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REDCLOUD

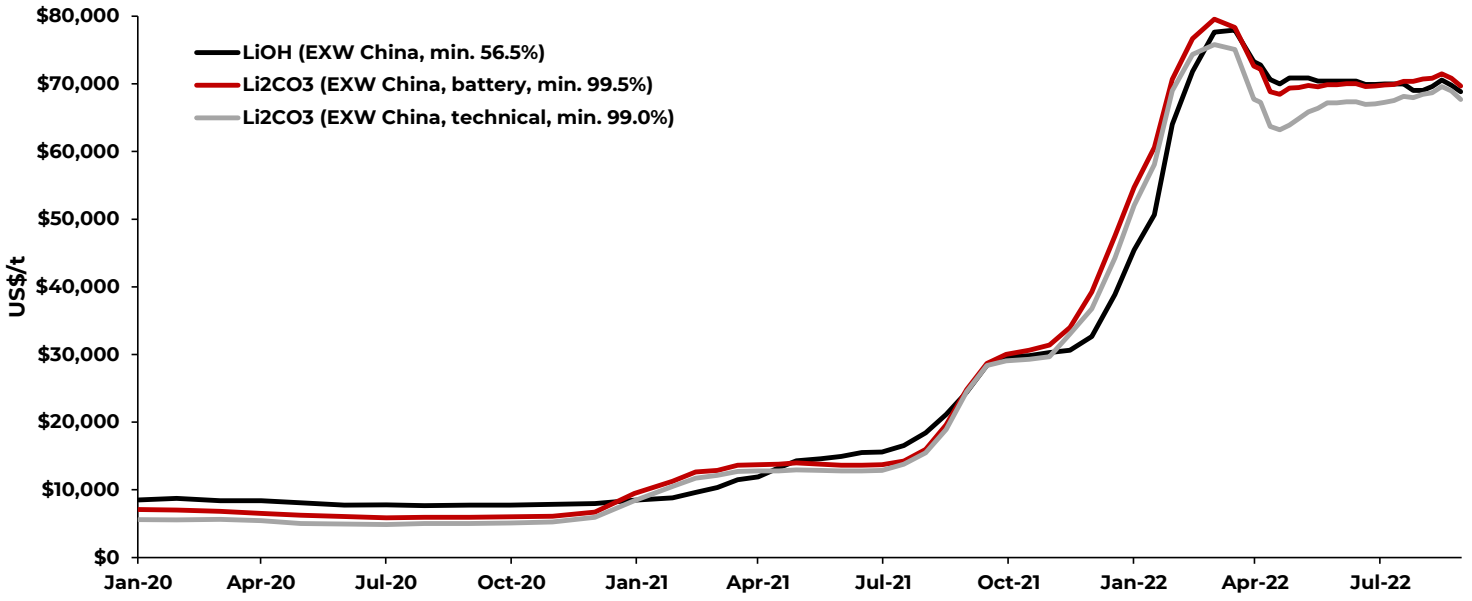
Lithium Market Update

Direct Lithium Extraction: What Mining Investors Should Know

Thematic
September 29, 2022

After rallying >700% since 2020, lithium prices have continued to hold steady, despite ongoing fears of global recessions, market sell-offs, and negative sentiment seen across global markets. Since the brief pullback in mid-Q2/22, lithium chemical prices have generally ticked back up, with prices up ~100-140% YTD. On the back of this rally, fueled by increasing demand for Li-ion batteries (particularly from EVs), we have seen increasing investment into Direct Lithium Extraction (DLE) technologies and DLE project developers. With potential for fantastic project economics and production capabilities that are disruptive to the global lithium sector, we expect more DLE companies to emerge, and more lithium companies to use the technology as it continues to be de-risked. **With this report, we hope to educate our readers on DLE in the context of the global lithium market and provide a guide as to what we believe mining investors should look out for when evaluating DLE project developers. We are also initiating coverage on two of our favourite DLE Li-brine developers, HeliosX Lithium & Technologies Corp. (TSXV:HX, BUY (S), Koby Kushner) and Grounded Lithium Corp. (TSXV:GRD, BUY, C$0.85 target, Koby Kushner). We also provide an overview on three other top picks in the DLE space, E3 Lithium Ltd. (TSXV:ETL, BUY, C$8.20 target, Koby Kushner), Lake Resources NL (ASX:LKE, BUY, A$3.15 target, David A. Talbot), and LithiumBank Resources Corp. (TSXV:LBNK, Not Rated, Koby Kushner).**

