ASX Announcement **17 August 2023**

PRAIRIE PROJECT
RESOURCE UPGRADED 39% (Updated)

Representing the highest-grade Indicated Lithium Brine Resource in Canada

HIGHLIGHTS

- **Highest grade Indicated lithium brine resource in Canada, with the majority of the Indicated resource at 127 mg/L Li.**
- **Resource increased to 5.7 million tonnes ("mt") of Lithium Carbonate Equivalent ("LCE") (4 mt Indicated and 1.7 mt Inferred), representing a 39% increase in size.**
- **Total resource represents approximately 8 years of current worldwide market for LCE[1].**
- **4 mt of LCE upgraded from Inferred to Indicated.**
- **Large Indicated resource enables the Company to complete a Pre-Feasibility Study ("PFS") by the end of 2023.**
- **Rare lithium brine resource that does not require the depleted brine to be injected back into the producing lithium aquifer. This extends the life of the well network infrastructure and ensures resource stability overtime.[2,3,4,5,6,7]**
- **No Hydrogen Sulphide ("H2S") or oil encountered.**
- **Pilot Direct Lithium Extraction ("DLE") test plant to commence operations in November 2023.**
- **Investor Webinar on Tuesday, 15 August at 10:00 am AEST / 8:00 am AWST. Managing Director, Paul Lloyd, and Chief Technical Officer, Brett Rabe, will provide a Company update.**

Arizona Lithium Limited (ASX: AZL, AZLOA, OTC: AZLAF) ("Arizona Lithium", "AZL" or "the Company"), a company focused on the sustainable development of two large lithium development projects in North America, the Big Sandy Lithium Project ("**Big Sandy**") and the Prairie Lithium Project ("**Prairie**"), is pleased to announce that it has increased the resource size, and upgraded a significant portion of the resource at its Prairie Lithium brine project in Saskatchewan, Canada.

The total resource has been increased from 4.1 mt of LCE[7] to 5.7 mt of LCE, representing a 39% increase in resource size, with a resource upgrade also successfully completed. 4.0 mt of LCE has been upgraded to Indicated and 1.7 mt of LCE remains Inferred. This marks the first known lithium brine resource to be upgraded to Indicated in Saskatchewan and represents the highest-grade Indicated lithium brine resource in Canada. The majority of the targeted resource resides in the Middle Wymark Unit with a representative concentration of 127 mg/L Li (Figure 3).

The geology of the Prairie Lithium project in Southeast Saskatchewan enables it to be one of the only DLE brine projects that does not require the depleted lithium brine to be re-injected into the producing aquifer after the lithium has been extracted from the brine.[2,3,4] This is due to Prairie currently having enough natural pressure, permeability, and lateral continuity to sustain the production rates required for commercial production of brine.[5,6,7] Furthermore, the geology of the Williston Basin in Southeast Saskatchewan has world class fluid

[1] https://www.mckinsey.com/industries/metals-and-mining/our-insights/australias-potential-in-the-lithium-market
[2] E3 Lithium 43-101 Technical Report: Lithium Resource Estimate, Bashaw District Project, Central Alberta (20/04/2023) (TSXV: ETL)
[3] LithiumBank Resources Corp. NI 43-101 Preliminary Economic Assessment, West-Central Alberta (16/06/2023) (TSXV: LBNK)
[4] Standard Lithium Announces Positive Preliminary Feasibility Study Results For Its South West Arkansas Project (08/08/2023) (NYSE: SLI)
[5] NI 43-101 Technical Report on the Lithium Brines of Mansur Viewfield Areas of Southern Saskatchewan, Canda (20/04/2023) (CSE: EMPS)
[6] NI 43-101 Technical Report: Resource Assessment of Kindersley Lithium Project in Saskatchewan, Canada for Grounded Lithium Corp (30/11/2022) (TSXV: GRD)
[7] Arizona Lithium - Agreement To Acquire Canada's Highest Grade Lithium Brine Resource (21/12/22) (ASX: AZL)

storage capabilities, providing the Company the option to explore multiple potential disposal formations without the risk of diluting the resource in place.[7]

The operations of producing brine from one formation and disposing it in another formation is an extremely common occurrence in southeast Saskatchewan. From January - April 2023, the oil and gas industry in Saskatchewan produced and disposed of an average of 149,654,188 bbl.[8] (23,792,399 m^3) of brine per month from various formations across Saskatchewan, well exceeding the anticipated brine volumes that will be required for a commercial lithium brine operation.

