MANDRAKE RESOURCES

Date: 22 October 2024

ASX Code: MAN

Capital Structure
Ordinary Shares: 616,759,920
Current Share Price: 2.5c
Market Capitalisation: $15.4M
Cash: $14.9M (June 2024)
EV: $0.5M

Directors

Lloyd Flint
Non-Executive Chairman
Company Secretary

James Allchurch
Managing Director

Roger Fitzhardinge
Non-Executive Director

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Maiden Inferred Resource of 3.3Mt LCE at the Utah Lithium Project

Highlights

- **Large-scale maiden Inferred Resource estimate of 3.3Mt Lithium Carbonate Equivalent (LCE) establishes the Utah Lithium Project as a top tier US-domiciled lithium brine asset**
- **Direct Lithium Extraction (DLE) testwork via Rio Tinto-backed ElectraLith has successfully produced 99.9% pure battery grade Lithium Hydroxide from Utah Lithium Project brines**
- **Mandrake is ideally positioned in the Paradox Basin with well access, abundant existing infrastructure, access to strong local workforce and an established regulatory environment**
- **Strong news flow from forthcoming activities:**
  - **Re-entry of existing wells targeting reservoirs known to host high concentration lithium-rich brines likely to result in significant upside in lithium concentrations**
  - **Production of large brine volumes from re-entry of existing wells to supply two DLE partner pilot plants**
  - **Commencement of Scoping Study**
  - **Further applications for US govt funding opportunities following the recent award of US$1M**
- **Mandrake well-funded – $14.9M (30 June 2024)**

Mandrake Resources Limited (ASX: MAN) (Mandrake or the Company) is pleased to provide a maiden JORC Code 2012 compliant Inferred Mineral Resource Estimate (MRE) at its 93,755-acre (~379km^2) Utah Lithium Project.

Managing Director James Allchurch commented:

'The identification of a 3.3Mt LCE Resource is an exceptional milestone for the Company, confirming Mandrake's 100%-owned Utah Lithium Project status as a top tier US lithium asset.

The Utah Lithium Project is supremely located in a historic oil and gas and mining district in the mining friendly state of Utah with excellent access to power, roads and other crucial infrastructure.

Mandrake will now proceed with well re-entry operations which will provide potential tonnage and grade upside to the Resource. Furthermore, two leading DLE providers,

ElectraLith and Electroflow, will be processing Mandrake brine at their respective pilot processing plants in the near term.

We also expect to deliver a further Resource upgrade (Indicated) and complete a Scoping Study in H1 2025 underpinned by the forthcoming well re-entries, providing shareholders with very strong news flow over the coming months.

Importantly, the federal US government continues to provide considerable support and incentives to encourage the development of lithium production in the US, particularly those of a large potential scale located in appropriate mining areas such as the Utah Lithium Project.'

Table 1. Maiden JORC Inferred Resource Summary for the Utah Lithium Project

Resource Category	Formation	Brine Volume (billion m^3)	LCE (Mt)[1]
Inferred	Paradox Clastics A, B & C	2.5	1.5
	Leadville	4.2	1.6
	McCracken	0.5	0.2
	Totals	**7.2[2]**	**3.3**

[1] Conversion factor of 5.323 used to convert lithium tonnes to lithium carbonate equivalent (LCE) tonnes
[2] Assumes production from all formations
There may be minor discrepancies in the above table due to rounding

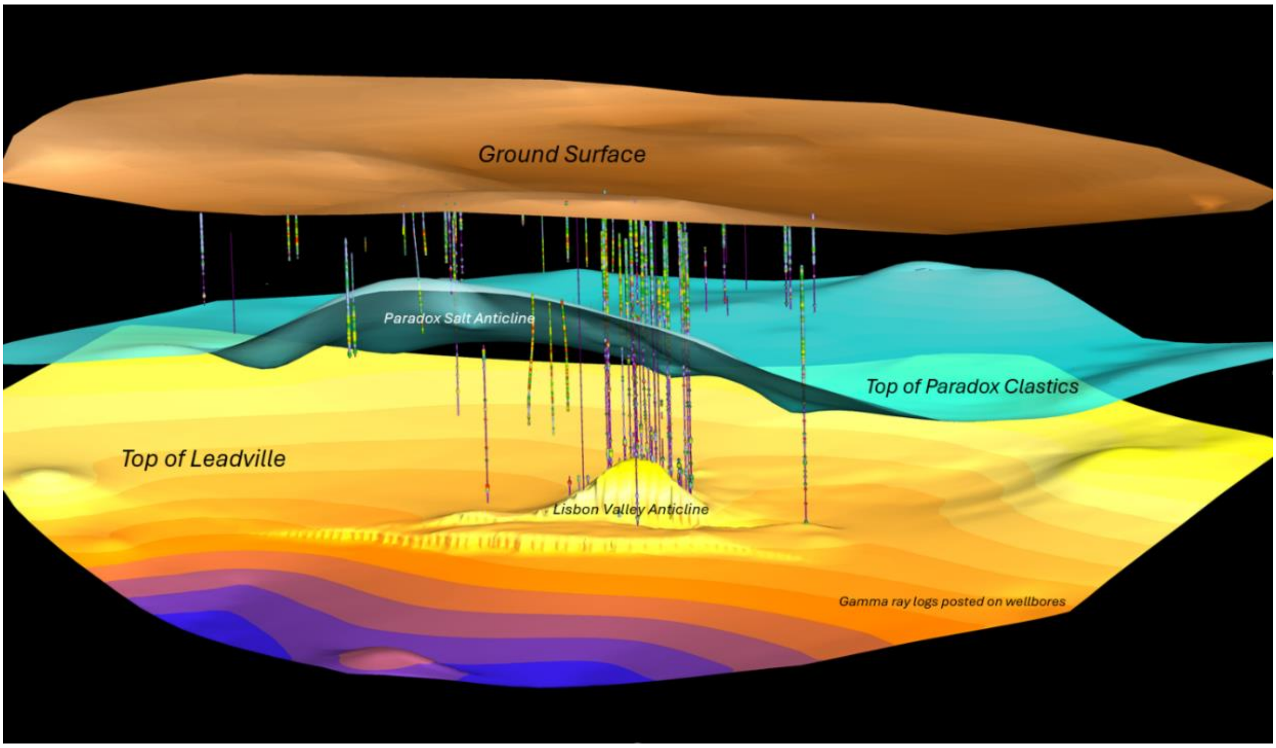

Figure 1. 3D model of stratigraphic intervals of the lithium brine host formations at the Utah Lithium Project. 3D seismic data was integrated to determine the continuity of geologic units and fault geometries

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Table 2. Maiden JORC Inferred Resource for the Utah Lithium Project

Resource Category	Formation	Rock Volume (km³)	Brine Volume (billion m³)	Average Porosity (%)	Avg Li (mg/L)	Elemental Li (t)[2]	LCE (Mt)[1,2]
Inferred	Leadville	46.6	4.2	9	73	306,000	1.63
	McCracken	9.3	0.5	5	73	35,000	0.19
	Plastic Clastic Zone A	11.3	1.2	11	112	137,000	0.73
	Plastic Clastic Zone B	5.9	0.7	12	142	100,000	0.53
	Plastic Clastic Zone C	5.3	0.6	12	69	44,000	0.24
	Totals	**78.4**	**7.2**[2]	**9.6**[4]	**86**[3]	**622,000**	**3.31**

[1] Conversion factor of 5.323 used to convert lithium tonnes to lithium carbonate equivalent (LCE) tonnes
[2] Assumes comingled production from all formations
[3] Brine volume weighted average lithium concentration
[4] Brine volume weighted average porosity
There may be minor discrepancies in the above table due to rounding

Forthcoming Activities / News Flow

Re-entry Operations

Mandrake is well advanced with preparations to re-enter additional existing oil and gas wells at the Utah Lithium Project which will enable the following:

Investigation of High Lithium Concentration Reservoirs

The Inferred Mineral Resource of 3.3Mt LCE is based solely on existing data, that is, brines derived from well casing perforations originally designed to produce oil and gas.

Historic high concentrations of lithium have been recorded within the Paradox Formation from clastic zones not typically completed (perforated) for oil and gas production. Based on extensive sub-surface technical work undertaken at the Utah Lithium Project, Mandrake has identified a number of clastic zones that may contain relatively high concentrations of lithium which, if proven, would have a material positive impact on the existing Inferred Mineral Resource.