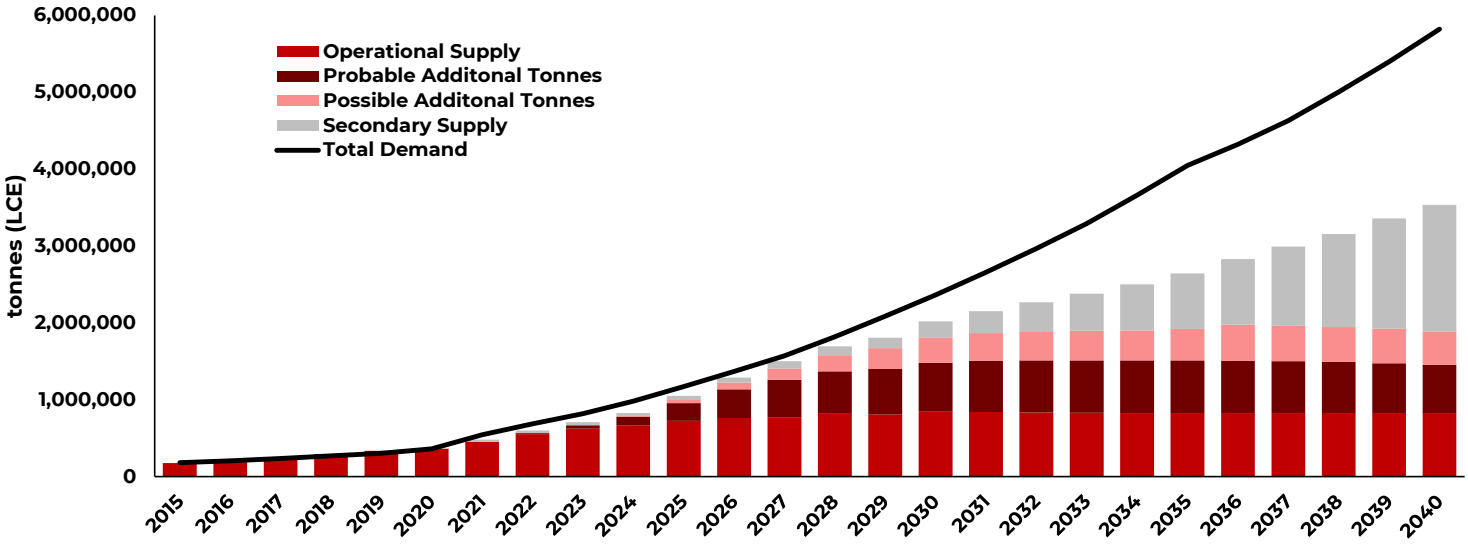
Figure 1: Lithium price movement since January 2020



Source: Benchmark Mineral Intelligence

Will lithium prices come back down? We think so, but it may be a while. Given the material disconnect between market prices and the cost curve, we do not expect current prices to sustain long-term (listen to our recent podcast episode on this topic **here**). Nor do we anticipate demand to fade away anytime soon, hence, the catalyst that would trigger such a correction, in our view, is the introduction of significant new supply – which we have yet to see. The issue is that the timeline to bring new battery capacity online is much shorter than the timeline to bring a new mine into production, and so the current deficit is expected to magnify over the coming years. We also note that costs are increasing, and if there is a correction, we still expect prices to remain above previous historical highs. **Bottom line: we believe this ongoing rally has legs. While we do not anticipate a near-term supply shock or sharp correction, we do think these high prices will continue to incentivize the advancement of processing technologies such as DLE, which may lead to a longer-term disruption in the global supply chain.**