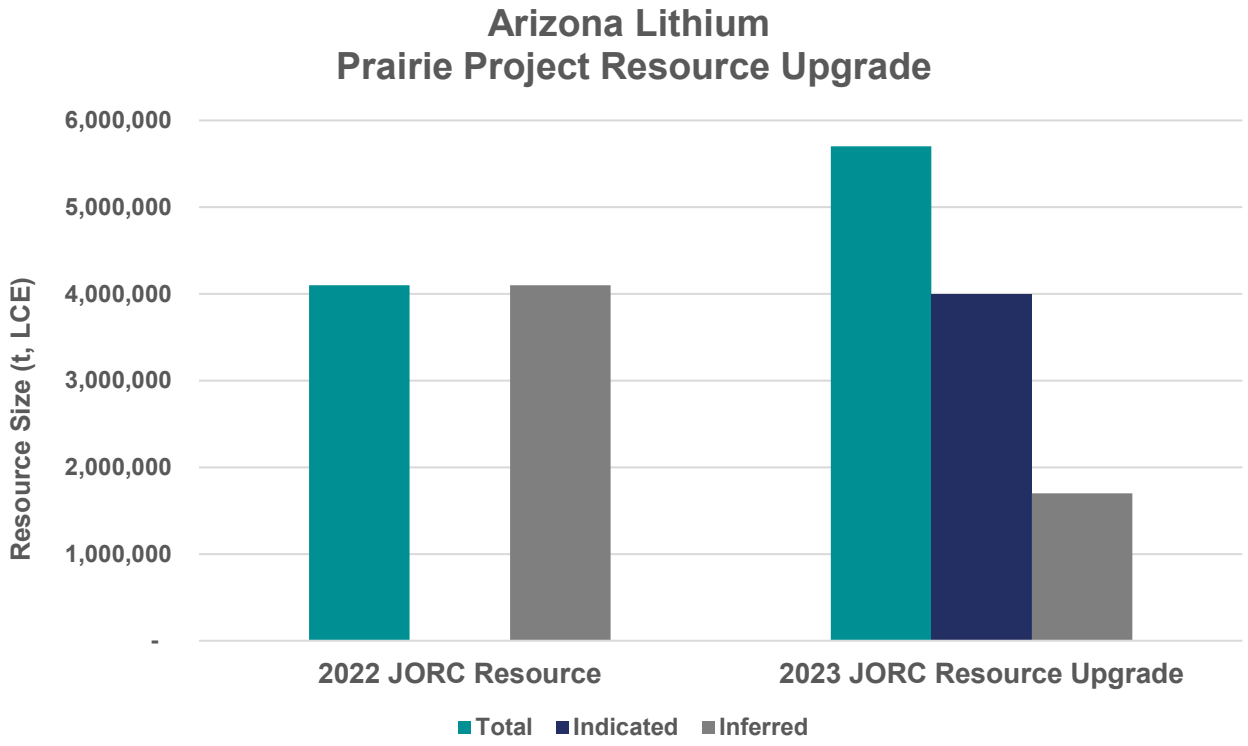

Figure 1: 2022 JORC Resource VS 2023 JORC Resource Upgrade

[8] Government of Saskatchewan Publications Centre (saskatchewan.ca)

	Representative Lithium Concentration (mg/L)		Li Mass (tonnes)		LCE Mass (tonnes)		
Producing Formations	**Inferred**	**Indicated**	**Inferred**	**Indicated**	**Inferred**	**Indicated**	**Total**
Seward	98	98	22,176	59,088	118,042	314,528	432,570
Flat Lake	95	96	1,987	5,049	10,576	26,876	37,452
Upper Wymark	143	160	42,458	99,157	226,005	527,811	753,816
Middle Wymark	121	127	168,925	406,305	899,188	2,162,761	3,061,950
Lower Wymark	94	96	34,748	91,207	184,966	485,496	670,462
Saskatoon	55	57	41,218	98,961	219,402	526,771	746,173
Total	102	106	310,000	760,000	1,700,000	4,000,000	5,700,000