Leadville and McCracken-hosted brines are likely related to fluid-rock interactions with basement rock. Fluid-rock interactions within the Paradox clastics and subsequent evaporative concentration are the likely lithium sources and concentration mechanisms for supersaturated Paradox Clastic-hosted brines. Mandrake is investigating the various controls on lithium distribution as controlled by lithium sources and brine migration to better target high yield and high lithium concentration brine.

Brine Pump Testing – Potential upgrade to Indicated Mineral Resource

Mandrake plans to conduct pump testing of existing lithium brine reservoirs such as the prolific Leadville Formation, the hydrogeologic information from which will potentially improve the size of the Resource and enable the upgrade to Indicated Resource classification that will underpin the project Scoping Study.

Data derived from forthcoming pump testing will also improve crucial input datasets such as permeability and formation/reservoir deliverability which will in turn better inform the Resource whilst also providing crucial production cost details for cost modelling currently underway.

Supply to Direct Lithium Extraction (DLE) Pilot Plants

Rio Tinto-backed ElectraLith has successfully produced 99.9% pure battery-grade Lithium Hydroxide from Mandrake brine (see 6 May 2024 ASX release) whilst US-based Electroflow Technologies has achieved outstanding repeatable lithium recoveries of 92% and conversion to Lithium Hydroxide with no chemical pre-treatment from Mandrake brine (see 21 May 2024 ASX release).

Re-entry of existing wells will allow Mandrake to supply both DLE partners (ElectraLith and Electroflow Technologies) with bulk brine volumes for the next phase of the DLE development programme which is the processing of brines at their respective DLE pilot plant facilities.

Operating at their own cost, the pilot plant operators will supply vital information to Mandrake which will include recovery rates, purity of end product (lithium hydroxide) and general plant efficiency and performance data. Process costings will also be provided to Mandrake which will inform the Scoping Study that will focus on the feasibility of commercial lithium hydroxide production from Utah Lithium Project brines.

Further Applications for US Govt Funding following Recent Success

Mandrake, in conjunction with Idaho National Laboratories (INL), the National Renewable Energy Laboratory (NREL) and the University of Utah, were recently granted US$1 million by the US Department of Energy (DoE) to conduct relevant field work and research to characterize and estimate reserves of lithium and other critical minerals in the Paradox Basin (see 5 August 2024 ASX release). It is anticipated that this funding will cover the majority of costs associated with the forthcoming historic well re-entry operations detailed above.

The US government has implemented bold policies to promote and stimulate US domestic critical mineral production, particularly lithium. This broad policy has resulted in a range of funding grants being made available to companies, such as Mandrake, who are developing large scale strategic lithium assets in the US.

Mandrake has two outstanding grant applications awaiting processing and evaluation and is in the process of compiling a third grant application which will be submitted in November 2024.

Mineral Resource Estimate

The Mineral Resource Estimate was developed in compliance with the JORC (2012) code, and guidance provided by the CIM (2012) and AMEC (2017) that pertain specifically to brine aquifers. The lithium resource is defined as the mass of lithium within the host aquifers within 100% Mandrake-owned leases. Lithium mass estimates were made separately for three major aquifer units, utilizing specific methodology for each aquifer unit. The brine aquifers included: the Devonian McCracken Sandstone, Mississippian Leadville Formation, and Pennsylvanian Paradox Clastic Zones A, B and C (see Figure 2).

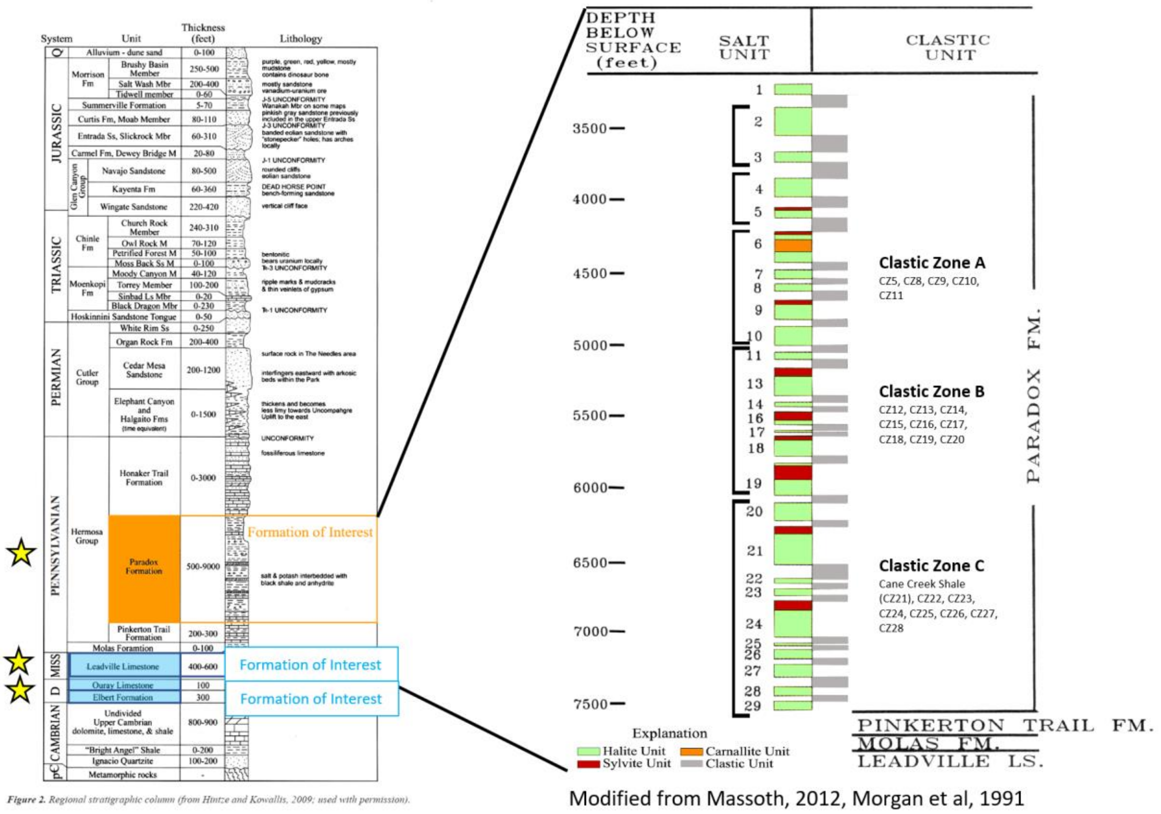
The lithium resource estimate for the McCracken Sandstone was calculated using the following relationship:

Lithium mass = bulk rock volume x average effective porosity x concentration of lithium in the brine for each aquifer unit.

For the Leadville Formation and the Paradox Clastic Zones, net pay footages were calculated using cutoff criteria from wireline logs instead of total thickness for the final resource estimate:

Lithium mass = net pay bulk rock volume x average effective porosity x concentration of lithium in the brine for each aquifer unit.

Data was sourced from historical oil and gas wells which were drilled using conventional oil and gas drill rigs that drill vertical well bores using rotary drilling techniques.



Massoth, 2012

Figure 2. Geologic Stratigraphic Column

Bulk Rock Volume

For the Inferred Resource estimation, the thickness and/or net pay of the McCracken Sandstone, Leadville Formation, and Paradox Clastic Units were determined using the following methodology:

1. Historical oil and gas well logs within and surrounding Mandrake's acreage were compiled in Petra software.
2. Geologic top picks were made utilizing regional cross sections. Published geologic tops from Massoth (2012) were used as a reference for tops within the clastics, then tops were correlated to wells within the Mandrake acreage.
3. Isopach thickness grids were created in Petra software for the Leadville and McCracken units.
4. Isopach maps of the hydrocarbon saturated interval were mapped for the Leadville and McCracken units.
5. If enough wireline porosity data were available, a net pay cutoff was applied to create a net pay thickness grid. The specific net pay parameters and approach varies for each geologic interval.
6. The bulk rock volume was calculated in Petra software, by applying the outline of Mandrake acreage blocks over the isopach or net pay grids and subtracting hydrocarbon saturated intervals from the thickness.

The Mandrake acreage block is defined as acreage which Mandrake owns the lithium mineral rights and includes both Bureau of Land Management (BLM) placer claims and Utah School and Institutional Trust Lands Administration (SITLA) OBA acreage. The bulk Mandrake acreage encompasses 93,755 acres (379.4 km^2). Each geologic unit was gridded using the extent of the well data; some units do not cover the entire Mandrake acreage position. The individual volume was calculated using only Mandrake acreage that is within the mapped isopach grid.