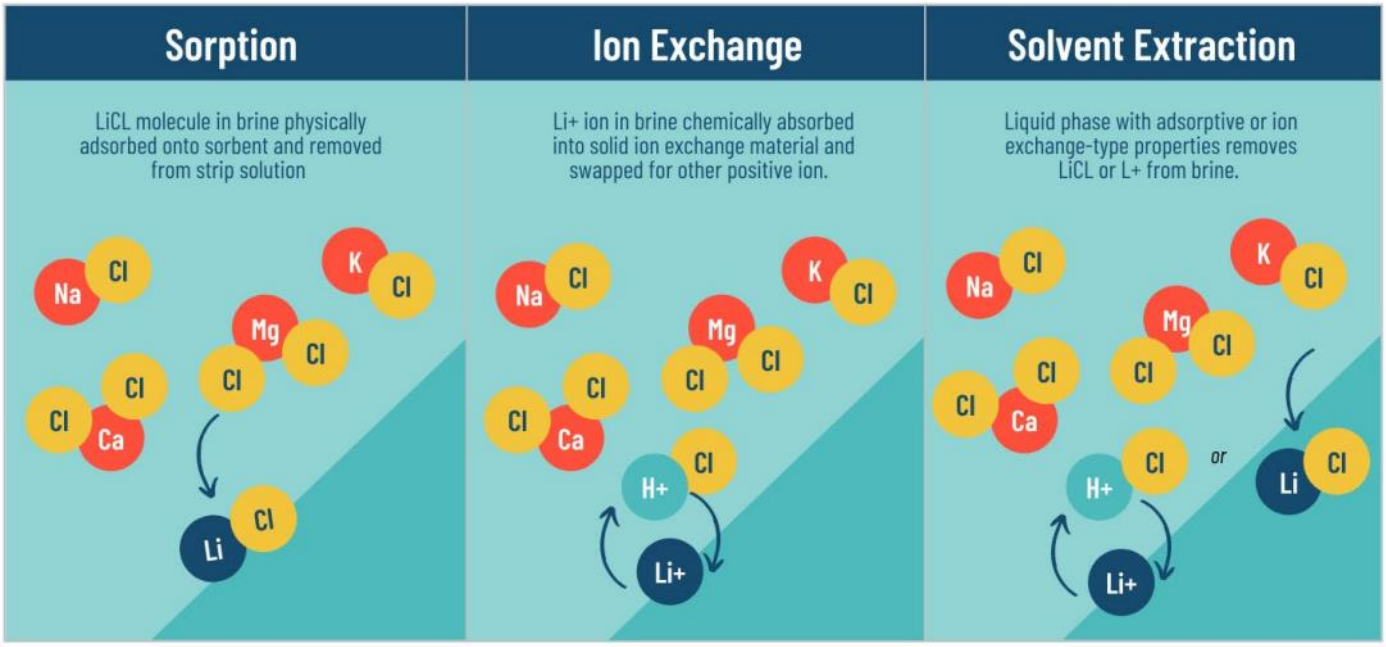
Figure 2: Lithium supply and demand projections



Source: Benchmark Mineral Intelligence

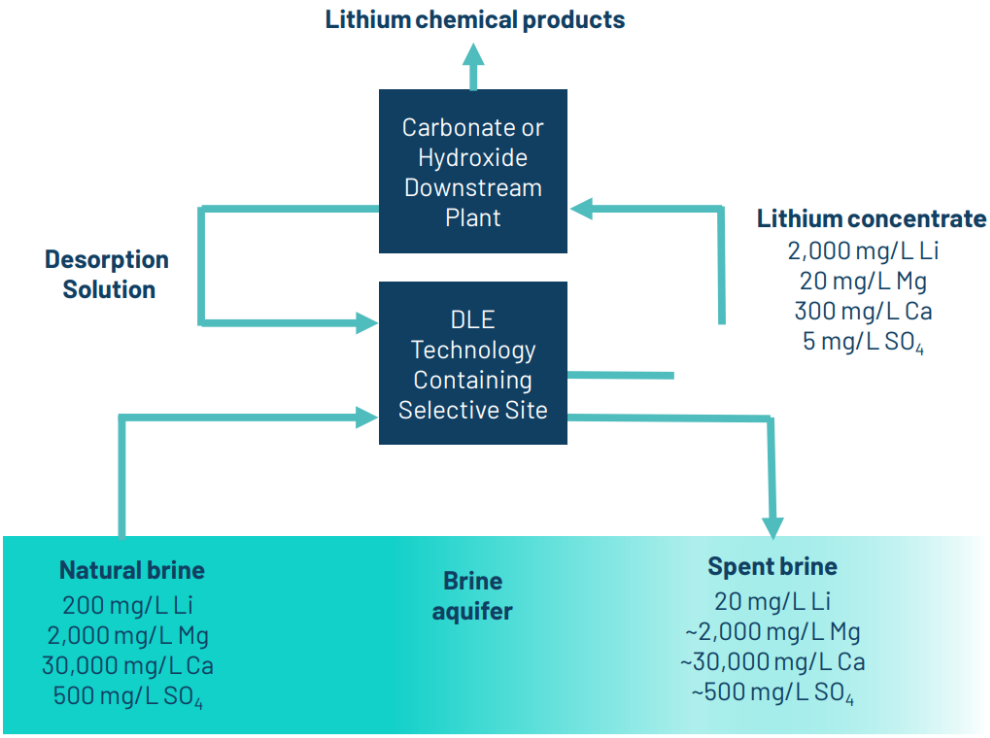
What is DLE? Simply put, it is a way of selectively isolating lithium from solution without the need for traditional evaporation methods. The end-product of a DLE circuit is a high-purity lithium concentrate (usually either Li-sulphate or Li-chloride), which can then be further refined using conventional methods (polishing/electrolysis) into lithium chemicals (carbonate or hydroxide). There are several different types of DLE, which generally fall into three broad categories: adsorption, ion-exchange (IX), and solvent extraction.

