



3 October 2018

ASX ANNOUNCEMENT

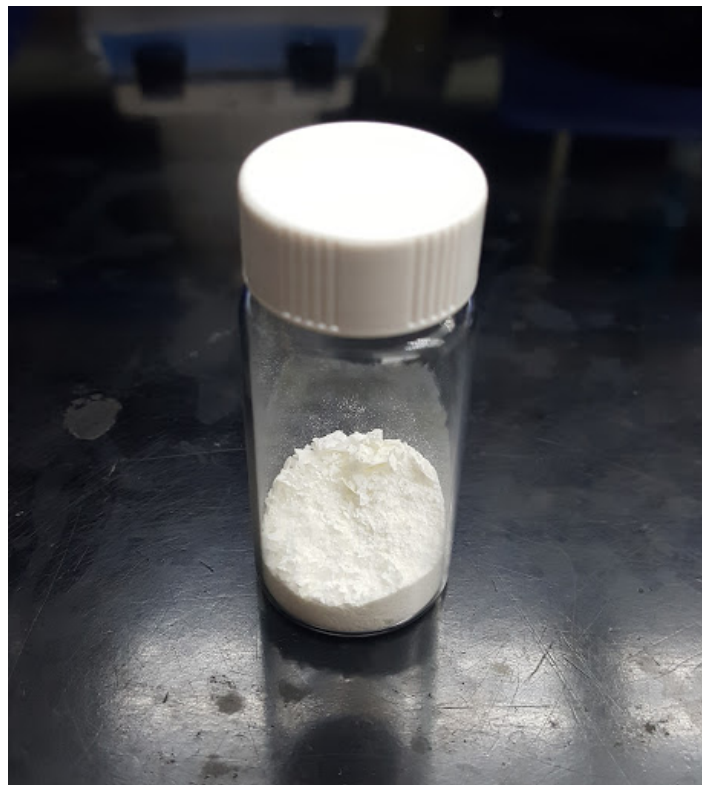
ASX: ASN

## Anson Produces Lithium Hydroxide Product

### Highlights:

- **First lithium hydroxide product precipitated from Cane Creek brine**
  - **Produced from R&D precipitation test work**
- **Further testing is being completed to produce larger sample**
- **Hazen Research appointed for B, Br & I extraction bench-top test work**
- **Hatch appointed to co-ordinate all metallurgical work being carried out**

Anson Resources Limited (Anson) is pleased to announce that it has successfully produced its first lithium hydroxide product from the Paradox Lithium Project in Utah, (the Project), see Figure 1, during R&D precipitation test work carried out by Lilac Solutions (Lilac). This represents a further step forward in determining the production process and determining products that can be offered to customers. Both lithium carbonate, see announcement 12 July 2018, and lithium hydroxide have now been successfully produced from Cane Creek brine using the Lilac process.



**Figure 1: Anson's first vial of lithium hydroxide product.**

For personal use only



Commenting on the results, David Snyder, Chief Executive Officer of Lilac Solutions, said, “High purity lithium hydroxide was produced from the Cane Creek brine and Lilac remains on-track to produce battery grade products from Anson’s lithium rich brines.”

Anson is examining different production processes to assess the best recovery and purity results from the Cane Creek brines, which will also provide the best financial returns.

This metallurgical test work is being run in parallel with the test work being carried out by Outotec, see ASX announcement 12 July 2018. The Lilac test work was carried out on a 1000 litre bulk sample extracted from the free flowing Cane Creek 32-1 well.

### **Lilac Solutions Test Work Process**

Lilac’s production process uses a newly developed technology that extracts only the lithium from the brine using an adsorption methodology. Lilac has been conducting test work on the Paradox Lithium brine since July 2018. Other minerals including boron, bromide, iodine and magnesium are not recovered using this process. Lilac’s unique ion exchange media and system was used on the Cane Creek brine containing approximately 100 ppm Li, 40,000 ppm Ca, 30,000 ppm Mg, and 10,000 ppm Na.

The supersaturated brine was passed through the Lilac IX process to produce a concentrated lithium sulphate solution at 16,900 mg/l Li with a molar purity of 76% (cation basis). The average recovery of Li from the brine to the eluate was approximately 55%.

A two-step purification process was used to remove impurities from the lithium eluate. This removed mostly Ca and Mg with minor amounts of transition metals (Fe, Mn etc) and other multivalent ions after which lithium carbonate was precipitated out. These impurities can be removed earlier in the final production design using other processes or during the recovery of the B, Br and I.