The thickness of each geologic unit is well-constrained with Mandrake's acreage position - Table 3 lists the number of well logs and geologic formation top picks used to define the isopach grids for each geologic interval. The mapped units demonstrate reliable correlations on a regional scale. The Leadville Formation and Paradox Clastic Zone Members are especially well-defined.

Table 3. Number of geologic top picks from well logs used to define the boundaries of each geologic model

Geological unit of interest	Number of well log formation picks used to define model (Inside Mandrake AOI)
Paradox Clastics Zone A top	38
Paradox Clastics Zone A bottom	38
Paradox Clastics Zone B top	34
Paradox Clastics Zone B bottom	34
Paradox Clastics Zone C top	31
Paradox Clastics Zone C bottom	31
Leadville Limestone - top	47
Leadville Limestone - bottom	20
McCracken Sandstone - top	20
McCracken Sandstone - Aneth - bottom	6

Lithium Brine Concentration

Leadville/McCracken

Lithium concentration trends were defined across the northern Paradox Basin utilizing published water sample data and data collected by Mandrake. It was determined that Leadville and McCracken brines are likely to be part of the same hydro-stratigraphic unit, as there is no major seal between the units and both have similar cation-anion trends. Water sample data from the Lisbon area all have similar cation and anion trends and were used to create a contoured lithium brine concentration map that was applied to the brine volume to get the final mass of lithium estimate.

The Leadville and McCracken aquifers are assumed to have a representative lithium concentration of 62-75 mg/L in the Mandrake acreage areas. The lithium brine concentration grid average is 73 mg/L.

Paradox Clastics

Lithium concentration trends were defined within the Paradox Clastics by compiling a brine geochemistry dataset from multiple public and private datasets, including the water sampling conducted by Mandrake. Major anion and cation trends were investigated, and it was determined that there is a NW-trending belt of geochemically similar samples that can be used to define a regional lithium brine trend within the Clastic units.

The Paradox Clastics have excellent top and bottom seals and thus a higher likelihood of having preserved residual evaporitic brines, having limited the brine's interactions with other connate fluids and meteoric water. Based on stratigraphic trends in major-cation balance, Li, Br, and K, the Paradox Clastics can be reasonably divided into zones A (Clastics 5-10), B (Clastics 11-20) and C (Clastic 21 to the Pinkerton Trail Fm).

Based on a review of available geochemical data, Paradox Clastics are assumed to have a representative lithium concentration of 69 mg/L (Clastic C Zone), 112 mg/L (Clastic A Zone) and 142 mg/L (Clastic B Zone) in the Mandrake acreage area.

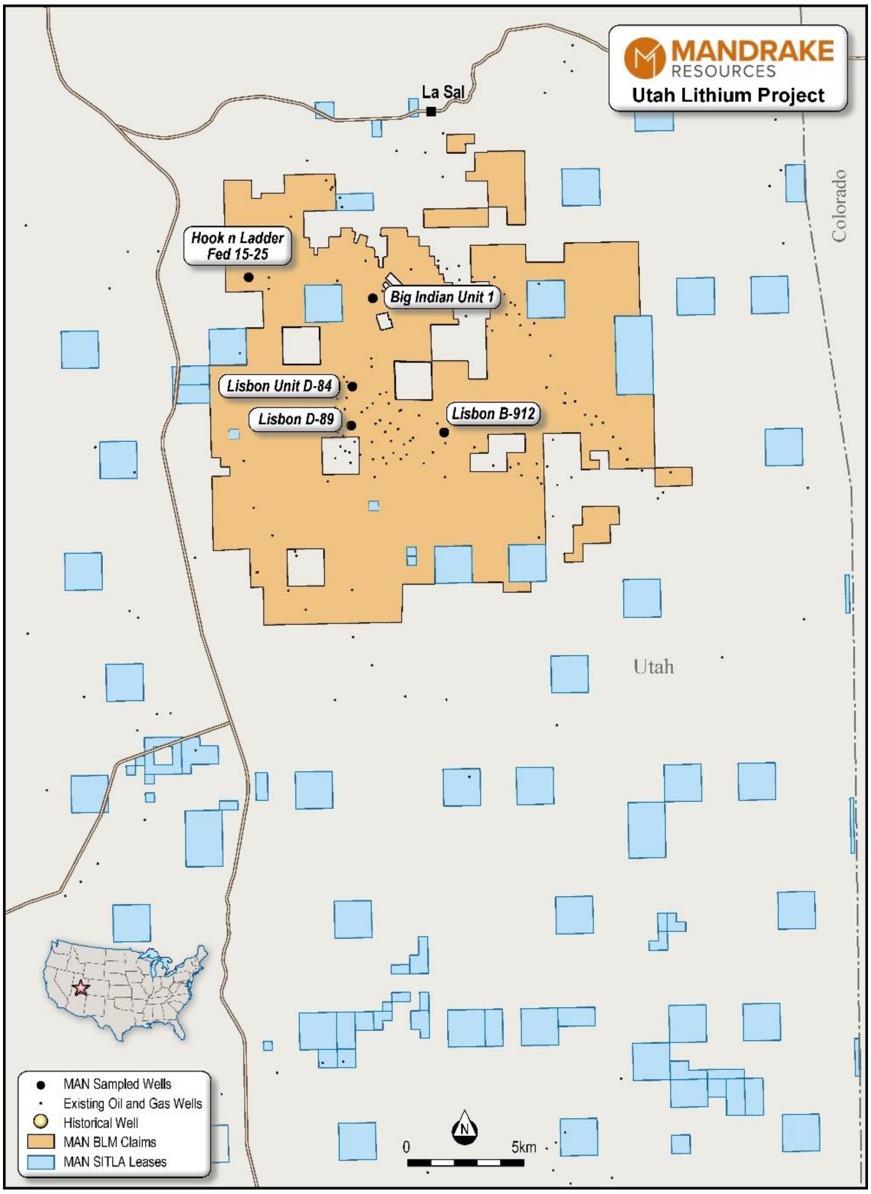


Figure 3. Wells sampled by Mandrake together with existing oil and gas wells used to generate the Mineral Resource Estimate

Information pertaining to brine geochemistry and lithium concentrations was compiled by Mr. Jake Cammack, owner of Interpretive Geosciences. Mr. Cammack holds an MSc (Geochemistry) from the University of Wisconsin, Madison. He has worked for 14 years in many geochemistry-related capacities including the collection and interpretation of produced brine and water, metallic ores, core and cuttings, as well as oil, gas and helium. He is also proficient in utilizing in-situ micro-geochemical analyses to support petrographic interpretations. Mr. Cammack maintains a Paradox-Basin brine and water dataset that is among the most comprehensive in the basin. Mr. Cammack's geochemistry work for this report was reviewed and approved by Competent Persons Mr. MacMillan and Ms. Kraushaar.

Sampling Techniques and Sampling Analysis Method

The water sampling conducted by Mandrake utilised a ball-valve bailer, capable of storing up to 3.4 L of liquid, attached to a wireline truck. A 200-300 mL aliquot of the brine was analysed with an AquaTroll 500 water multimeter. The brine was collected in a HDPE sampling bottle with minimal headspace and transported in a cooler on ice.

The samples were submitted to NELAC accredited laboratories to carry out the following methodologies for sample analysis:

- Sample Digestion: EPA 200.2
- Anions: EPA M300.0, EPA 300.0, SM2320B, SM4500S2-D, SM2310BSM, SM D516
- Cations: EPA M200.7 & EPA 200.7
- Volatile Organic Compounds (Hydrocarbons): EPA M8015D, EPA M8260C/D, and EPA M3520C

The sampling techniques and analysis methods related to historical samples are unknown.

Cut-off Parameters

Based on field observations, intra-formational brine densities and chemistries are relatively consistent and ubiquitous across Mandrake's acreage. Accordingly, no cut-off grades were applied to lithium concentrations for the purposes of the Mineral Resource Estimate.

Porosity and permeability cut-offs for the individual formations are described in the following section.

Average Effective Porosity and Permeability

Leadville

The Leadville Formation has demonstrated excellent porosity and permeability within the dolomite lithologies at Lisbon Valley. Production from Lisbon Valley has yielded 9 million barrels (1.4 million m^3) of oil, 35 million barrels (5.6 million m^3) of water, and 440 million cubic feet (12.5 million m^3) of gas over the life of the field.

