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# **Utah Paradox Brine Project Update**

# Highlights:

- Possible re-entry target identified
  - Gold Bar Unit 2 well drilled to a depth of 9,682ft intersecting the targeted brine zone
- Site visit completed
  - Additional drill hole target locations identified
  - Power, road and rail infrastructure identified
- Appointment of consultant to carry out permitting requirements
- Creation of database from historical logs to fast track drilling permit
- Geological and geophysical interpretation ongoing
  - Review of available seismic data
- Metallurgical test work ongoing
- The Project sits on Roberts Rupture within the Paradox Basin:
  - 1,700ppm lithium has been assayed historically from Clastic Zone 31, a mere 800m away, with grades comparable to the highest known lithium brine grades worldwide
  - Clastic Zone 31 (containing lithium rich brines) is possibly replenished from aquifers below, and there are an additional 20 untested Clastic Zones possibly containing brines
  - Brines from Clastic Zone 31 are at higher temperature (60<sup>o</sup>C compared to 40<sup>o</sup>C) and pressure (twice) than expected



Anson Resources Limited (ASX: ASN, ASNOA) (Anson or the Company) Paradox Brine Project consists of 291 mineral claims covering 2,331 hectares, see Figure 1, and is located in Grand County, Utah 300 kilometres from Salt Lake City. The town of Moab is the county seat and largest city in Grand County with a population of approximately 5,500. The Paradox Brine Project is within a 20 minute drive from the Moab town centre.

### Paradox Brine Project Overview:

The Paradox Brine Project is subterranean pressurised brine (SPB) project with Anson targeting brines from Clastic Zone 31, approximately 6,000 to 7,000 feet below the surface, and 20 additional brine zones above and below Clastic Zone 31.

The Pennsylvanian Paradox Formation has been defined in numerous oil wells drilled throughout the region. See Figure 1. Over pressurised brines were encountered in a unit of the Pennsylvanian Paradox Formation named the Clastic Zone 31.

While most wells were not analysed for lithium, the Clastic Zone 31 horizon of 2 wells within 1km of the south end of the claims (Long Canyon No.1 and Robert's Well) were assayed and showed lithium values of up to 1,700ppm, and an average of 500ppm Li, with the higher lithium values reported close to the Robert's Rupture geological formation which runs through the Project claims. In addition, bromine, boron and iodine were found to be in high concentrations.

The pressurised brines from Clastic Zone 31 consists of up to 36 feet of shale, anhydrite and dolomite, and are not part of any oil reservoir. The brines are under pressure (approximately twice the expected pressure of 4,953 psi) and at a higher temperature than would be expected ( $60^{\circ}$ C compared to  $40^{\circ}$ C). This resulted in the brines flowing to the surface when intersected by historic drilling.

Engineering reports from the 1960's conclude that the brine reservoir is extensive and is likely recharged from fresh in-flows of artesian water as indicated by well pressure measurements and draw-down tests.



Figure 1: The Paradox Brine Project claims and location of proposed drill targets.



## **Exploration Target:**

Anson has estimated an Exploration Target of the lithium rich brines within Clastic Zone 31 of 30 to 40 million barrels with a grade of 500 to 1,700ppm.

Cautionary Statement: The potential quantity (volume) and grade of the Exploration Target is conceptual in nature. There has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of Mineral Resources.

### Infrastructure:

To gain access to the property from Moab, you travel north on sealed roads for 14 kilometres on Highway 191 to State Highway 313. Turn west on 313 and travel 16 kilometres and then turn east on the road to Gemini Bridge to the western edge of the claims.

The area has numerous oil pump jacks, and storage tanks, all of which are serviced by a network of all weather dirt roads, see Figure 2.



Figure 2: Photo of the oil pump jacks abutting the access tracks to the project area.

Electrical transmission lines pass both east and west of the project area, see Figure 3. There is year round access to major sealed highways and the Cane Creek Subdivision railroad spur, which is under-utilised.



Figure 3: Power and rail infrastructure just to the north east (300m) of the project area.



During the site visit, access roads and drill pad availability for additional drill hole targets were identified in the central to northern end of the project area, see Figures 4 and 5. These include an existing oil well, Gold Bar Unit 2, which it may be possible to re-enter resulting in a cost saving compared to drilling a new well.



Figure 4: Tracks followed during the site visit, identifying access to proposed drill sites.



Figure 5: Photos of proposed drill sites with easy access.

### **Geological Database:**

A database is being created from historic petroleum well data in the area surrounding the Paradox Brine Project area, consisting of 55 wells within a 130km<sup>2</sup> area. This results in a significant cost and time saving to acquire this information, which would normally require numerous exploration programs.



The data includes brine geochemistry, geological and geophysical drill hole logs and well data. In addition, there is seismic data over the claim area that will be interpreted to aid in defining drill hole targets. Using this data a 3D geological model will be created.

The isopach map, see Figure 6, shows the thickness of the Paradox Salt Formation in the project region. In the claim area well control suggests the thickness will be approximately 3500 – 5000 ft. The thickness of the horizon increases to the north.



Figure 6: An isopach map showing the Salt Formation thickness and locations of proposed drill targets (red icons).

The Clastic Zone 31 horizon has been reported to be a good brine reservoir. The structural high to the south is due to the Cane Creek Anticline. Depths rapidly increase towards the north, see Figure 7, then rises again into another structural high located just northwest of the northern part of the project area. These types of areas are known for intense fracturing and thus can greatly increase the porosity and permeability of the clastic zones thereby increasing brine flow potential. A thickness map shows that the Clastic Zone 31 horizon ranges from a gross thickness of between 10 - 36 feet.