Calcium hydroxide (slaked lime) was added to the lithium carbonate product to make a lithium hydroxide solution which was then crystallised after the calcium carbonate was filtered out. The final  $\text{LiOH}\cdot\text{H}_2\text{O}$  sample was 99.7% pure (as measured using the same analytical conditions as above).

The R&D test work was designed to optimise the purification and processing of the lithium samples and was split into multiple streams with different parameters for optimisation. The system was not optimised for lithium recovery. At present, a much larger lithium hydroxide sample is being produced which should increase the recovery significantly.

Waste streams were not re-cycled using the Lilac IX process in this original test work, but will be in future, which should increase the overall lithium recovery.

For a commercial lithium project in the Paradox Basin, Lilac expects the lithium recovery in the Lilac IX unit to be 60-80% and downstream lithium recovery to be 90%, resulting in an overall plant lithium recovery of approximately 50-70%.

It is possible that this alternative lithium extraction process could be added to either the front or back end of alternate production processes if proven to improve production results and be financially beneficial.



## **Boron, Bromide & Iodine Test Work**

Hazen Research, based in Denver, Colorado, has been appointed to complete a series of bench-scale experiments to examine the potential extraction and purification of boron, bromine and iodine from a representative brine sample from the Cane Creek 32-1 well. Test work on the sample has commenced.

The extraction of boric acid from acidic aqueous brines containing potassium, magnesium, sodium, and calcium chloride is to be tested using Solvent Extraction (SX) which uses 2-ethylhexanol and iso-octanol.

The extraction of the bromine and iodine is carried out using the following steps.

Iodine recovery from oil well brines typically follows three steps:

- Clean-up of residual oil from the brine
- Blowout of iodine from solution
- Iodine product finishing

Bromine recovery from brines is conducted in four distinct operations:

- Oxidation of bromide to bromine
- Stripping of bromine from solution
- Separation of stripped bromine from the vapor phase
- Finishing purification of the separated bromine

## **Engineering Consultants Appointed**

Hatch, a global engineering consultancy group, has been appointed to assist Anson Resources in focusing the test work of Outotec, Lilac Solutions and Hazen Research towards commencement of the PFS, with industry leading lithium knowledge supported by global area experts in bromine and boron processing as well as solvent extraction and ion exchange operations.

The main purpose of this study is to ensure that the test work being done for Anson Resources is aimed at informing the 2019 PFS, such that options to be carried into the PFS can be compared relatively on a similar level of definition.

The key activities for the work package are as follows:

- Review of the Outotec, Lilac Solutions and Hazen Research test work reports;
- Ongoing support for Anson Resources in test work supervision and direction;
- Hatch workshop on flowsheet ideas to be carried into the PFS; and
- Summary report, including scoping assistance for the PFS.

Anson's Managing Director, Bruce Richardson, commented, "The company is moving as quickly as possible to determine the most economic process to recover value from the brines contained in the Paradox Lithium Project. The results achieved by Lilac Solutions in being able to produce lithium carbonate and lithium hydroxide from these brines have been very impressive and are significant steps forward in the development of the Project. The ability to produce either lithium



carbonate or lithium hydroxide would enable the company to meet the demands of customers of both products and would provide it with the flexibility to meet changes in the product demand. While test work will continue on producing battery grade lithium products, the company also looks forward to the results that are anticipated from Hazen in extracting boron, bromide and iodine, as it is considered that the extraction of these minerals may not only provide additional revenue streams but also contribute to improving the quality and recovery of lithium carbonate and/or lithium hydroxide. The appointment of Hatch, as a part of the team, brings significant resources and experience to lithium processing and will assist the company in ensuring that the best processing is utilised in the Paradox Lithium Project.”