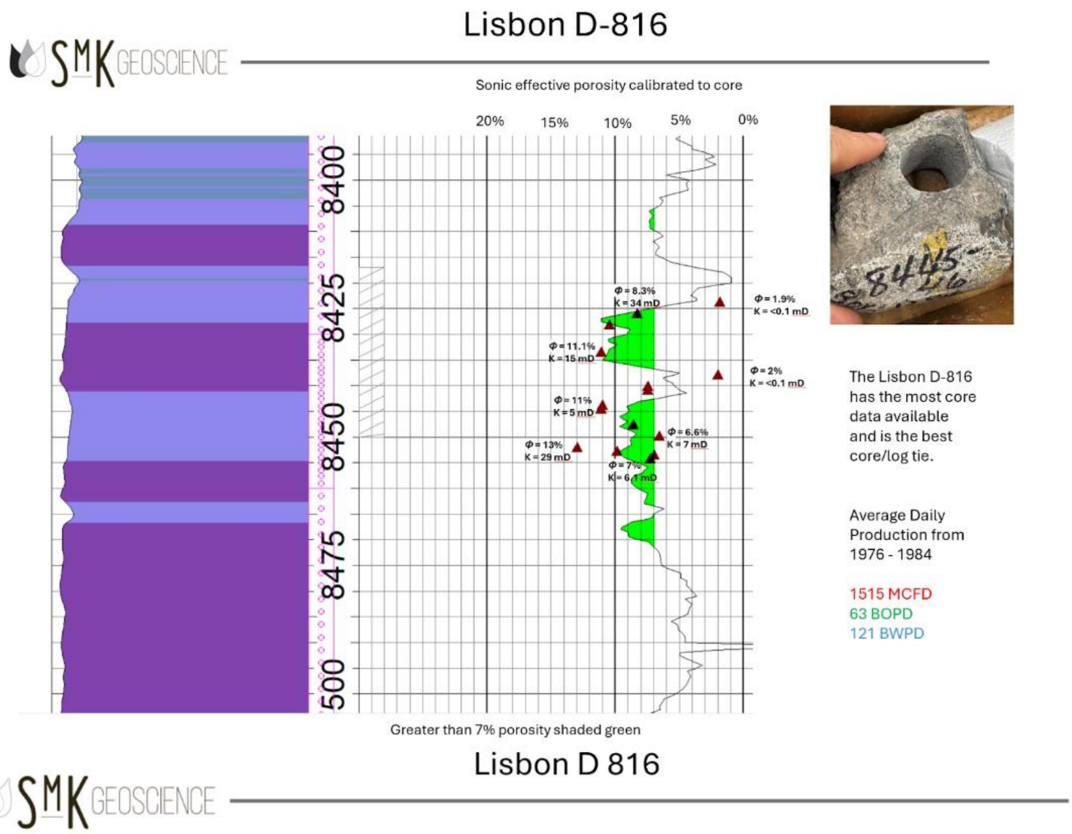
There are five cores available in the Leadville within the Mandrake acreage at the Utah Center for Core Research in Salt Lake City, Utah, that have previously been analyzed for porosity and permeability. Core data, including depth, porosity, permeability and thin section analysis were published in Chidsey (2020). These five wells had sonic porosity logs available over the entire Leadville section; no density or neutron logs were available. The sonic logs were tied to the core datasets utilizing the Raymer-Hunt-Gardner transform and an effective porosity wireline model was created. This model was applied to all Leadville wells with available sonic logs.

A net porosity cutoff was applied to the entire thickness of Leadville that had less than 4% effective sonic porosity. A 4% effective porosity cutoff was chosen based on production and wireline data from Doe Canyon, where reservoir gas contribution is observed in rocks as low as 4% porosity. The averaged porosity over these higher-grade rocks was found to be 8.9% in the core dataset, and 9% in the regional wireline dataset.

Using a smaller net pay footage thickness, a 9% porosity average was applied to the net Leadville reservoir to calculate the bulk rock volume available for brine storage. A net pay thickness grid was hand-contoured and applied to the final volume calculations. The net pay thickness in the Leadville averaged 415' (127 m).

The most quantitative measurements of permeability are associated with core plug analysis, while historical fluid production is a supporting line of evidence that shows the Leadville Formation has sufficient permeability to sustain future brine production.

Core plug analysis sourced from Chidsey (2020) is available for five wells within the Mandrake acreage. The measured permeability in these core plugs have a range of 5 to 99 millidarcys (mD) and a geometric mean of 13 mD.

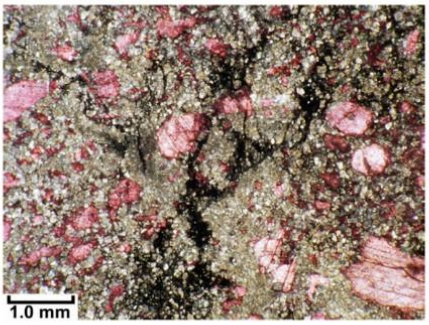


8419 ft.

Plug	oriented; ∅ 1.9%, K< 0.1 mD
Description:	calcareous dolomite, originally crinoidal/peloidal grainstone/ packstone; calcite (30%) dolomite (70%) with undolomitized remnants of crinoids, bryozoans, and peloids. Dolomite is very fine to medium crystalline, fractures with pyrobitumen plugging; no BC; poorly sorted dolomite crystals from finely sorted to euhedral rhombs; no saddle dolomite; open marine.
Diagenetic Events:	1) deposition; 2) carbonate cement as syntaxial overgrowths; 3) replacement dolomite not under burial conditions (replacing crinoid ossicles and large skeletal grains); 4) fracturing; 5) pyrobitumen. No bleaching.
Pore Types:	tight, none

8421 ft.

Plug:	no orientation; ∅ 8.3%, K = 34 mD
Description:	dolomite (100%), crinoidal/(soft) peloidal wackestone; uniform massive type dolomitic matrix with molds and some BC; crinoids leached; ghost of peloids; micro-fractures; no bitumen.
Diagenetic Events:	1) complete replacement of matrix by uniformally anhedral, finely crystalline dolomite, some burial overprint on finely crystalline dolomite; 2) leaching of undolomitized fossils and matrix; 3) some late saddle dolomites cement filling molds (not enough to effect reservoir quality); 4) micro-fractures; 5) trace of bitumen.
Pore Types:	Mo, BC, and FR



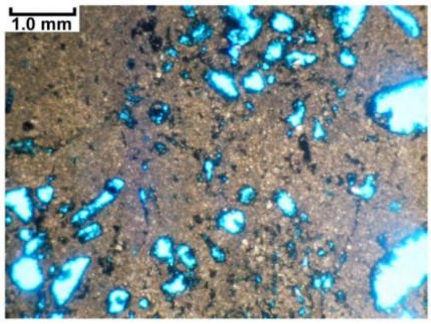


Figure 4. Lisbon D-816 sonic log-to-core tie. Core photos and descriptions from Chidsey, 2020

McCracken

The McCracken sandstone is a Devonian shallow marine sequence with three coarsening-upwards sequences identified from core at Lisbon Valley (Cole and

Moore, 1996). The McCracken reservoir has produced almost 1 million barrels (160,000 m^3) of oil at Lisbon Valley and has proven porosity and permeability within its sand-rich facies.

Porosity estimates from core data covering the McCracken Sandstone interval from six wells within the Mandrake acreage were made available by Paradox Resources (Figure 5). Four of the six wells also have sonic wireline curves, and two wells have pulsed neutron logs. Because of lack of available McCracken wells with quality photoelectric and bulk density wireline log data, the wireline model was not utilized in the final porosity estimates. However, the available sonic logs were bulk shifted to match the core datasets and generally show good agreement in the McCracken interval.