Figure 3: The three broad categories of DLE technologies



Source: Alex Grant / Jade Cover Partners (2020), Vulcan Energy Resources Ltd.

Figure 4: Generalised schematic of a DLE process



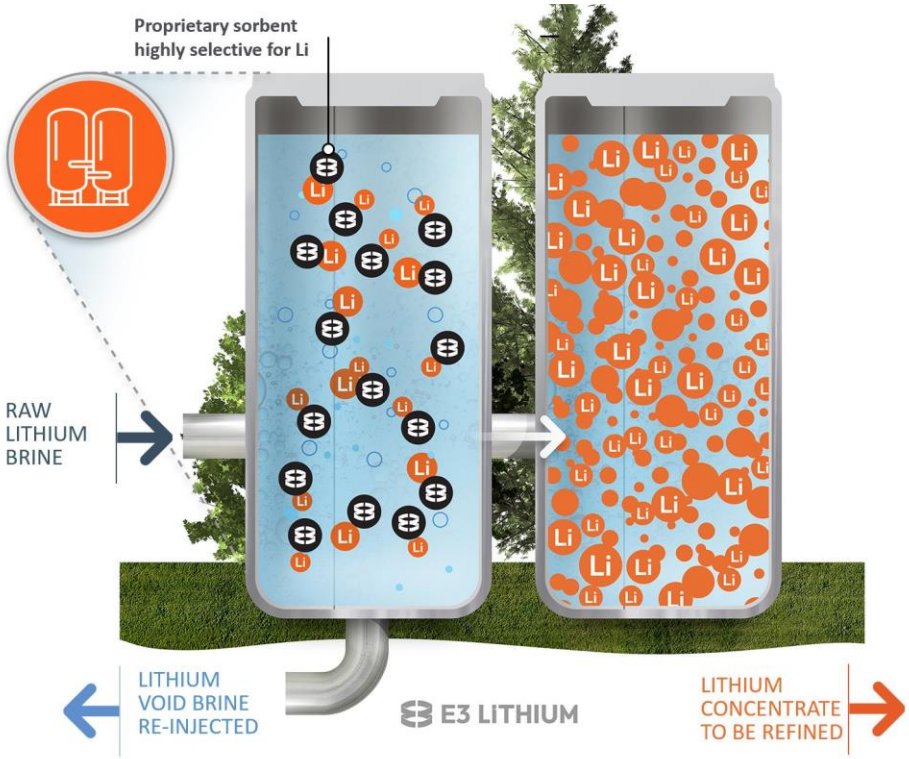
Source: Alex Grant / Jade Cover Partners (2020), Vulcan Energy Resources Ltd.

Does DLE work? The answer is not binary: it is not whether it works or does not work. It is the *extent* to which a particular DLE solution works with a particular brine. We also recognize that what works in a lab might not work the same in the field, and so it is important for developers to take a staged approach to de-risking the technology. Contrary to popular belief, there are commercial-scale DLE Li-brine operations today. The best-known example is Livent's (NYSE:LTHM, Not Rated) Fenix project in Argentina's Salar del Hombre Muerto, which has been using a hybrid DLE-evaporation approach since the 1990s. More recently, at least three additional DLE projects have been commissioned since 2017 in Qinghai, China. Majors appear to be putting more faith into DLE, as evidenced by Rio Tinto's (ASX:RIO, Not Rated) recent acquisition of the Rincon Li-brine DLE project in Argentina for US$825M, and Imperial Oil's (TSX:IMO, Not Rated) strategic collaboration agreement with E3 Lithium (**read more**). For emerging DLE companies, pilot testing has shown to be successful, with Lake Resources arguably being the most advanced amongst publicly listed pre-production developers. Lab pilot testing at Lake's Kachi project in Argentina successfully produced a Li-chloride solution with 99.97% purity using Lilac Solution's DLE technology, and with offtakes and funding in place, the company is ramping up construction of a larger-scale demo plant ahead of commercial production in 2024.

