Lithium Recovery %	89	90	92	93
Boron Recovery %	89	88	89	94
Leach Time	164 days	41 days	41 days	4 hours
Acid Blend	3%	10%	15%	-
Acid Consumption (kg/t of ore)	-	413	460	296

The chart below shows Li and B recoveries and pH on a daily basis for **Column 1** (164 days, 495kg).



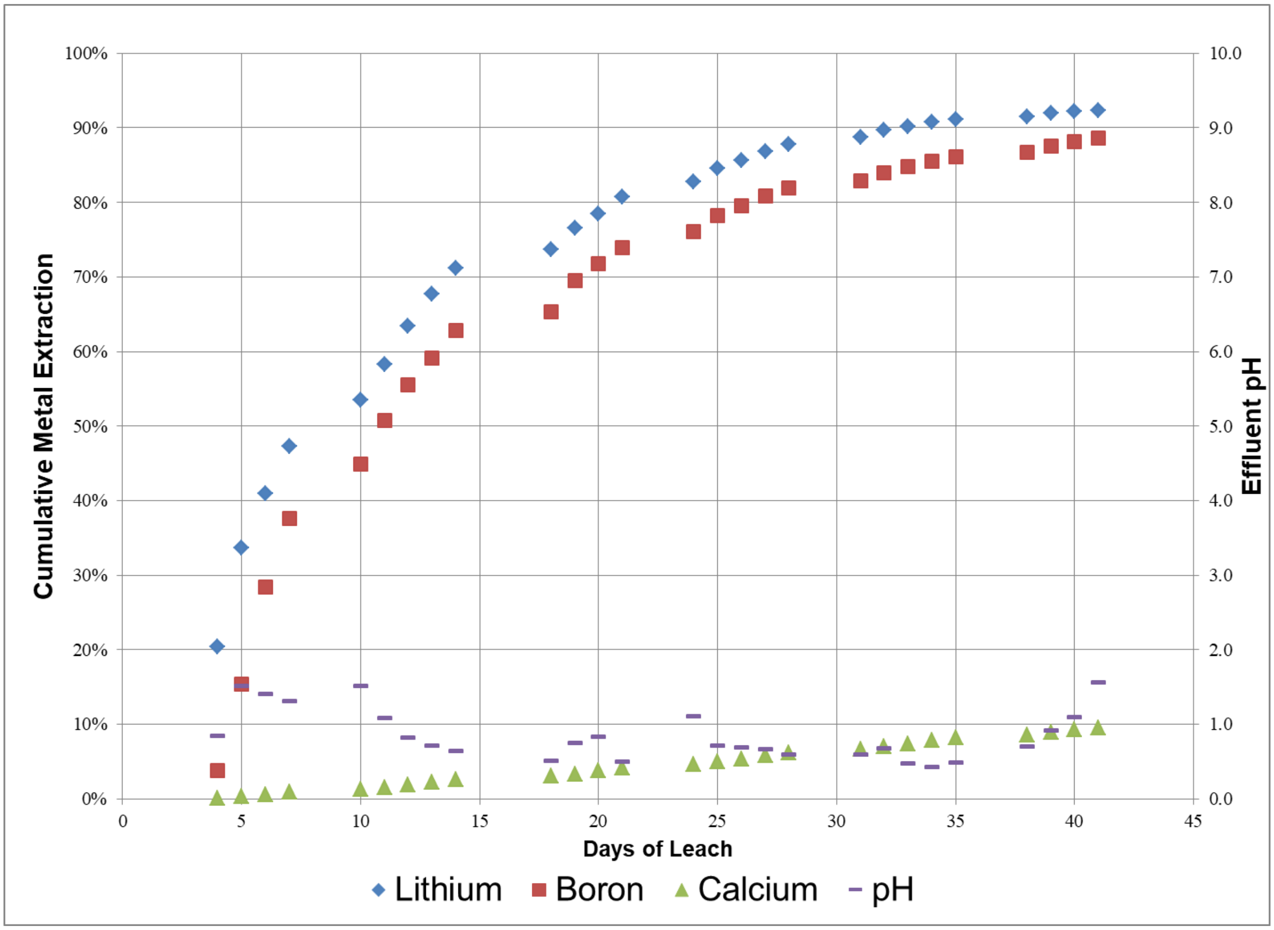
For Column 1, lithium and boron recoveries both reached 89% after 164 days. Extraction rates were low (9% Li and 21% B) during the first 40 days while acid dosages were deliberately kept low and acidity remained above pH 6. With increasing acid dosage from day 40, by day 80 acidity reached pH 2 and recoveries climbed to 33% Li and 48% B. With further increased acid dosage from day 76, acidity reached and was maintained at pH 1. By day 120, recoveries reached 75% Li and 78% B. The column leach was stopped at day 164 at which time recoveries had reached 89% for both Li and B. Calcium extraction was low (<10%) despite the calcite content and this is explained by the conversion of calcite to gypsum, which aids in permeability and percolation rates.