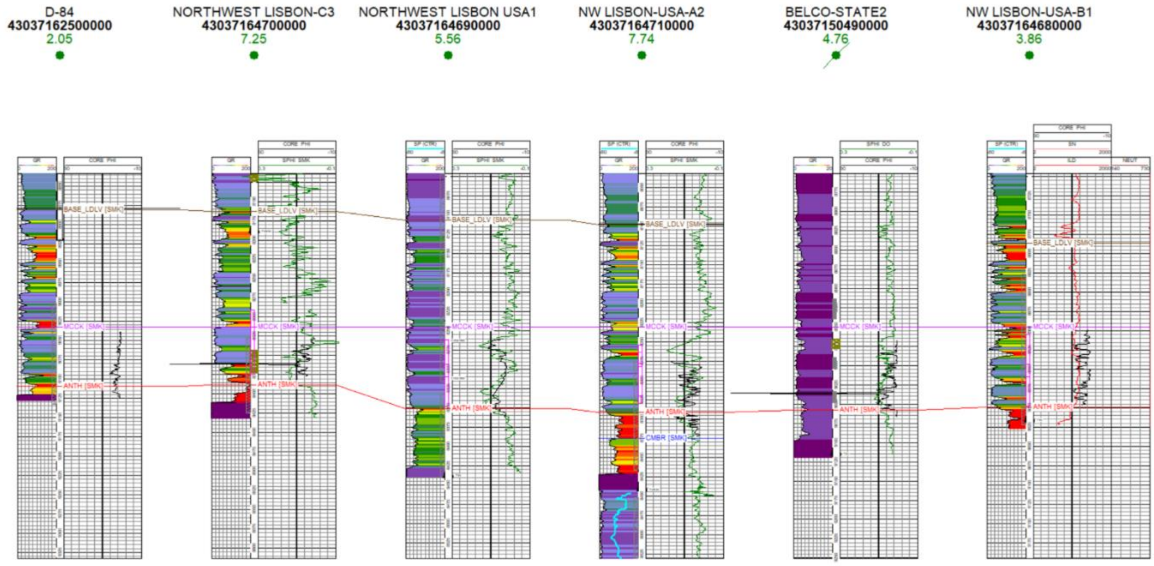


Figure 5. Core datasets used for McCracken effective porosity estimate. CORE_PHI is the digitized core data provided by Paradox Resources. The black curve shows the core data and its coverage within the total McCracken interval. The green curve is the sonic log bulk-shifted to match the core datasets. The top of the McCracken is labeled MCCK(SMK) and the base of the unit is labeled ANTH(SMK). The green number by the well symbol is the average core porosity over the McCracken

The Competent Person considers the core data as sufficient to define the effective porosity, due to the coverage of the majority of the McCracken interval. An average was taken over the entire McCracken interval over the six wells listed above. The average effective porosity value over the gross isopach interval is 5.2%. The gross isopach grid was hand contoured and averaged 84' (25 m).

A qualitative indicator of permeability in the McCracken is the production data from Lisbon Valley. The ability to produce commercial volumes of hydrocarbons suggests there is sufficient permeability and lateral continuity of permeable zones to move fluids towards a production well.

There are six wells with Mandrake's acreage with open perforations exclusively in the McCracken (no Leadville contribution). The aggregate total production from these wells from 1960 to present is significant - 995,065 BBL (158,203 m^3) oil, 3,216,964 MCF (91,094,276 m^3) gas, and 61,552 BBL (9,786 m^3) of water.

There is one well within Mandrake's acreage with 105 ft (32 m) of core data within the McCracken that has an average measured permeability of 5.3 mD. Based on this data, a permeability of 5 mD is a reasonable estimate of permeability of the McCracken.

Paradox Clastics

The Paradox Formation was deposited during the Pennsylvanian in a restricted marine and salt evaporate basin that covered southeast Utah. This formation consists of 29 separate salt cycles and interbedded shale/sandstones, anhydrites and dolomites (Massoth, 2012). Many of the halite units are several hundred feet thick, while the interbedded clastics are 10-180 feet thick. Clastic Unit 21 (Cane Creek Shale) has previously been targeted for hydrocarbon production and has shown good porosity from core.

There are two wells within the Mandrake acreage with core data over the Cane Creek Shale within the Paradox Clastics (Jagniecki et al, 2019). The Remington 21-1H has sonic logs available over this interval, and the Cisco State 36-13 has neutron and density porosity logs available. Due to the widespread availability of sonic logs over the clastic intervals in many wells, the Remington 21-1H was utilized to create a wireline to core effective porosity model. This model was applied to 21 wells within the Mandrake acreage with sonic logs.

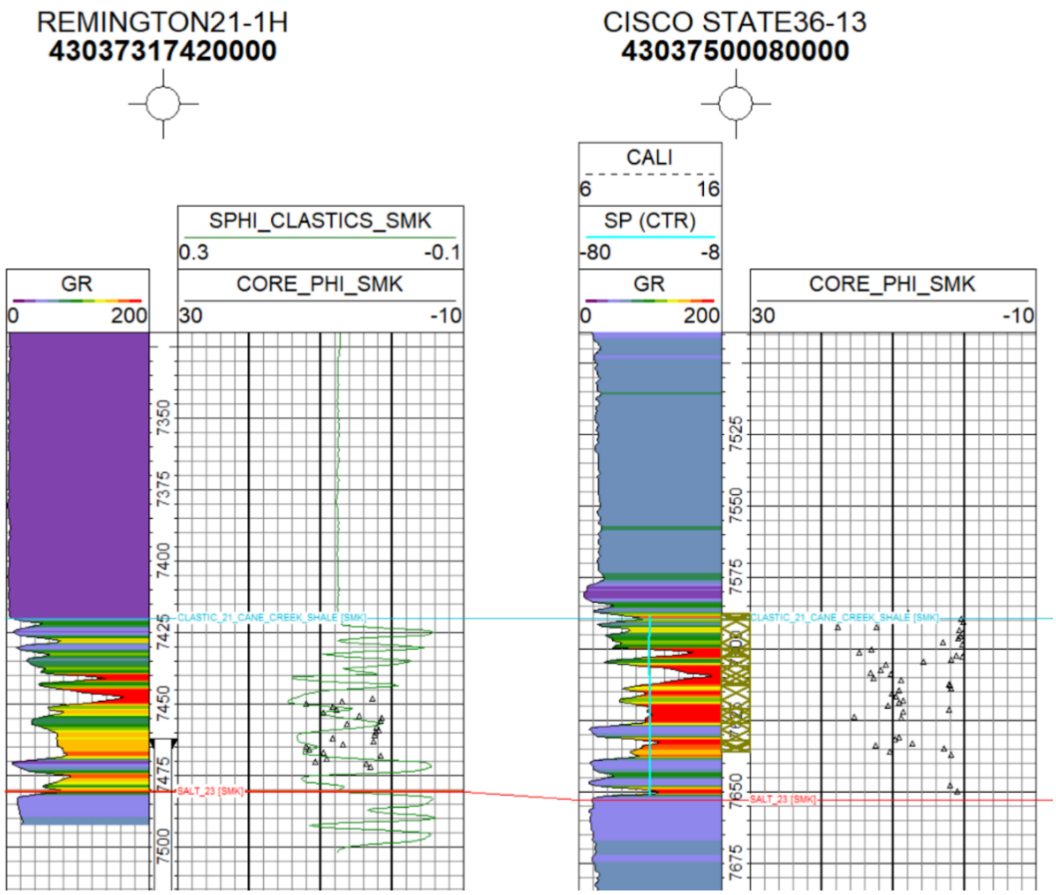


Figure 6. Wireline-to-core tie in the Cane Creek Shale member of the Paradox Clastics. The average porosity in the Cane Creek Shale is 6% in the adjusted sonic log, and 5.9% in the core data in the Remington 21-1H. The average core porosity in the Cisco State 36-13 is 6.8% over the entire Cane Creek Shale interval

Net pay was selected in the Paradox Clastics for each well using the following log parameters: clastic interval with greater than 6% effective porosity and less than 70% shale volume. The average effective porosities utilized in the volumetrics are as follows: Clastic Zone A = 10.9%, Clastic B Zone = 11.9% and Clastic C Zone = 12.2%. A net pay hand-contoured grid was created for each Clastic Zone (A, B and C) and the average effective porosity was applied to each grid to calculate the total pore space available for brine storage within the rock. The average net pay thicknesses varied from 47' (14 m) in the Clastic C Zone, 56' (17 m) in the Clastic B Zone, and 99' (30 m) in the Clastic C Zone.

The discrete 29 cycles of halite and clastics within the Paradox Formation were deposited in a geologic setting influenced by sea level changes. While there is no permeability data from the majority of the clastic intervals, it is expected that the permeability may be best in the thicker net pay intervals with the best porosity.

Within the Mandrake acreage, both the Cisco State and Remington wells referenced above have permeability data measured from core. The specific Clastic interval that contains permeability data is the Cane Creek Shale (Clastic 21).

Based on the available data, it is assumed that 2 mD is a representative permeability for the Paradox Clastics and that a reasonable lower and upper permeability bound is 0.2 mD and 20 mD respectively.

Mineral Resource Classification

As prescribed in paragraph 21 of the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code):

- An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.
- An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to an Ore Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

The resource was classified as an Inferred Mineral Resource based on confidence in the quality of the wireline logs, core data, historical production data and brine sampling.

This announcement has been authorised for release by the Board of Mandrake Resources.