Figure 2: Resource Overview

Arizona Lithium Managing Director, Paul Lloyd, commented: *"Immediately after acquiring the Prairie Lithium Project, we put our plans in motion to fast track the development of the Resource. Completing the first Indicated Resource upgrade in a timely and efficient manner, highlights the technical capability of the team and the Company's commitment to production of Lithium, from the Prairie project. The combination of the Resource upgrade and the upcoming DLE pilot plant operation in November 2023, set the stage for a very exciting second half of the year for the Company. With all of this, the PFS on the Prairie project will be completed by the end of this year."*

Investor Webinar

The Company would like to remind shareholders and investors of the AZL Investor Webinar which will be held on Tuesday, 15 August at 10:00 am AEST / 8:00 am AWST. Managing Director, Paul Lloyd, and Chief Technical Officer, Brett Rabe, will provide a Company update.

To register your interest for the webinar, please click through to the link below.

https://janemorganmanagement-au.zoom.us/webinar/register/WN_gQQrtbtzRFqoHXys4pvfNA

After registering your interest, you will receive a confirmation email with information about joining the webinar. Participants will be able to submit questions via the Panel throughout the presentation, however, given we are expecting a large number of attendees we encourage shareholders to send through questions via email beforehand to jm@janemorganmanagement.com.au

About the Prairie Lithium Project

AZL's Prairie Lithium Project is located in the Williston Basin of Saskatchewan, Canada, with Arizona Lithium also holding a proprietary lithium extraction process technology that selectively removes lithium from Brine. Located in one of the world's top mining friendly jurisdictions, the project has easy access to key infrastructure including electricity, natural gas, fresh water, paved highways and railroads. The project aims to have strong environmental credentials which should result in less use of freshwater, land and waste, aligning with AZL's sustainable approach to lithium development.

The Prairie Lithium Ion Exchange (**"PLIX"**) is an ion-exchange material that selectively extracts lithium from brine, using equipment which is anticipated to be readily available at commercial scale. PLIX may have a global application, with the process currently being tested on lithium resources from around the world (including encouraging results with Big Sandy). While Prairie Lithium continues to develop, scale and operate its own DLE technology, the company is also testing other DLE technologies to ensure it deploys the most cost-effective technology onto its resource.