**ENDS**

**For further information please contact:**

**Bruce Richardson**  
**Managing Director**

**E: [info@ansonresources.com](mailto:info@ansonresources.com)**

**Ph: +61 8 9226 0299**

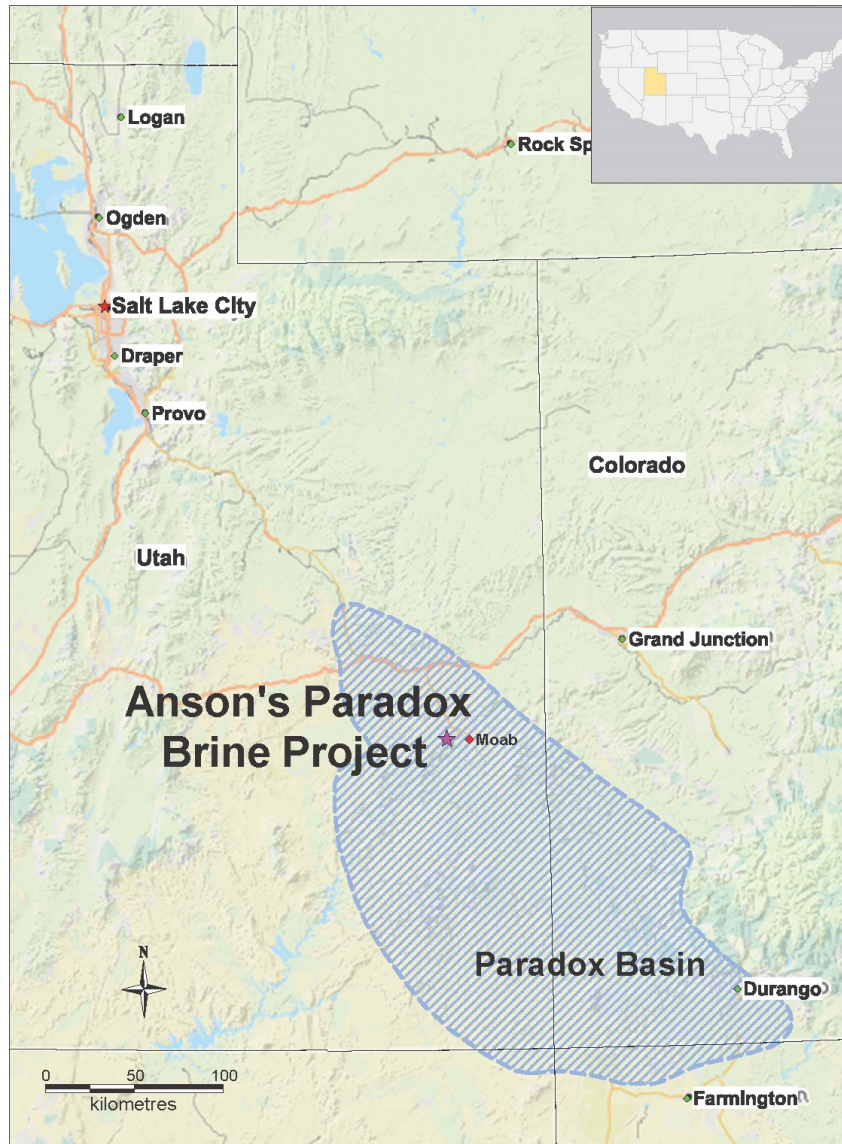
**[www.ansonresources.com](http://www.ansonresources.com)**

**Follow us on Twitter [@anson\\_ir](https://twitter.com/anson_ir)**

**Forward Looking Statements:** Statements regarding plans with respect to Anson’s mineral projects are forward looking statements. There can be no assurance that Anson’s plans for development of its projects will proceed as expected and there can be no assurance that Anson will be able to confirm the presence of mineral deposits, that mineralisation may prove to be economic or that a project will be developed.

## About the Utah Lithium Project

Anson is targeting lithium rich brines in the deepest part of the Paradox Basin in close proximity to Moab, Utah. Lithium values of up to 1,700ppm have historically been recorded in close proximity to Anson's claim area. The location of Anson's claims within the Paradox Basin is shown below:



**Competent Person's Statement:** The information in this announcement that relates to exploration results, geology and metallurgical data is based on information compiled and/or reviewed by Mr Greg Knox, a member in good standing of the Australasian Institute of Mining and Metallurgy. Mr Knox is a geologist who has sufficient experience which is relevant to the style of mineralisation 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. Mr Knox has reviewed and validated the metallurgical data produced by Lilac Solutions and consents to the inclusion in this announcement of this information in the form and context in which it appears. Mr Knox is a director of Anson and a consultant to Anson.

**Chemical Engineer's Statement:** The information in this announcement that relates to lithium extraction and processing is based on information compiled and/or reviewed by Mr. Alexander Grant. Mr. Grant is a chemical engineer with a MS degree in Chemical Engineering from Northwestern University. Mr. Grant has sufficient experience which is relevant to the lithium extraction and processing undertaken to evaluate the data presented.