Forward Looking Statements

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

Competent Persons Statement

The information in this announcement that relates to geology, exploration results and Mineral Resource Estimate was compiled by Ms. Sabina Kraushaar and Mr. Gordon MacMillan.

Ms. Sabina Kraushaar is a Competent Person whom holds an M.Sc in Geology specialising in Structural Geology and is a Member of the Australian Institute of Geoscientists (Member #8940). Ms. Kraushaar 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 "Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Ms. Kraushaar consents to the inclusion in the report of the matters based on her information in the form and context in which it appears. Ms Kraushaar is owner of SMK Geoscience and independent consultant to Mandrake Resources.

Mr. Gordon MacMillan P.Geol., Principal Hydrogeologist of Fluid Domains, is an independent consulting geologist of a number of brine mineral exploration companies and oil and gas development companies. Mr. MacMillan is a member of the Association of Professional Engineers and Geoscientists of Alberta (APEGA), which is ROPO accepted for the purpose of reporting in accordance with the ASX listing rules. Mr. MacMillan has been practising as a professional in hydrogeology since 2000 and has 24 years of experience in mining, water supply, water injection, and the construction and calibration of numerical models of subsurface flow and solute migration. Mr MacMillan 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 "Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr. MacMillan is also a Qualified Person as defined by NI 43-101 rules for mineral deposit disclosure. Mr MacMillan consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

REFERENCES

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JORC Code, 2012 Edition – Table 1 report template

Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
Sampling techniques	• 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. • Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. • Aspects of the determination of mineralisation that are Material to the Public Report. • 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.	• In January 2024 Mandrake collected brine samples from existing perforations in five historical shut-in oil and gas wells located in the Lisbon Valley (Utah). A ball-valve bailer, capable of storing up to 3.4 L of liquid, attached to a wireline truck was used to retrieve samples from the formations of interest. • A mixture of brine and minor volumes of hydrocarbon liquids retrieved from the bailer were poured into a clean bucket and then into a 2,000 mL separator funnel to separate hydrocarbons from water. After 5-10 minutes of allowing for hydrocarbon/brine separation, a 200-300 mL aliquot of the brine was captured from the separation funnels to be analysed with an AquaTroll 500 water multimeter. The Aqua Troll was factory calibrated upon shipment and re-calibrated upon arrival for high conductivity brines (~100,000 µs/cm). After 30-40 minutes of allowing for hydrocarbon/brine separation, the brine separated was collected in a HDPE sampling bottle with minimal headspace and transported in a cooler on ice. • Sampling equipment (e.g. bucket, beakers, separation funnels, etc.) was thoroughly cleaned with soap and water and rinsed 3x - 4x with distilled water between sample points. • Historical wells may not be optimally perforated to target fluids associated with the highest lithium-brine units. • Historical high yield brine sampling targeting native brines from geological formations has been conducted on oil

Criteria	JORC Code explanation	Commentary
		and gas wells at the Utah Lithium Project by oil and gas companies including Paradox Resources which reports the historical sampling techniques as follows: o A mixture of oil and produced water was collected directly from the well head (where possible) or from the oil-brine separator tank (when oil to water cuts were high) into a 19 L Nalgene carboy filled to the top and capped. After the formation water had settled to the bottom of the carboys, the formation water was removed through a spigot at the bottom of the carboy and filtered through a 1.6 µm glass fiber filter to remove any residual oil. All water samples were filtered through 0.45 µm nylon membrane filters into HDPE bottles. Samples were acidified by adding two drops of concentrated Optima-grade nitric acid into 30 mL pre-acid-washed HDPE sample bottles. All samples were kept on ice in the field and at ~4 °C in the refrigerator in the laboratory prior to analysis.
Drilling techniques	• 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).	• The historical oil and gas company owned wells were drilled using conventional oil and gas drill rigs that drill vertical well bores using rotary drilling techniques.
Drill sample recovery	• Method of recording and assessing core and chip sample recoveries and results assessed. • Measures taken to maximise sample recovery and ensure representative nature of the samples. • 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.	• Sample size of the samples collected by Mandrake is constrained by the capacity of the bailer. • Measurements of the original liquids recovered by Mandrake from the bailer, oil saturation and final sample collected were recorded. • Mandrake took actions to extract brine from each sample and separate-out any minor liquid hydrocarbons

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Criteria	JORC Code explanation	Commentary
		that were retrieved from the original mixed-liquids in the bailer. • The historical collection of brines from the oil and gas wells is poorly documented.
Logging	• 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. • Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. • The total length and percentage of the relevant intersections logged.	• Petrophysical well logs associated with the historical wells were compiled in Petra software and include gamma-ray, neutron, bulk density, resistivity, sonic, photoelectric, and mud logs. • The petrophysical logs provide information that was used to make stratigraphic formation picks to define the down-well lithology of each well. These interpreted lithological logs were used to prepare cross-sections to map the reservoir and estimate the thickness and net pay of the formations of interest. • Published geologic tops from Massoth (2012) were used as a reference for tops within the clastic units, then tops were correlated to wells within the Utah Lithium Project. • Quantitative effective porosity and permeability data from core plugs were tied to sonic logs from each geologic interval in order to make effective porosity estimates. • Core data was utilized, along with bulk density, sonic and photoelectric logs, to make effective porosity estimates. • Qualitative observations from the core data (observed vugular porosity, rock type, etc) were used to further validate the porosity models. • All effective porosity estimates were made over 100% of the geologic aquifer brine reservoir thickness. This means that if effective porosity from core was only available in the best part of the reservoir, the sonic effective porosity model was applied to the entire thickness of the reservoir in order to accurately capture the storage space available. By using the wireline model over the entire

Criteria	JORC Code explanation	Commentary
		reservoir thickness, the estimate is not biased towards the best quality reservoir rock.
Sub-sampling techniques and sample preparation	• If core, whether cut or sawn and whether quarter, half or all core taken. • If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. • For all sample types, the nature, quality and appropriateness of the sample preparation technique. • Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. • 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. • Whether sample sizes are appropriate to the grain size of the material being sampled.	• No sub-sampling techniques were applied to the brine samples collected by Mandrake. • The core data utilized for the clastics porosity model in the Inferred Resource includes 1" diameter plugs drilled at regular intervals from core located at the Utah Core Research Center in Salt Lake City, Utah. Porosity was determined from the 1" plugs by US company Core Labs using Boyle's Law technique by measuring grain volume at ambient conditions and pore volume at indicated net confining stress. The permeability was measured on each sample using unsteady-state method at the indicated net confining stress. • The specific core sampling techniques for the core utilized for the Leadville and McCracken porosity models are unknown. • The specific sampling techniques, sample preparation of brine and Quality Control-Quality Assurance procedures related to historical wells are unknown.

Quality of assay data and laboratory tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.
	• 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.
	• Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.
		Samples collected by Mandrake
		• Sample collection and preparation followed the protocols of the NELAC accredited laboratories used.
		• A blind synthetic standard was provided every 20-30 samples or at the beginning and end of a set of samples. Blind blanks (distilled water) are provided every 50-60 samples or at the beginning of each set of samples and a check lab was used for every second sample.
		• The contracted labs reported the following methodologies for sample analysis:
		  o Sample Digestion: EPA 200.2
		  o Anions: EPA M300.0, EPA 300.0, SM2320B, SM4500S2-D, SM2310BSM, SM D516
		  o Cations: EPA M200.7 & EPA 200.7

Criteria	JORC Code explanation	Commentary
		○ Volatile Organic Compounds (Hydrocarbons): EPA M8015D, EPA M8260C/D, and EPA M3520C • Assay procedures are considered appropriate. • Quality control procedures included the use of external laboratory checks. **Historical brine sampling by other operators** • The specific sampling techniques, lab methodologies and Quality Control-Quality Assurance procedures related to historical geochemical analyses are uknown. • Often the laboratory names are not reported, and hence there is no way to evaluate laboratory certificates or make statements on the independence and accreditation of the individual laboratories used in the historical brine analytical work. • Where possible, these brine analyses were evaluated using similar methodologies to Hitchon and Brulotte (1994).
Verification of sampling and assaying	• The verification of significant intersections by either independent or alternative company personnel. • The use of twinned holes. • Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. • Discuss any adjustment to assay data.	• Documentation of primary field data collected by Mandrake was conducted under standard operating procedures. • Lithological intersections were controlled by the open perforations in the wellbores at the time of sampling.
Location of data points	• Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. • Specification of the grid system used. • Quality and adequacy of topographic control.	• Well locations are identifiable in the field. • The longitude and latitude locations of the oil and gas wells provided by the oil and gas companies are recorded in government databases. • The datum elevation was verified with well log headers and published surface topographic maps.
Data spacing and distribution	• Data spacing for reporting of Exploration Results. • Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity	• Data spacing is suitable to establish a Mineral Resource. • No compositing was applied to the brine data.