The chart below shows Li and B recoveries and pH on a daily basis for **Column 2** (41 days, 150kg, 10% acid blend).



For Column 2, recoveries reached 90% Li and 88% B after 41 days. Due to the acid addition (blending) prior to loading the column and the higher acid application rates, acidity of the effluent started at pH 2 and remained around pH 1 from day 10 for the duration of the test. This meant that leaching of lithium and boron commenced immediately and reached 50% by day 11. By day 28 recoveries reached 86% Li and 82% B. The column leach was stopped at day 41 at which time recoveries had reached 90% Li and 88% B. Calcium extraction remained below 10% despite the calcite content and this is explained by the conversion of calcite to gypsum, which aids in permeability and percolation rates.

The chart below shows Li and B recoveries and pH on a daily basis for **Column 3** (41 days, 150kg, 15% acid blend).



For Column 3, recoveries reached 92% Li and 89% B after 41 days. Due to the acid addition (blending) prior to loading the column and the higher acid application rates, acidity of the effluent started and remained around pH 1 for the duration of the test. This meant that leaching of lithium and boron commenced immediately and reached 50% by day 10. By day 28 recoveries reached 88% Li and 82% B. The column leach was stopped at day 41 at which time recoveries had reached 92% Li and 89% B. Calcium extraction remained below 10% despite the calcite content and this is explained by the conversion of calcite to gypsum, which aids in permeability and percolation rates.

Summary of Rhyolite Ridge Lithium-Boron Project

Location

Rhyolite Ridge is located in southern Nevada, 25km west of Albermarle's Silver Peak mine, the only operating lithium mine in the USA, and 340km from the Tesla Gigafactory near Reno. Grid power and water are available in close proximity to the project. Rhyolite Ridge is one of the largest lithium and boron deposits in North America and has the potential to become a strategic, long-life and low-cost source of lithium carbonate and boric acid.

Geology

Rhyolite Ridge project covers two separate lithium-boron deposits (North Basin and South Basin) located 4km apart. The mineralisation occurs in flat lying sedimentary sedimentary rocks as a two or more stacked layers or lenses. The sedimentary rocks are up to 300m thick and the mineralized layers within are 20-70m thick. The mineralized layers contain lithium only (clay-rich) and lithium-boron (clay-poor) mineralisation.

The lithium-only mineralisation typically contains over 2000ppm lithium, less than 0.02% boron and occurs in clay-rich layers. The lithium-boron mineralisation typically contains 1500-2000ppm lithium and greater than 1% boron, is higher in silica, sodium and potassium and lower in calcium and magnesium and occurs in 20m to 70m thick layers containing abundant searlesite (20-40%) and low in clay. Searlesite is a sodium-boron-silicate mineral. There are at least two separate layers of lithium-boron mineralisation (upper zone and lower zone) separated by 30-50m of barren sediments. The upper zone outcrops and the lower zone is shallow (<40m) along the western margin of South Basin. Both types of mineralisation are very consistent laterally over at least several square kilometers.

The host rocks are dominated by the minerals searlesite (boron-bearing), sepiolite (lithium-bearing), K-feldspar, calcite and dolomite. Unlike most other sedimentary-type lithium deposits, the lithium-boron mineralization at Rhyolite Ridge has low clay content.

Both basins have not been structurally disturbed since deposition and the strata/mineralisation are very consistent laterally.

Resource Estimate

The Indicated and Inferred Resource estimate for the South Basin is 460 million tonnes at 1,700ppm lithium (equivalent to 0.9% lithium carbonate) and 0.46% boron (equivalent to 2.6% boric acid) at a 1,050ppm lithium cut-off. The Resource includes a high-grade lithium-boron zone totaling 137 million tonnes at 1,800 ppm lithium (equivalent to 0.9% lithium carbonate) and 1.26% boron (equivalent to 7.2% boric acid) at a 1050ppm lithium and 0.5% boron cut-off. The Indicated category comprises 75% of the high-grade lithium-boron Resource.