## JORC CODE 2012 “TABLE 1” REPORT

### Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul style="list-style-type: none"> <li>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where ‘industry standard’ work has been done this would be relatively simple (eg ‘reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay’). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<p><b>Cane Creek 32-1-25-20 well</b></p> <ul style="list-style-type: none"> <li>Mud Rotary (historic oil well).</li> <li>On re-entry, sampling of the supersaturated brines was carried out</li> <li>Samples were collected in a professional manner</li> <li>Samples were collected in IBC containers from which samples for assay were collected</li> <li>Initial samples were sent to multiple certified laboratories in the USA</li> <li>Bulk sample sent to Lilac Solutions in Oakland, California</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</li> </ul>	<ul style="list-style-type: none"> <li>Mud Rotary Drilling (18 ½” roller bit).</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>	<p><b>Cane Creek 32-1-25-20</b></p> <ul style="list-style-type: none"> <li>Sampling of the targeted horizons was carried out at the depths interpreted from the newly completed geophysical logs. Clastic Zones 17, 19, 29, 31 and 33 to be sampled</li> </ul>

## JORC CODE 2012 “TABLE 1” REPORT

Criteria	JORC Code Explanation	Commentary
Logging	<ul style="list-style-type: none"> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> </ul>	<p><b>Cane Creek 32-1-25-20</b></p> <ul style="list-style-type: none"> <li>All cuttings from the historic oil wells were geologically logged in the field by a qualified geologist</li> </ul>
	<ul style="list-style-type: none"> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul style="list-style-type: none"> <li>Geological logging is qualitative in nature.</li> <li>All the drillhole were logged.</li> </ul>
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled,</li> </ul>	<p><b>Cane Creek 32-1-25-20</b></p> <ul style="list-style-type: none"> <li>Sampling followed the protocols produced by SRK for lithium brine sampling</li> <li>Samples were collected in IBC containers and samples taken from them.</li> <li>Duplicate samples kept Storage samples were also collected and securely stored</li> <li>Bulk samples were also collected for future use.</li> <li>Sample sizes were appropriate for the program being completed.</li> </ul>
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</li> </ul>	<p><b>Cane Creek 32-1</b></p> <ul style="list-style-type: none"> <li>The metallurgical assays were carried out at ALS, a certified laboratory in California</li> <li>Assays were carried out using an ICP-OES instrument</li> <li>ICP was used for cation and metal analysis</li> <li>IP was used for anion analysis</li> <li>Quality and assay procedures are considered appropriate</li> <li>Duplicate samples kept (can be sent to an external lab)</li> <li>Bulk sample (1000l) will be sent off for bench top test work</li> </ul>

## JORC CODE 2012 “TABLE 1” REPORT

Criteria	JORC Code explanation	Commentary
Verification of sampling and assaying	<ul style="list-style-type: none"> <li>• The verification of significant intersections by either independent or alternative company personnel.</li> <li>• The use of twinned holes.</li> <li>• Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. <i>Discuss any adjustment to assay data.</i></li> </ul>	<p><b>Cane Creek 32-1-25-20</b></p> <p>Documentation has been recorded and sampling protocols followed.</p>
Location of data points	<ul style="list-style-type: none"> <li>• Data spacing for reporting of Exploration Results.</li> <li>• Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. <i>Whether sample compositing has been applied.</i></li> </ul>	<p><b>Cane Creek 32-1-25-20</b></p> <ul style="list-style-type: none"> <li>• The project is at an early stage and information is insufficient at this stage in regards to sample spacing and distribution. No sample compositing has occurred.</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>• Data spacing for reporting of Exploration Results.</li> <li>• Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>• Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>• Data spacing is considered acceptable for a brine sample but has not been used in any Resource calculations</li> <li>• No sample compositing has occurred.</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>• If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul style="list-style-type: none"> <li>• All drill holes were drilled vertically (dip -90).</li> <li>• Orientation has not biased the sampling</li> </ul>



## JORC CODE 2012 “TABLE 1” REPORT

Criteria	JORC Code explanation	Commentary
<i>Sample security</i>	The measures taken to ensure sample security.	<b>Cane Creek 32-1-25-20</b> <ul style="list-style-type: none"> <li>• Sampling protocols were followed and chain of custody recorded.</li> <li>• Samples were delivered directly to the lab</li> </ul>
<i>Audits or reviews</i>	<i>The results of any audits or reviews of sampling techniques and data.</i>	<b>Long Canyon Wells and Cane Creek 32-1-25-20</b> <ul style="list-style-type: none"> <li>• No audits or reviews of the data have been conducted at this stage.</li> </ul>

### Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li>• <i>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</i></li> <li>• <i>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</i></li> </ul>	<b>Cane Creek 32-1-25-20</b> <ul style="list-style-type: none"> <li>• The project consists of 1317 claims.</li> </ul>
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li>• <i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	<b>Long Canyon Wells and Cane Creek 32-1-25-20</b> <ul style="list-style-type: none"> <li>• Past exploration in the region was for oil exploration.</li> <li>• Brine analysis only carried out where flowed to surface during oil drilling.</li> </ul>
<i>Geology</i>	<ul style="list-style-type: none"> <li>• <i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Oil was targeted within clastic layers (mainly Clastic Zone 43)</li> </ul> <b>Cane Creek 32-1-25-20</b> <ul style="list-style-type: none"> <li>• Lithium is being targeted within the clastic layers in the Paradox Formation.</li> </ul>

## JORC CODE 2012 “TABLE 1” REPORT

Criteria	JORC Code explanation	Commentary
<p><i>Drill hole Information</i></p>	<ul style="list-style-type: none"> <li>• <i>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:</i> <ul style="list-style-type: none"> <li>○ <i>easting and northing of the drill hole collar</i></li> <li>○ <i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li>○ <i>dip and azimuth of the hole</i></li> <li>○ <i>down hole length and interception depth</i></li> <li>○ <i>hole length.</i></li> </ul> </li> </ul>	<p><b>Drillhole Summary:</b> <b>Cane Creek 32-1-25-20</b></p> <ul style="list-style-type: none"> <li>• 610,154E, 4,270,986N</li> <li>• 5662 RL</li> <li>• 11,405 TD</li> </ul>
	<ul style="list-style-type: none"> <li>• <i>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</i></li> </ul>	
<p><i>Data aggregation methods</i></p>	<ul style="list-style-type: none"> <li>• <i>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</i></li> <li>• <i>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</i></li> <li>• <i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></li> </ul>	<p><b>Long Canyon Wells</b></p> <ul style="list-style-type: none"> <li>• No weighting or cut-off grades have been applied.</li> </ul> <p><b>Cane Creek 32-1-25-20</b></p> <ul style="list-style-type: none"> <li>• No averaging or cut-off grades have been applied.</li> </ul>
<p><i>Relationship between mineralisation widths and intercept lengths</i></p>	<ul style="list-style-type: none"> <li>• <i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li>• <i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li>• <i>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. ‘down hole length, true width not known’).</i></li> </ul>	<p><b>Long Canyon Wells and Cane Creek 32-1-25-20</b></p> <ul style="list-style-type: none"> <li>• Exploration is at an early stage and information is insufficient at this stage.</li> <li>• Drill hole angle (-90) does not affect the true width of the brine</li> </ul>

## JORC CODE 2012 “TABLE 1” REPORT

Criteria	JORC Code explanation	Commentary
<i>Diagrams</i>	<ul style="list-style-type: none"> <li>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</li> </ul>	<p><b>Long Canyon Historic Wells</b></p> <ul style="list-style-type: none"> <li>No new discoveries have occurred;</li> <li>Most are historic results from the 1960’s, though some oil wells drilled recently.</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	<p><b>Long Canyon Wells</b></p> <ul style="list-style-type: none"> <li>Reporting of additional results, which are all historic, in the area is not practical as the claims are owned by numerous companies.</li> </ul> <p><b>Cane Creek 32-1-25-20</b></p> <ul style="list-style-type: none"> <li>Exploration is at an early stage</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</li> </ul>	<p><b>Long Canyon Wells</b></p> <ul style="list-style-type: none"> <li>No additional exploration data is meaningful in relation to brines.</li> </ul> <p><b>Cane Creek 32-1-25-20</b></p> <ul style="list-style-type: none"> <li>The exploration reported herein is still at an early stage.</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	<p><b>Long Canyon Wells</b></p> <ul style="list-style-type: none"> <li>Historic oil wells and no future work is to be carried out as claim owned by multiple oil companies</li> </ul> <p><b>Cane Creek 32-1-25-20</b></p> <ul style="list-style-type: none"> <li>Further work is required which includes mapping and other exploration programs such as further core drilling.</li> </ul>