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Criteria	JORC Code explanation	Commentary
	appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. • Whether sample compositing has been applied.	
Orientation of data in relation to geological structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. • 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.	• The effect of structures in the concentration of different elements in the brines is not fully understood. • Seismic interpretation has been undertaken by Mandrake to evaluate geological structures but further work is still required.
Sample security	• The measures taken to ensure sample security.	• Samples collected by Mandrake were safely stored by Mandrake's personnel while at the field and shipped by registered courier to the laboratories and DLE providers. • Sample security procedures (if any) as conducted by the historical oil and gas companies are unknown.
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	• The Mineral Resource estimate was subject to input and review by Fluid Domains.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary

Mineral tenement and land tenure status	• *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.*
	• *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.*
		• The Utah Lithium Project is located approx. 60km SSE of the City of Moab, in the State of Utah in the United States.
		• The total land position is 93,755 acres and includes:
		  o 34,670 acres within an Other Business Agreement (OBA) with the Utah State Government's School and Institutional Trust Lands Administration (SITLA).
		  o The remaining land position of approximately 59,085 acres is comprised of over 2,950 staked Bureau of Land Management (BLM) placer claims.
		• All the land tenure / staked BLM claims are 100% owned by Mandrake's US subsidiary (Mandrake Lithium USA Inc.).

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Criteria	JORC Code explanation	Commentary
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Historical exploration work has been performed by oil and gas companies who have completed hydrocarbon-specific exploration and production activities over the last 80 years across the lease and claim areas. • Individual wells within oilfields continue to produce in the Paradox Basin and within the boundaries of the Utah Lithium Project.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Project is in the north-central portion of the Paradox Basin. • Structurally, Mandrake's Project occurs on the southern margin of the "Paradox fold and fault belt", which consists of a series of roughly parallel, northwest-trending faults, northwest striking diapiric salt-cored anticlines and synclines in the northern part of the Paradox Basin. • Currently, Mandrake's lithium-brine geological target units are defined by the Devonian McCracken sandstone, the Mississippian Leadville-Ouray Limestone Formation (Leadville Limestone) and the Pennsylvanian Paradox Member of the Hermosa Formation. • The Leadville Limestone comprises massive to thinly laminated, gray, buff, and yellow limestone that were deposited in intertidal to subtidal environments. • The Paradox Basin can be defined by the maximum extent of halite and potash salts in the Middle Pennsylvanian Paradox Formation and is composed of halite interbedded with gypsum, shale, sandstone, and dolomite deposited intermittently in a closed marine depositional environment.

Drill hole Information	• *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:*
	  o *easting and northing of the drill hole collar*
	  o *elevation or RL (Reduced Level – elevation above sea level in feet) of the drill hole collar*
		• The historical oil and gas wells were drilled vertically.
		• Historic wells utilised in the geologic modelling include:

Well Label	Surface Latitude	Surface Longitude	RL (ft)	Total Depth (ft)
FEDERAL1	38.176568	-109.340956	5928	9325
STATE1	38.227048	-109.304253	6319	10636

Criteria	JORC Code explanation	Commentary				
	○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.* • *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.*	HATCH WASH UNIT1	38.147026	-109.327292	5813	8957
		FEDERAL-UTAH-A1	38.096073	-109.105896	6692	10327
		LITTLE VALLEY1	38.152458	-109.188235	6532	9712
		BIG INDIAN UNIT6	38.168835	-109.129689	6525	10244
		CHURCH ROCK UNIT1	38.063365	-109.367431	6156	8441
		HORSETHIEF CAN UNIT1	38.306264	-109.073659	7323	11999
		NW LISBON-C2	38.21229	-109.276867	6805	10706
		NW LISBON-G1	38.215597	-109.276655	6788	6320
		LISBON UNITC-74	38.208583	-109.290599	6446	9015
		NW LISBON-STATE A1	38.20229	-109.253007	6581	10419
		BIG INDIAN-B1	38.253771	-109.278853	6753	10070
		BIG INDIAN UNIT5	38.246402	-109.293015	6797	9994
		LA SAL-USA1	38.272001	-109.316194	6511	9807
		SPILLER CANYON ST1	38.171972	-109.190365	6861	9661
		BELCO-STATE2	38.18326	-109.286069	6229	9120
		B-615	38.182968	-109.277371	6307	9051
		FEDERAL1-31	38.13299	-109.334923	5820	8822
		CHEVRON-FEDERAL1	38.266433	-109.332408	6522	9955
		HORN-FEDERAL1	38.28639	-109.071791	7314	11565
		LITTLE VALLEY-FED1	38.172933	-109.217073	6339	9100
		GULF-STATE1	38.218678	-109.341888	5948	9540
		LISBON UNITB-84	38.204088	-109.293389	6296	8766
		LISBON UNITB-814	38.177718	-109.260294	6482	8965
		HOOK AND LADDER 15-2	38.245936	-109.336416	6248	9579
		FEDERAL13-30	38.247917	-109.326983	6402	9534
		LISBON FEDERAL3-21	38.167594	-109.178577	6726	9953
		FEDERAL1-20	38.16773	-109.195414	6767	9555

Criteria	JORC Code explanation	Commentary				
		GOVT EVELYN CHAMBERS	38.12552	-109.320071	5820	8826
		WHITE ROCK UNIT 12	38.117649	-109.311515	5841	8854
		LISBON UNITD-610	38.197951	-109.268563	6842	8510
		LISBON UNITB-94	38.200233	-109.294033	6392	9150
		REDD11-1	37.928641	-109.357447	7050	6280
		FEDERAL21-4	38.167738	-109.299641	5943	8817
		TXP-IRON SPRINGS1-3	37.931717	-109.159933	6782	6340
		LISBONA-710	38.194741	-109.282048	6445	9140
		LISBONB-614A	38.184211	-109.256703	6849	9097
		SUGAR LOAF4-1	38.118421	-109.398829	6278	5730
		REMINGTON21-1H	38.071738	-109.396102	6404	9615
		WINCHESTER21-1H	38.082061	-109.298001	5995	10025
		JEFFERSON4-1	37.940395	-109.29711	6892	6263
		CISCO STATE36-13	38.051147	-109.232022	6013	7948
		USA-BIG INDIAN1	38.239428	-109.275236	7126	11143
		LISBON FED2-21F	38.164728	-109.185766	6864	9560
		LISBONB-912	38.186416	-109.240868	6372	9170
		LISBON UNITA-814	38.175994	-109.263026	6425	9020
		LISBON UNITB-99	38.186878	-109.294088	6170	8697
		LISBON USA-D NW2	38.182113	-109.240735	6385	9058
		LISBON VALLEY-C1	38.196841	-109.295572	6307	9553
		LISBON UNITB-616	38.181469	-109.293018	6175	8689
		LISBON UNITB-815	38.176129	-109.276863	6102	8561
		LISBON UNITC-69	38.19601	-109.290516	6263	8849
		LISBON UNITC-84	38.206642	-109.289051	6452	8963
		LISBON UNITC-94	38.200449	-109.289343	6351	8864
		NW LISBON-B2	38.174249	-109.251658	6658	9305
		D-84	38.204969	-109.286034	6535	9133

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<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
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<tr><td>D-89</td><td>38.189514</td><td>-109.288069</td><td>6264</td><td>8853</td></tr>
<tr><td>SOUTHEAST LISBON1-9</td><td>38.110647</td><td>-109.065116</td><td>6218</td><td>9740</td></tr>
<tr><td>LA SAL-FEDERAL1</td><td>38.240471</td><td>-109.247619</td><td>7041</td><td>10406</td></tr>
<tr><td>NW LISBON-USA-B1</td><td>38.18321</td><td>-109.258345</td><td>6733</td><td>9022</td></tr>
<tr><td>NORTHWEST LISBON USA</td><td>38.198009</td><td>-109.276629</td><td>6589</td><td>8440</td></tr>
<tr><td>NORTHWEST LISBON-C3</td><td>38.201609</td><td>-109.272683</td><td>6813</td><td>8426</td></tr>
<tr><td>NW LISBON-USA-A2</td><td>38.190178</td><td>-109.268019</td><td>6641</td><td>9312</td></tr>
<tr><td>ISLAND MESA1</td><td>38.161558</td><td>-109.061458</td><td>6462</td><td>11421</td></tr>
<tr><td>JESSE 1A</td><td>37.799351</td><td>-109.117089</td><td>6829</td><td>8313</td></tr>
<tr><td>MCINTYRE 17-21</td><td>38.077249</td><td>-108.990735</td><td>6341</td><td>8612</td></tr>
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<tr><td>Data aggregation methods</td><td>

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.
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.
The assumptions used for any reporting of metal equivalent values should be clearly stated.