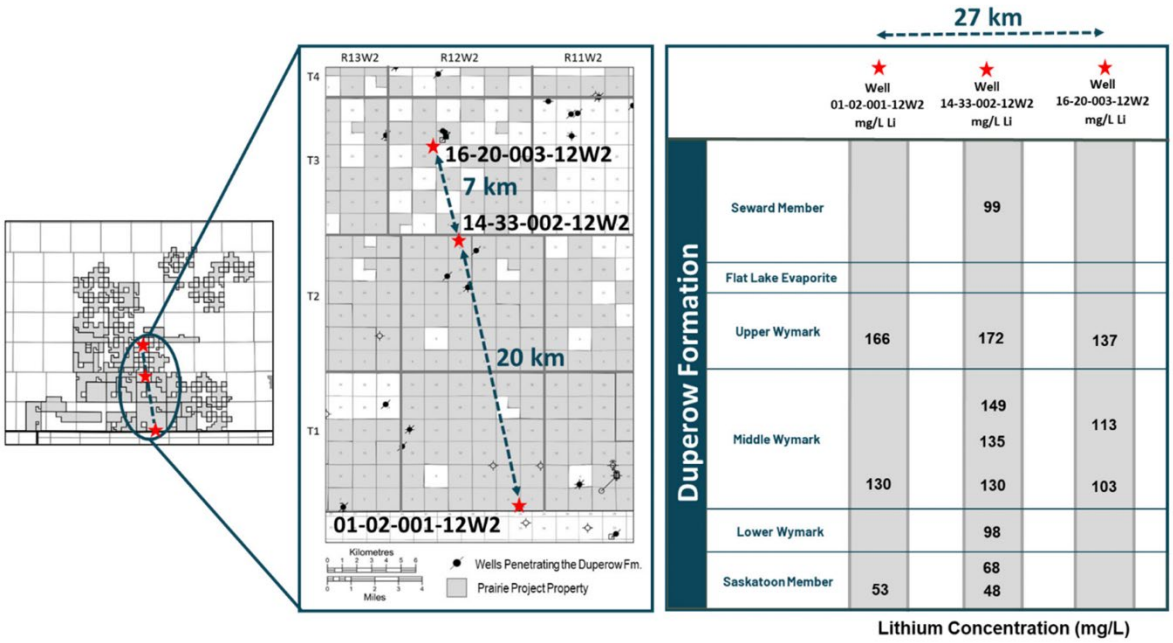

Figure 3 - Location map and representative lithium concentrations from Arizona Lithium's test wells[9]

[9](Lithium concentrations measured by Isobrine Solutions and confirmed by one other commercial laboratory in Edmonton, Alberta)

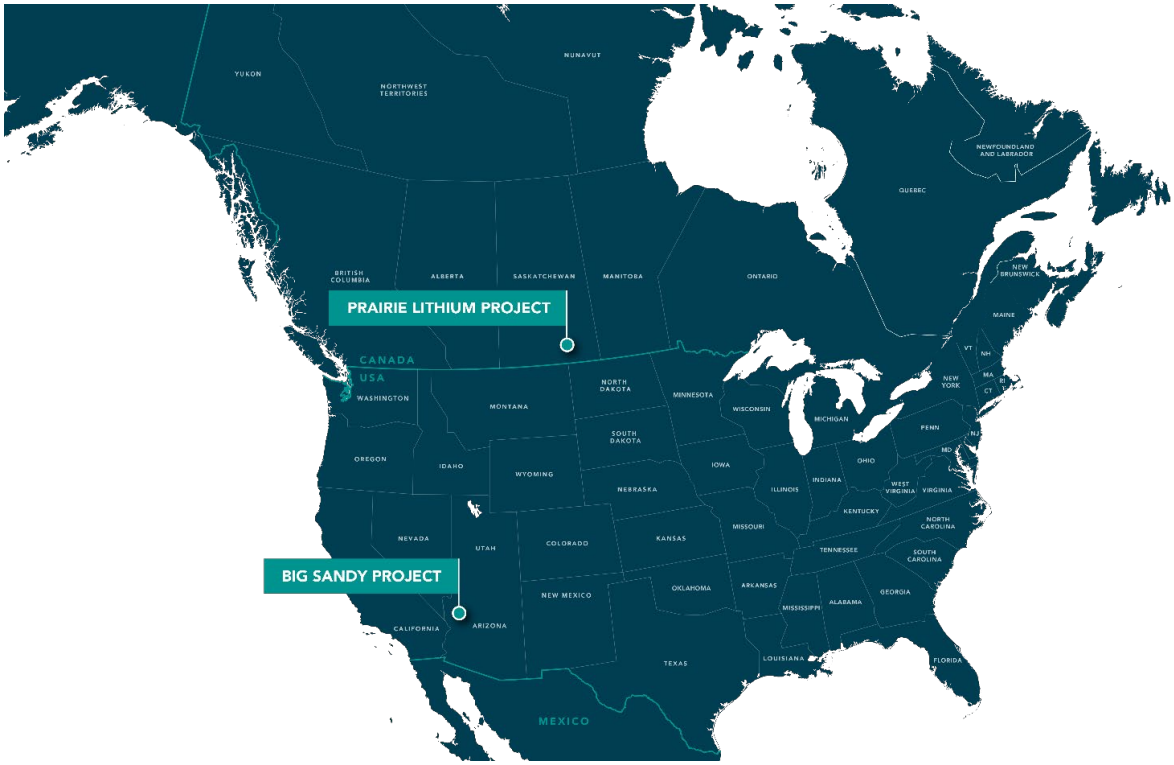

Figure 4 – Location of AZL's Lithium development projects.