October 2017 Mineral Resource Estimate (1,050ppm Li Cut-off)

Group	Classification	Tonnage Mt	Li ppm	B ppm	Li_2CO_3 %	H_3BO_3 %	K_2SO_4 %	Contained Li_2CO_3 kt	Contained Boric Acid kt	Contained Potassium kt
Upper &	Indicated	273.7	1,700	5,700	0.9	3.3	1.7	2,440	8,950	4,630
Lower	Inferred	185.8	1,700	2,900	0.9	1.6	1.6	1,620	2,960	3,020
Zone	**Grand Total**	**459.5**	**1,700**	**4,600**	**0.9**	**2.6**	**1.7**	**4,060**	**11,910**	**7,650**

October 2017 Mineral Resource Estimate (1,050ppm Li Cut-off and 0.5% B Cut-off)

Group	Classification	Tonnage Mt	Li ppm	B ppm	Li_2CO_3 %	H_3BO_3 %	K_2SO_4 %	Contained Li_2CO_3 kt	Contained Boric Acid kt	Contained Potassium kt
Upper &	Indicated	103.1	1,700	13,100	0.9	7.5	1.9	920	7,740	1,970
Lower	Inferred	34.0	2,000	11,100	1.0	6.3	2.2	350	2,160	740
Zone	**Grand Total**	**137.1**	**1,800**	**12,600**	**0.9**	**7.2**	**2.0**	**1,280**	**9,900**	**2,710**

The Resource remains open to the north, south and east and has significant potential to expand with further drilling of the South Basin. None of the known lithium-boron mineralisation at North Basin is included in the Mineral Resource estimate.

For further information regarding the resource estimate, refer to the announcement titled **"Global Geoscience Doubles High-Grade Lithium-Boron Mineral Resource"** dated 31 October 2017.

Metallurgy

Metallurgical testwork has focused on demonstrating that the lithium-boron mineralisation is amenable to acid leaching. Initially this testwork focused on a flowsheet involving crushing, grinding and flotation followed by agitation (tank) leaching. Flotation is used to remove acid-consuming carbonate minerals and reduce acid consumption. Results announced in May 2017 showed very high recoveries (>90%) for lithium and boron and lower than expected acid consumption rates (296kg acid per tonne of ore). Due to the very positive results and high recoveries obtained, a number of other potentially lower cost (capital and operating costs) acid leach options are being evaluated, including heap leach.

For further information regarding mineralogy and acid leaching, refer to announcement titled "**Exceptional leach results and exercise of option for 100% ownership**" dated 2 May 2017.

Mining

The South Basin deposit is ideally suited to open pit mining methods as it is shallow, thick, consistent and gently dipping, resulting in a low strip ratio. RPM Global is close to completing a preliminary mining study/analysis as part of the broader mining study being undertaken for the PFS. The study is evaluating conceptual pit designs and development, scheduling and mine site design and layout. Water and geotechnical investigations are being undertaken by Tierra Group International.

Work In Progress – Upcoming News

The Rhyolite Ridge test program will continue to focus on work required for the Rhyolite Ridge PFS including:

- Preliminary mining study/analysis – close to completion, results to be released soon
- Further optimisation of acid-leach process – in progress
- Crystallisation and purification testwork on PLS to produce lithium carbonate and boric acid – in progress
- PFS engineering study – about to commence
- Environmental, ground water and geotechnical studies – in progress

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About Global Geoscience

Global Geoscience Limited (ASX:GSC) is an Australian-based mineral explorer and developer focused on its 100%-owned Rhyolite Ridge Lithium-Boron Project in Nevada, USA. Rhyolite Ridge is a large, shallow lithium-boron deposit located close to existing infrastructure. It is a unique sedimentary deposit that has many advantages over the brine and pegmatite deposits that currently provide the world's lithium. The Rhyolite Ridge Pre- Feasibility Study is well under way.

Global Geoscience is aiming to capitalise on the growing global demand for lithium and boron. Lithium has a wide variety of applications, including pharmaceuticals, lubricants and its main growth market, batteries. Boron is used in glass and ceramics, semiconductors and agriculture. Global Geoscience aims to develop the Rhyolite Ridge Lithium-Boron Project into a strategic, long-life, low-cost supplier of lithium carbonate and boric acid. To learn more please visit: www.globalgeo.com.au.

Competent Persons Statement

The information in this report that relates to Exploration Results is based on information compiled by Bernard Rowe, a Competent Person who is a Member of the Australian Institute of Geoscientists. Bernard Rowe is a shareholder, employee and Managing Director of Global Geoscience Ltd. Mr Rowe has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Bernard Rowe consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

In respect of Mineral Resources referred to in this presentation and previously reported by the Company in accordance with JORC Code 2012, the Company confirms that it is not aware of any new information or data that materially affects the information included in the public report titled "Global Geoscience Doubles High-Grade Lithium-Boron Mineral Resource" dated 31 October 2017 and released on ASX. Further information regarding the Mineral Resource estimate can be found in that report. All material assumptions and technical parameters underpinning the estimates in the report continue to apply and have not materially changed.