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The lithium average of the total resource was calculated using volume-weighted lithium averages of the summed Leadville, McCracken and Paradox Clastics volumes.
Lithium analyses for the Leadville and McCracken range from 55 to 88 mg/L across the Mandrake lease area. This data was de-clustered to generate a contoured-map showing Li concentrations across the Mandrake Lease areas. De-clustering entailed taking averages of the Lisbon area well analyses and the Jesse 1A well analyses and representing the well or grouped-wells by their respective geographical centers and average Li concentrations. De-clustered averages and wells used in this mapping are as follows: Lisbon (62 mg/L), Jesse 1A (75 mg/L), McIntyre 17-21 (72 mg/L; no de-clustering applied). A final Leadville and McCracken concentration of 73 mg/L Li was calculated by using volume-weighted averages.
The Paradox Clastic lithium concentrations are derived from arithmetic averages of analyses from each of the clastic zones: A (avg. 112 mg/L), B (avg. 142 mg/L) and C (avg. 69 mg/L) across the Mandrake acreage area and

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Criteria	JORC Code explanation	Commentary
		samples along NW-trending belt of geochemically similar samples to the Mandrake acreage area
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• Brines are produced from large, confined aquifer/reservoir deposits as fluid media - representing samples from a larger pool of fluids. Accordingly, it is accurate to state that brine data do not have common solid mineral deposit sample intervals or intercepts. Hence downhole lengths and true widths are not applicable to this type of deposit.
Diagrams	• *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.*	• Historical well collar locations and appropriate lithium-brine information are presented within the figures, tables, and text contents of this announcement.
Balanced reporting	• *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.*	• All data provided and available to the CP for this work is summarised in the report.
Other substantive exploration data	• *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.*	• Based on the Mandrake's current knowledge of the project, all meaningful information has been provided.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Swabbing or pump-testing campaign to further develop the Resource and supply Mandrake's Direct Lithium Extraction (DLE) partners with adequate brine for pilot test work is currently underway. • Scoping studies.

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1 and where relevant in Section 2 also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying error, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• All logs used from historical oil and gas wells were imported and validated in a Petra database. • All data was checked for accuracy and audited by personnel from Fluid Domains.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken, indicate why this is the case.*	• Competent Person Sabina Kraushaar has visited the site. • The consultants whilst at site reviewed locations and infrastructure for the project including locations for future drilling.
Geological Interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• Sufficient historical wells exist (petrophysical logs and core), together with 3D seismic, to reasonably interpret the geology and brine reservoirs (the Devonian McCracken sandstone, the Mississippian Leadville-Ouray Limestone and the Pennsylvanian Paradox Member of the Hermosa Formation). All the units are readily identifiable between drill holes by correlating the gamma ray logs via cross section, and interpretation was based on the current understanding of the geology. • Historical petrophysical logs were utilized to pick the geologic unit datum at each well location, interpretations based on specific depositional environments were then used to create grids that connect all the datums. • Mandrake's Project occurs on the southern margin of the "Paradox fold and fault belt", which consists of a series of roughly parallel, northwest-trending faults. The 3D seismic dataset was utilized to interpret the locations and orientations of faulting. The faulting is shown to impact the geometry of deposition and reservoir continuity in the brine aquifer units; this relationship is confirmed with

Criteria	JORC Code explanation	Commentary
		historical well logs. Geologic units are mappable and correlated across all known faults. • The Paradox Basin is a large basin containing oil, gas and brine. The geological interpretation, location and depth of the brine bearing units is very well known and documented through the drilling of hundreds of oil and gas wells over the past century.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• The brine units are encountered at depth over the entire Mandrake acreage block. • The Mandrake acreage block is defined as acreage which Mandrake owns the lithium mineral rights and includes both BLM placer claims and SITLA OBA acreage. The bulk Mandrake acreage encompasses 93,755 acres (379.4 km^2). • The thickness and/or net pay grid of each geologic unit is based on historical oil and gas well logs within and surrounding the Mandrake acreage and geologic top picks made by the Competent Person utilizing regional cross sections. Published geologic tops from Massoth 2012 were used as a reference for tops within the clastics. • Each geologic unit was gridded using well database data; some units do not cover the entire Mandrake acreage position. For example, some of the clastic units pinch out on the NE side of the Lisbon fault. The individual volume was calculated using only Mandrake acreage that is within the mapped isopach grid.
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	• Inferred Resource estimates were made separately for three major aquifer units. The brine aquifers included: the McCracken Sandstone, Leadville Formation, and Paradox Clastic Zones A, B and C. • The lithium estimate was calculated using this relationship: Resource mass = bulk rock volume x porosity x concentration of lithium in the brine for each aquifer unit.

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	• *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of byproducts.* • *Estimation of deleterious elements or other nongrade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	• Computer software Petra (SP Global) was utilized to create the isopach and net pay grids, and to run the volume estimates for the Utah Lithium Project. The isopach and net pay grids were also hand-contoured by the Competent Person to ensure the correct geologic interpretations. • Recovery of by-products was not considered in the estimate. • The Competent Person is satisfied that estimation and modelling techniques are appropriate to support the Mineral Resource estimation.
Moisture	• *Whether the tonnages are estimated on a dry basis orwith natural moisture, and the method of determination of the moisture content.*	• Lithium brine is a liquid resource, moisture content is not relevant to resource calculations.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• Based on field observations, intra-formational brine densities and chemistries are relatively consistent and ubiquitous across Mandrake's acreage. Accordingly, no cut-off grades were applied to lithium concentrations for the purposes of the Mineral Resource Estimate. • Porosity and permeability cut-offs applied to the individual formations are described in the text of the announcement.
Mining factors of assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual*	• Brine extraction involves pumping via a series of production wells. • For the Inferred Resource estimate, Competent Person Gordon MacMillian considered the reservoir pressure,

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	economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	permeability and hydraulic conductivity in the economic assessment of feasibility. • Historical production of brines associated with oil and gas wells indicates that brine can be recovered from the targeted units. • Multiple lines of evidence support the Reasonable Prospect for Eventual Economic Extraction (RPEEE) of brines within the Leadville Formation and McCracken Sandstone when independently produced. The Clastics Resource will meet the RPEEE criteria if it is co-produced with the Leadville and McCracken units.
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• No assumptions or predictions relating to metallurgical characteristics of the brine have been assumed in the estimation. • Lithium hydroxide has been produced from bench top test-work by two different independent DLE companies from Utah Lithium Project brine samples collected by Mandrake.
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• No environmental assumptions were used in this estimation. • Spent brines following processing and recovery of lithium will be injected back into appropriate horizons in the Paradox Basin. Spent brine will have similar characteristics to fresh brine minus concentrations of lithium.

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Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	• Bulk density determination is not relevant for brine resource calculations. • Average effective porosity values were calculated independently for the Leadville, McCracken and Paradox Clastics target units using wireline log data that has been calibrated to effective porosity from core. A separate porosity model was formulated for each geologic unit to ensure that the datasets available for each unit were fully utilized.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• The Mineral Resource estimate is reported here in compliance with the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' by the Joint Ore Reserves Committee (JORC). • The resource was classified as an Inferred Mineral Resource based on confidence in the quality of the wireline logs, core data, historical production data and brine sampling. The geologic unit correlations based on gamma ray logs demonstrate regional continuity of the geology and the porosity sonic models indicate reservoir quality over the Utah Lithium Project. Historical production and injection data also added qualitative evidence that there is prospective deliverability of each brine aquifer.
Audits or reviews	• *The results of any audits or revies of Mineral Resource estimates.*	• The Mineral Resource estimate was subject to review by Fluid Domains.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resources estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	• The geology and stratigraphy of the Paradox Basin is very well known. • The brine units, the subject of this resource estimation, are known to contain super saturated brine. • The relative accuracy of the Mineral Resource estimate is reflected in the reporting of the Mineral Resource to an Inferred classification as per the guidelines of the 2012 JORC Code.

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	• *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• Further test work is required to enable recoverable volumes of brine to be estimated.