Prairie Lithium Resource Estimate

Introduction

Prairie Lithium leases 72 subsurface mineral permits located in southeast Saskatchewan close to the United States border. The subsurface mineral permits are leased from the Saskatchewan Provincial Government and cover 549.5 square miles (351,709 acres or 1,423.2 km^2).

There has been abundant drilling for oil and gas in southeastern Saskatchewan. This oil and gas exploration work has produced the high quality geologic data (wireline logs, core, and reservoir testing) that was used in Prairie Lithium's resource estimate.

Geology and Geological Interpretation

The deposit type containing the resource being explored by Prairie Lithium is a lithium-bearing brine hosted by the Duperow Formation (Middle and Late Devonian) sediments characterized by cyclic carbonates and evaporites in the open-marine Alberta Basin. Lithium brines are defined as accumulations of saline groundwater enriched in dissolved lithium (Bradley, et al., 2017) within arid climates. The lithium brines are located within a closed sedimentary basin with a close association with evaporite deposits which resulted from trapped evaporatively concentrated seawater (Bradley et al., 2013). Across the Project, the top of the Duperow Formation varies in depth from 1,500 m true vertical depth (TVD) (900 mbsl) in the northeast to 2,700 m TVD (2,000 mbsl) in the southwest.

Historical and newly acquired brine analysis data indicate that the Property is located within an area of extremely elevated TDS brine above 300,000 mg/L and with lithium concentrations of up to 258 mg/L within the Duperow Formation. Since 2021, six wells have been drilled and/or recompleted in the Duperow Formation in the project area. Lithium results from wells located across the Property and beyond indicate that lithium concentrations are elevated and laterally continuous across the Property. The Duperow Aquifer is judged to be hydraulically continuous within, and far beyond, the Prairie Lithium resource area.

Elevated lithium concentrations in the Duperow Formation extend beyond the northern limits of the Property. Elevated lithium trends extend through the Property and south into North Dakota, USA. Elevated lithium concentrations start decreasing both to the east and to the west of the property.

Sampling and Sub-sampling Techniques

Historical well data from oil and gas exploration and newly collected data from wells drilled or recompleted specifically to test lithium concentrations and brine productivity were used to evaluate the lithium Mineral Resource. Since 2021, six wells have been drilled and/or recompleted in the Duperow Formation in the Project area.

Wells drilled and/or recompleted by Arizona Lithium:

- 101/14-33-002-12W2 (Year 2021)
- 104/01-02-001-12W2 (Year 2021)
- 141/16-20-003-12W2 (Year 2022)

Wells drilled and/or recompleted by Hub City Lithium in partnership with ROK Resources:

- 111/11-02-009-13W2 (Year 2022)
- 101/14-36-008-13W2 (Year 2022)
- 101/02-22-007-09W2 (Year 2022)

- Brine collection procedures for the wells tested since 2021 are outlined here. After the wells were drilled, they were cased and then perforated over the zones of interest. Prior to perforating the zones of interest, a Cement Bond Log was run and analyzed to ensure zonal isolation behind casing.
- During well testing, formation water was brought to surface using an electrical submersible pump (ESP) and by swabbing small volumes of fluid. During swabbing operations, packers were placed between each individual zone swabbed. The packers were pressure tested to ensure zonal isolation during the swabbing operations.
- Prior to sampling operations, all lines and tanks were cleaned to remove any possible residual brine or hydrocarbon contamination. Samples were collected directly at the wellhead, or from sampling ports attached to flow lines as close to the wellhead as possible. Prior to sampling the test intervals, representative samples of all drilling and completion fluids were taken and analyzed.
- Field determination of density, resistivity, and pH of the initial samples from the well were used to determine when the well was producing representative samples.
- Once it was determined that the well was producing formation water, samples were collected for lithium analysis in the laboratory. At the sample point, the well was opened to a waste receptacle for 5 to 10 seconds to remove any debris build-up in the sample lines, then the sample was collected into 1 L, 2 L, or 4 L clean plastic screw-top jugs. Field containers were immediately labelled with date, time, sample interval and then the container was transferred to the onsite laboratory for preliminary analysis. After a visual inspection for trace hydrocarbons and debris, samples with obvious debris were pre-filtered through glass wool. The sample was then filtered through a standard 0.45-micron filter to remove any particulates or oil.
- Once sufficient volume was filtered for analysis, samples were split into two to four containers (typically 1 L each), labelled with particulars (date, time, interval, an 'anonymous' sample ID for each laboratory), and sealed with secure tape on the caps. Each bottle was then sealed with tamper proof seals to ensure integrity. Samples were couriered to the various laboratories using full chain-of-custody documentation.