DLE is not a "one size fits all" solution. Even within each category, there are variations in how each DLE process is performed, and what works well for a salar in Argentina or Nevada might not work well for a petrobrine in Canada or Arkansas. For example, there are several technology companies developing proprietary ion-exchange (IX) DLE solutions. IX has been used for decades (accounting for approximately half of annual uranium production and is used worldwide to soften water by selectively exchanging Ca and Mg with Na ions). To facilitate the chemical reaction, a sorbent material, often in the form of resin beads, is required. It is usually this sorbent material that makes a DLE technology proprietary. We suspect DLE sorbents are usually made of metal-oxide materials, such as manganese-oxide nanoparticles. This sorbent material, when in the presence of Li-enriched brines, is designed to "capture" Li ions while "rejecting" deleterious elements. The Li-void brine is then sent away (usually reinjected back underground), and acid is used to "wash" the Li away from the sorbent, creating a concentrated solution. **For all DLE solutions, the effectiveness of the technology depends on the specific brine chemistry. Brine chemistries vary between projects, and we believe each requires a tailor-made DLE solution.** HeliosX is an example of a company taking a bespoke approach to DLE; it has partnered with different technology providers for its various

assets across each jurisdiction (Alberta, Nevada, and Argentina). E3 Lithium developed its own sorbent in-house, specifically made for its brines in Alberta. Meanwhile, LithiumBank, through its engineering consultant, is in the process of shortlisting potential DLE technology providers for its Alberta brines, while Grounded Lithium plans to take a similar approach for its brines in Saskatchewan.

Figure 5: Simplified ion-exchange DLE process



Source: E3 Lithium Ltd.

DLE can be disruptive if successfully scaled up. Traditional evaporation methods rely on the sun to gradually remove water from the brine to leave behind a concentrated Li solution. Recoveries are typically low (~40%), the process takes months to complete and is generally inefficient at removing impurities. To be amenable to economic evaporation, a hot, arid climate is required, the brine should have low impurities, and grades should be high. Otherwise, the natural concentration process will take too long (evaporation cut-off grades are usually ~300 mg/L Li). This is where DLE comes into play: the process can take hours (not months) to achieve >90% Li recoveries, does not require a hot, arid climate, can selectively recover Li without the impurities, and can potentially make lower-grade brines feasible to extract (typical cut-offs for DLE brines are ~50 mg/L Li, although effective porosity cut-offs of ~2-3% are sometimes used instead – grade becomes less relevant for DLE projects as we will discuss shortly). Because of its effectiveness in producing a high-purity Li concentrate, many DLE developers are planning to proceed directly to the polishing/electrolysis steps on or near site and produce battery-grade chemicals for direct sale to end-users. **While we think scaling up the technology poses a major risk for developers, we believe scale-up risks can be partially mitigated if it can be done in a modular approach.** Unlike traditional hard-rock mines or brines, production rates for DLE projects are not typically limited by the geometry of the resource or evaporation rates, respectively. Rather, production for DLE projects may be limited by well deliverability. Increasing production could simply be a function of drilling more wells (while adding more treatment capacity – as is also the case with conventional methods). E3 Lithium is contemplating scaling up from 20,000 tpa LHM to ~150,000 tpa LHM - which represents ~20% of current total demand (LCE basis). Several other companies have similar ambitions and given the unprecedented rate that lower-grade Li-brines are being delineated, we believe new technologies such as DLE may be required to help fill the ballooning lithium supply deficit.

DLE has potential to offer an ESG-friendly source of lithium. DLE technology may allow for lithium extraction without the need for large-scale mining (per typical hard-rock operations) nor large evaporation ponds (per typical brine operations). This can translate to a lower environmental footprint (typically <5% of the land use required for Li projects that produce similar volumes), less ground disturbance (as the Li-void brine can be reinjected back to where it came from, which may also reduce or eliminate the need for large tailings ponds), potentially less fresh water and energy usage, and overall, fewer carbon emissions (especially if the company is aiming to direct-ship its final Li-chemical directly to end-users rather than shipping to an intermediary, as is the case with most hard-rock Li mines, which ship a Li-concentrate to China for downstream processing). **As more countries look to lower their greenhouse gas emissions while securing local supplies of lithium, we suspect that a global push towards cleaner solutions like DLE may be in order.**