Figure 7: A structure map showing the depths of Clastic Zone 31 (depths are subsea feet).

## Seismic Line Data:

Anson has completed a review of the availability of Seismic data in Paradox Brine Project area. Six suitable lines of available data over or near the claim area have been identified (seismic lines), see Figure 8, and Anson is in the process of purchasing the data through Seismic Exchange (SEI).



Figure 8: Historic seismic lines (yellow) completed over the Anson claims in relation to the proposed drill targets.



A review of the historic seismic lines showed that the data was of relatively good quality, with clear deep reflections from the Cambrian and Mississippian (Leadville) sections, and a reasonable indication of areas where the shallower Paradox Salt was either mostly undeformed or, where it had undergone deformation, the degree of that deformation. There were also indications of seismic character within the salt unit that could potentially be related to the interbedded clastic zones within the salt units. The more recent data was of better quality, with the Exxon line, EC-EXX-43019-H2 being strike oriented in a basinal position giving both structural and stratigraphic control over the project area. The seismic lines over the project area and the distances required for processing are shown in Table 1.

Line Name	Miles
3810906-В-Е	5.0
EC-EXX-43019-H2	6.6
GNK-1A	3.9
GNK-2A	2.7
GNK-32	9.1
GNK-40	4.0
TOTAL	31.3

Table 1: Seismic lines and the approximate distances required to be purchased for each line.

### Permitting Update:

Anson has appointed Millcreek Mining Group (MMG), a Salt Lake City based geological/environmental company, to coordinate with all relevant Federal and State government agencies to complete all surveys and applications required with the aim of obtaining a drilling permit. The work conducted on all proposed drill hole target areas, includes:

- Environmental (flora and fauna) surveys;
- Cultural surveys; and
- Identifying the most appropriate pathway to complete all the regulatory requirements

#### Well Design:

Anson is also in the process of appointing a consultant to provide a well design and prepare an exploration well permit application. The well is located on Bureau of Land Management (BLM) - regulated ground and hence the project will be subject to both State and Federal regulation. County permitting issues in general are limited, but may include site access (ingress and egress off State/County roads); traffic management and dust control; and health and safety programs.

The well drilling design will incorporates the following key criteria:

- total well depth,
- production casing and tubing size requirements,
- expected bottom hole pressure and associated casing design and BOP requirements,
- bit and motor hydraulics,
- drilling mud and mud system requirements,
- potential lost circulation zones, and
- drilling rig requirements (including air drilling, as warranted).



## Metallurgical Test work:

Encouraging results were obtained in the Phase 1 metallurgical test work completed by Outotec, Finland, on synthetically prepared brine solutions. The test work was performed on 2 synthetically prepared brines that have a chemical composition similar to that of the brine extracted from the Roberts Brine and the Long Canyon No.1 wells located within 1 km south of the Project area. These drill holes intersected Clastic Zone #31 were found to contain lithium rich brines.

The composition of the brines submitted for testing is shown in Table 2.

Element	Li	В	Br	I	Mg	Са	К	Na	CO3	SO4	PO4	HCO3
Brine 1	1,700	20,000	2,500	450	34,000	3,000	33,000	43,000	200	500	1.5	NA
Brine 2	500	600	4,500	300	33,500	49,900	21,700	11,400	2,200	940	2,000	1,500

Table 2: Composition of the synthetic lithium brine solution used in the test work\*

Magnesium (Mg) was precipitated out of solution in less than 2 hours to a concentration below 20 mg/l at a pH of 9.5, see Figure 9. During this process the lithium loss was less than 3%.



Figure 9: The Mg precipitation yields in Test 1 based on the solution analysis.

Calcium (Ca) was removed from the Mg depleted brine using chemical precipitation with the calcium concentration being reduced to 21 mg/l (in Brine 2, high Ca) in less than 1 hour. It was also established that calcium removal was possible by means of solvent extraction (SX), reducing the concentration to 5mg/l.



The final concentration of selected brine minerals after the extraction of Mg and Ca is shown in Table 3.

Feed brine	Stage	Li g/l	Mg g/l	Ca g/l
Brine 1	Feed (target values)	1.7	34	3
	After Mg removal	1.3	<0.002	1.74
	After Ca removal	1.2	<0.002	<0.009
Brine 2	Feed (target values)	0.5	33.5	49.9
	After Mg removal	0.38	0.01	34.8
	After Ca removal	0.23	<0.002	0.021

Table 3: The concentration of Li, Mg and Ca in the brine solution before and after Mg and Caextraction.

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The information in this announcement that relates to exploration results and geology 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 and consents to the inclusion in this report of the matters based on information in the form and context in which they appear.

#### Anson's Further Projects

- The Ajana Project is located in Northampton, Western Australia, a proven and established mining province for zinc, lead and silver. The Ajana Project is adjacent to the North West Coast Highway and 130km north of Geraldton. The prospective ground on the 222km<sup>2</sup> of tenements E66/89, E66/94 and E66/100 (under application) contain extensive areas of graphitic schist mineralization. The Ajana area is dominated by the Proterozoic gneiss with conformable lenses of meta-sediment, pelitic gneiss, meta-quartzite, mafic gneiss and graphitic schist known as the Northampton Metamorphic Complex, which typically hosts high grade graphite deposits in Western Australia and graphite deposits worldwide.
- The Hooley Wells Nickel-Cobalt Laterite Project is located 800km north of Perth and 300km east of Geraldton in Western Australia. Tenement E9/2218 (under application) and E9/2219 (under application) contain historical shallow drilling which has interested nickel and cobalt laterites.