Drilling Techniques

Wells drilled specifically to test the Duperow Formation in this area use reverse circulation drilling, are drilled with brine mud and are drilled with a bit size of 222 mm which is standard for these types of wells.

Classification Criteria

Samples from Duperow Formation brines have been collected all around Arizona Lithium's Property. Formation brines have been sampled from vertical wells that have been drilled perpendicular to the Duperow Formation stratigraphy. There is no relationship between the drilling orientation and the formation water quality, so no sampling bias related to sampling orientation is present.

There has been abundant drilling for oil and gas in southeastern Saskatchewan producing high quality geologic data (wireline logs, core, and reservoir testing) that was used in Arizona Lithium's report. The range in spacing between wells with lithium concentration measurements varies from 610 m between the most closely spaced wells to over 68,000 m between the most widely spaced wells. Of these wells, 279 have wireline logs to determine the average porosity over the net pay interval and 19 wells have brine samples analyzed for lithium concentration.

The Duperow Aquifer is judged to be hydraulically continuous within, and far beyond, the Arizona Lithium resource area based on regional hydrochemical mapping conducted over 25 years demonstrating systematic patterns of water chemistry across the project area. The Saskatchewan Phanerozoic Fluids and Petroleum Systems Project (Jensen et al., 2015) was based on hundreds of water samples collected and submitted to the Government of Saskatchewan. Arizona Lithium's sampling program supports the interpretation of regionally consistent lithium values.

Other parties including government and academic research teams have also leveraged oil and gas wells to evaluate brine chemistry. Academic research has published several technical reports characterizing the lithium potential of various stratigraphic intervals in southern and central Saskatchewan. Brine-rich formation water from oil and gas producing intervals have been tested for lithium and other elements by these researchers from University of Alberta and the Saskatchewan Geological Survey.

Sample Analysis Method

Arizona Lithium's internal laboratory provided initial rapid (<12 hour) analysis of lithium and sodium concentrations of sampled brines. Results from this laboratory were used for operational decisions and for selecting samples for further/confirmation analyses at the other laboratories.

Isobrine Solutions, a small commercial laboratory that was affiliated with Arizona Lithium, was selected to provide rapid (one-to-two-day turnaround). Results from Isobrine Solutions were used for lithium concentration mapping, but only after they were confirmed by the other three participating laboratories. Isobrine Solutions uses an ICP-OES to analyze for lithium and sodium (among other elements), but in addition uses an Ion Chromatograph (IC) to measure chloride (and other elements).

Element Materials Technology (Element) is a large commercial laboratory used for lithium and alkalinity analysis of selected samples. They have been used for over 20 years as part of the University of Alberta/Isobrine/Saskatchewan Geological Survey sampling programs, and consequently brings continuity of the laboratory analysis. Element Materials Technology is accredited by A2LA to ISO/IEC 17025:2017. All the lithium analyses conducted by Element were done on an ICP-MS.

AGAT Laboratories (AGAT) is a commercial laboratory in Edmonton Alberta and was used to confirm lithium analysis of selected samples of the other three laboratories. AGAT is accredited by CALA to ISO/IEC 17025:2017. AGAT conducted analyses for lithium using both ICP/MS, and ICP/OES, and after extensive testing it was determined that their ICP/OES using a constant 100 x dilution of samples provided accurate and precise results.

Estimation Methodology

Geological understanding of the Duperow Formation was foundational to the resource estimate. Geological mapping was completed by Arizona Lithium and interpolated structure surfaces for the intra-Duperow Formation stratigraphy were provided to Fluid Domains Inc. for construction of a three-dimensional geologic model in FEFLOW™. Isopach maps were created in GeoSCOUT™ using the kriging gridding algorithm at a 500 m grid spacing. The isopach maps were constructed to understand and assess thickness trends within the intra-Duperow Formation stratigraphy. Any anomalies in the maps were addressed by quality checking stratigraphic tops in the wells and shifting them accordingly.