When it comes to DLE projects, grade is not king. In the mining world, investors tend to favour grade – higher grade means less material is required to be moved in order to extract a given amount of metal, which should theoretically lead to better margins, all else equal. **For DLE projects, we believe investors should focus on deliverability.** This is often measured by the potential flow rates per well (which is largely a function of the aquifer; pressure, porosity, permeability, reservoir thickness, etc.). We tend to look for projects with potential for at least ~1,000 m^3/day per well. The general target for emerging developers is at least ~20,000 tpa of Li-chemical, and it is much harder to reach that target if deliverability is poor. To illustrate our point, we compare two hypothetical brine projects: project A has a grade of 75 mg/L Li and flow rates of 3,000 m^3/day per well, while project B has a grade of 150 mg/L Li and flow rates of 500 m^3/day per well. To reach 20,000 tpa LCE, project A would require ~46 production wells, while project B would require ~137 production wells. Despite being double the grade, project B would require ~3x the number of wells. Wells (drilling and completion) tend to be the biggest CapEx item for DLE projects; in Canada, it costs ~C$3M to drill and complete a new well, and so a CapEx of >C$400M for just the well drilling aspect alone for project B could greatly hamper its economics. The OpEx would also be negatively impacted; each well costs money to operate and maintain, let alone permit. There are additional considerations at play: access to infrastructure can make a project more economic (notably, the Li-brines in western Canada benefit from immense infrastructure left behind from decades of oil and gas development), as can the depth to the aquifer (shallower means less drilling required), and type of drilling required (vertical drilling is generally preferred to horizontal). We believe companies like Grounded Lithium understand that project economics extend well beyond grade; the company has strategically acquired ground overlying the Leduc aquifer where reservoir depths are shallow (~900m vs. the ~2,300m depths seen elsewhere) and the reservoir units are thick with high dolomitization (subsurface dolomite tends to be more porous than the limestone-rich units seen elsewhere).

Figure 6: Comparison of DLE project economics; demonstrating how grades are not necessarily indicative of costs

Project	E3 Lithium Bashaw	Standard Lithium Smackover	Vulcan Energy Zero Carbon Li	Lake Resources Kachi
Location	Alberta	Arkansas	Germany	Argentina
Study	PEA (Clearwater)	PEA (Lanxess)	PFS**	PFS
Primary End Product	LiOH-H2O	Li2CO3	LiOH-H2O	Li2CO3
Base Case Price (US$/t)	$14,079	$13,550	$14,925	$15,500
Project Life (years)	20	25	30	25
Annual Production (t)	20,000	20,900	39,400	25,500
Average Grade (mg/L Li)	75	168	181	250
Recovery (%)	94%	90%	88%	83%
OpEx (US$/t)	$3,656	$4,319	$2,904	$4,178
Initial CapEx (US$M)	$602	$437	$1,180	$540
Post-tax NPV 8% (US$M)	$820	$989	$2,087	$1,580
Post-tax IRR (%)	27%	36%	26%	35%

***Zero Carbon project parameters based on non-phased scenario, lithium business only, converted to USD using FX of 1.1 EUR/USD*

Source: Various company reports, RCS

Assessing the technology; more than just test results. High recoveries in a short cycle time (e.g. >90% under an hour) are preferred, though it is also important to ensure that the DLE recovers Li and Li only. Relative to Li, deleterious elements such as Cl, Na, Ca, and Mg often occur in higher abundances in brines. Having these elements affects the quality and pricing of the final lithium chemical end-product (even if the final solution comprises <0.5% of these elements). **Extensive testing is also required to confirm the durability of the DLE material involved.** Sorbent material degrades with each DLE cycle, and because it can be expensive to manufacture and frequently replace, it is important to ensure the material used is able to retain its effectiveness for several cycles (generally, we look for >500 cycles with minimal degradation). For petrobrines, the presence of hydrocarbons and sour gas is especially of concern; over time, hydrocarbons can coat the sorbent and block the IX process. To maintain high recoveries and low impurities, some companies may need to pre-treat the brines and/or add a washing step to clean the sorbent material between cycles. Commercial operations are expected to require plenty of sorbent; it is therefore important that the raw materials required are readily available and can preferably be manufactured on-site, which makes access to nearby infrastructure especially important for DLE developers. **We also look for technologies that have been tested in a way that best mimics real-world operating conditions.** Not all developers have access to their brines, and so testing is sometimes done on synthetic brines, which in our view, adds another layer of risk, as variances in brine chemistries may affect the DLE process. We note that our top picks discussed in this report all have access to their brines. Mimicking real-world conditions also means mimicking the physical properties of brines. For example, western Canadian brines tend to run hot (>70° C), and so E3 Lithium's laboratory-based pilot prototype, which we **recently visited**, includes a heater to warm its brines prior to entering the DLE circuit.

Flexibility regarding end-product is a nice bonus. While lithium remains the common ingredient amongst EV batteries, different chemistries require different forms of lithium. NMC batteries are demanded by higher-end EVs that provide a longer range and require Li-hydroxide, while LFP batteries, which appear to now be dominating China's EV market, require Li-carbonate. While solid-state batteries are still in research and development, these high-energy-density batteries require lithium in metal form. Because battery technology is rapidly evolving, we believe another key consideration for evaluating DLE technologies is whether the proposed process offers optionality regarding the lithium end-product. For example, while E3's Clearwater PEA assumes 100% Li-hydroxide, the company's DLE circuit produces Li-sulphate, which can also be converted to Li-carbonate. The company also collaborated with Pure Lithium (Private, Not Rated) to create lithium metal (**read more**).

Picking the winners. We previously alluded that DLE can be disruptive to the global lithium supply chain. More and more players are emerging and delineating vast Li resources with the goal of employing DLE. In our view, the most likely winners to come out of this cycle will be the first movers – developers that can rapidly de-risk their technology, commercialize their brines, and deliver their products during a heated lithium market. Assessing the effectiveness of a particular DLE technology when scaled and the deliverability of an early-stage brine asset are not easy tasks, and it is especially difficult to predict who the first mover will be. One thing investors should look out for are management teams that have the technical know-how and a track record for commercializing projects. Particularly with petrobrine companies, we believe oil and gas experience should bode extremely well. For investors seeking exposure to DLE, we typically recommend investing in a basket of developers. **We reiterate our top picks in the DLE space: HeliosX Lithium & Technologies Corp. (TSXV:HX, BUY (S), Koby Kushner), Grounded Lithium Corp. (TSXV:GRD, BUY, C$0.85 target, Koby Kushner), E3 Lithium Ltd. (TSXV:ETL, BUY, C$8.20 target, Koby Kushner), Lake Resources NL (ASX:LKE, BUY, A$3.15 target, David A. Talbot), and LithiumBank Resources Corp. (TSXV:LBNK, Not Rated, Koby Kushner).** Attached are our initiation reports on HeliosX Lithium and Grounded Lithium, and summary reports on E3 Lithium, Lake Resources, and LithiumBank Resources.

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Company Specific Disclosure Details

Company Name	Ticker Symbol	Disclosures
E3 Lithium Ltd.	TSXV:ETL	1,2
Grounded Lithium Corp.	TSXV:GRD	3,4
HeliosX Lithium & Technologies Corp.	TSXV:HX	
Lake Resources	ASX:LKE	3,4
LithiumBank Resources Corp.	TSXV:LBNK	

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Grounded Lithium Corp. (TSXV:GRD)

Getting in at Ground Zero on Sask's Newest Lithium Story

Initiating Coverage
September 29, 2022

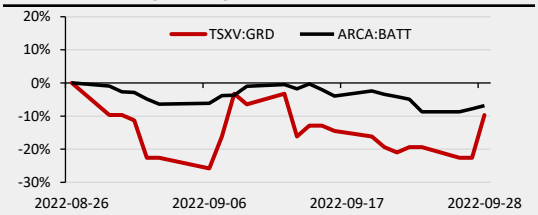
(Currency is CAD$ unless noted otherwise)

Closing Price	$0.28
Rating	BUY
Target ($/sh)	$0.85
Return to Target	204%
52 Week Low / High	$0.22 / $0.35

CAPITALIZATION	Basic	Diluted
Shares Outstanding (M)	56.9	64.3
Market Capitalization ($M)		$15.9
Enterprise Value ($M)		$11.2
Cash ($M)		$4.7
Total Debt ($M)		$0.0

STOCK CHART

RELATIVE PERFORMANCE



RELATIVE VALUATION	US$EV/t LCE	P/NAV
Grounded Lithium	$2.9	0.32x
Peers*	$59.8	0.34x

** S&P Cap IQ Pro*

MAJOR SHAREHOLDERS

Management (14.1%)

DISCLOSURE CODE: 3,4
(Please refer to the disclosures listed on the back page)

Source: RCS, Company Information, Capital IQ

Company Description

Grounded Lithium is an Alberta-headquartered lithium exploration company focused on lithium extraction from the production of subsurface brines in Western Canada. The company is advancing the Kindersley Li brine project in Saskatchewan, which hosts 2.9Mt LCE of inferred resources grading 74 mg/L. Grounded has rapidly expanded its land package since its inception and holds mineral rights on 73,259 ha of prospective land as of September 2022.

We are initiating coverage on Grounded Lithium with a BUY rating and C$0.85/sh target price. Grounded is a new company focused on exploring, delineating, and developing Li-brine resources in Saskatchewan. The company's flagship Kindersley project hosts 2.9 Mt LCE, and its resources are expected to grow as it acquires more prospective ground. Led by a strong management team, Grounded's vision is to define multiple standalone projects, each with potential to produce >5,000-20,000 tpa LCE via Direct Lithium Extraction (DLE). **With a high-quality Li resource and the right team in place to develop it, bolstered by a favourable Li market, we believe it is only a matter of time before the market recognizes Grounded Lithium as one of the top names in the Canadian DLE space.**