The structure maps of surfaces were exported from GeoSCOUT™ and imported into FEFLOW™ to determine the gross rock volume. Additionally, effective porosity maps net pay maps, and lithium concentration maps for each intra-Duperow interval were imported into FEFLOW™ to calculate the net brine volume of the Duperow Aquifer. Validation of the FEFLOW generated isopach maps was achieved by comparing to the isopach maps generated in GeoSCOUT™.

Wireline logs were examined to determine the lithology across the intra-Duperow Formation intervals. Density logging tools emit gamma-rays to measure electron density of the formation. These data are used to determine lithology (Photoelectric factor (PEF)) and calculate porosity. The typical data density of the bulk density log is a measurement is taken approximately every 0.1m vertical depth. This represents several thousand sample data points per well, that throughout the area equates to several hundred thousand sample data points. The bulk density of each interval was one source of data used to interpret the average porosity over each interval. This exercise was completed for 279 wells.

Transmissivity of the Duperow Formation has been measured at: 3 Arizona Lithium wells (101/14-33-002-12W2, 104/01-02-001-12W2, 141/16-20-003-12W2); 3 Hub City Lithium wells (111/11-02-009-12W2 13W2, 101/14-36-008-12W2 13W2, and 101/02-22-007-12W2 09W2); and in 11 drill stem tests (DSTs). Analysis of the well tests was completed using Theis (1935), Driscol (1986), and Dougherty-Babu (1984).

Evaluation of the potential deliverability from a single well was analysed using the Modified Moell method (Maathuis and van der Kamp, 2006). Potential deliverability from a well network was evaluated using Theis (1935) with superposition and an extended solution to MacMillan (2009). Evaluations of deliverability considered the geologic setting, linear well loss, and pressure interference between wells.

The Mineral Resource estimation is based on geological surfaces and Duperow Formation Aquifer quality data provided by Arizona Lithium. Historical and current lithium concentrations, geological data and well testing results were incorporated into the lithium mass estimates.

Approximately 71% of the Mineral Resource estimate is classified as Indicated because the lithium grade, brine volume, and transmissivity have been estimated with sufficient confidence to allow the application of modifying factors in support of mine planning and evaluation of economic viability.

In some areas, the resource estimate is classified as Inferred because the uncertainty in the lithium grade or the uncertainty in the formation transmissivity were considered too large to support evaluation of economic viability. It is expected that with continued exploration all areas of the resource can be upgraded to Indicated or Measured classifications.

The Mineral Resource estimation has been performed according to the requirements of the CIM Best Practice Guidelines for Resource and Reserve Estimation for Lithium Brines (2012).

Cut-off Grades

The samples are representative of the aquifer in the intersected Duperow Formation with the analysis representing an average intersected grade for that interval. The cut-off grade is then and economic decision on whether to proceed with the drilling of a production well given the recovery factors and the Lithium price at the time.

Lithium-rich Duperow Formation brine is widely distributed in the vicinity of the Project. The use of a cut-off grade would be based on economics of the production costs and the value of the recovered lithium. Based on Arizona Lithium's initial cost estimate work, the Project would likely be economic as long as the produced brine had a concentration greater than 65 mg/L.

Based on the currently available data, a fully penetrating Duperow well drilled anywhere in the Project, would have a blended lithium concentration greater than 65 mg/L. As such, the lithium grade is higher than the cut-off grade throughout the Project.

Competent Persons statement for Prairie and Registered Overseas Professional Organisation (ROPO) and JORC Tables

Gordon MacMillan P.Geol., Principal Hydrogeologist of Fluid Domains, who is an independent consulting geologist of a number of brine mineral exploration companies and oil and gas development companies, reviewed and approves the technical information provided in the release and JORC Code – Table 1 attached to this release. 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 22 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 is also a Qualified Person as defined by NI 43-101 rules for mineral deposit disclosure.

This announcement has been authorised for release by the Board.

FOR FURTHER INFORMATION PLEASE CONTACT:

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