- **The right place, the right time.** Saskatchewan is ranked #1 in Canada and #2 in the world in terms of investment attractiveness for a reason: it has a long history of oil and gas extraction, which has brought key infrastructure to the province's oilfields, and there are several government incentive programs in place to encourage local development of critical minerals. Meanwhile, record-high Li prices have continued to incentivize greener technologies, such as DLE.
- **Land acquisition criteria favours deliverability.** Management has leveraged their oil and gas expertise to acquire prospective ground where Li-brine resources may be most efficiently and cost-effectively brought to surface. Considerations include shallow reservoir depths, reservoir thicknesses, and geology (high porosities and permeabilities), which are expected to translate to high flow rates and low costs.
- **2.9 Mt LCE and growing.** Its land acquisition strategy led to Grounded acquiring Kindersley and defining a 2.9 Mt LCE inferred resource. The existing resource spans just a portion of its existing Li-brine rights, and the land position has since grown. Grounded grew its land position >700% in a short time frame using its proven targeted acquisition criteria. At this rate, we believe there is solid potential for Grounded to reach ~5 Mt LCE in one to two years' time.
- **Value proposition provides room to re-rate.** We believe Grounded is undervalued on its existing resource alone, and that this undervaluation is magnified when its resource growth potential is considered. Relative to its DLE peers, Grounded trades at a US$EV/t LCE of $2.9 (peers at $60) and a P/NAV of 0.32x (peers at 0.34x).
- **The right team in place to commercialize.** We view management's extensive operational experience and track record in Saskatchewan's oil and gas sector as highly favourable, given the overlapping skills required to commercialize liquid resources.

We are initiating coverage with a BUY rating and C$0.85/sh target price. Our target is based on a probability-weighted valuation estimate for Grounded's resource growth. **Upcoming Catalysts:** 1) Additional acquisitions (ongoing), 2) well test results (H2/22), 3) DLE and pilot testing (mid-2023), and 4) Kindersley PEA (H2/23). **Lithium exploration and extraction are inherently risky** and Grounded is subject to various geopolitical, technical, corporate, or financial risks.

Koby Kushner, P.Eng., CFA | Mining Analyst

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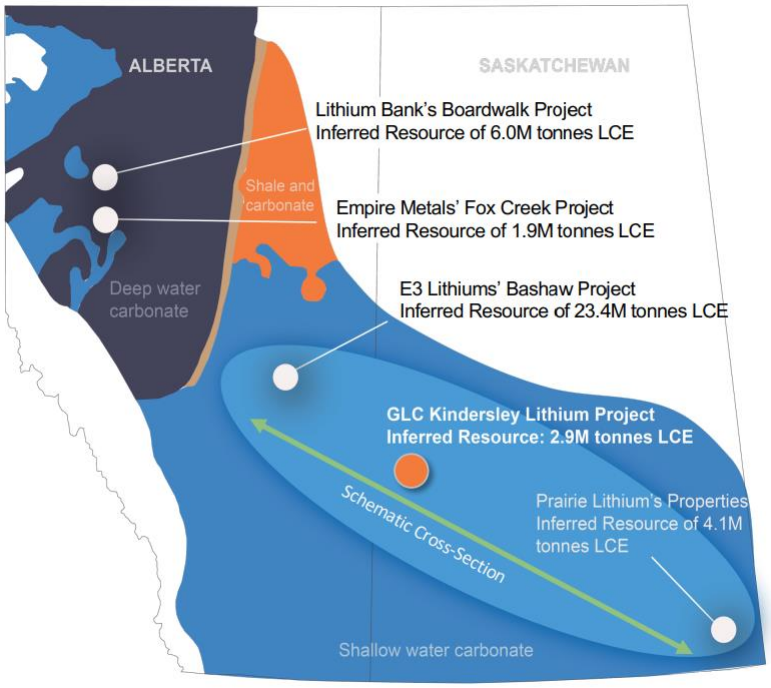
A new lithium player in the western Canadian petrobrines

Lithium is deemed a critical mineral

Investment Thesis

Developing lithium brine resources in Saskatchewan. Grounded Lithium is a new entrant in the lithium brine exploration space in western Canada, having incorporated in late-2020 and began publicly trading last August. It holds a 100% interest in the Kindersley Li-brine project in Saskatchewan, host to 2.9 Mt LCE in inferred resources within the prolific Leduc formation (also known as the Duperow in Saskatchewan). Grounded is focused on acquiring prospecting ground and defining quality Li-brine resources amenable to Direct Lithium Extraction (DLE), and eventually bringing its brines into production by leveraging management's extensive experience in the oil and gas industry. **In our view, Grounded Lithium ticks the right boxes when it comes to assessing the merits of a western Canadian Li-petrobrine company, and because it is still a new story, we believe the market has yet to recognize its attractive value proposition.**

Figure 1: Kindersley project location



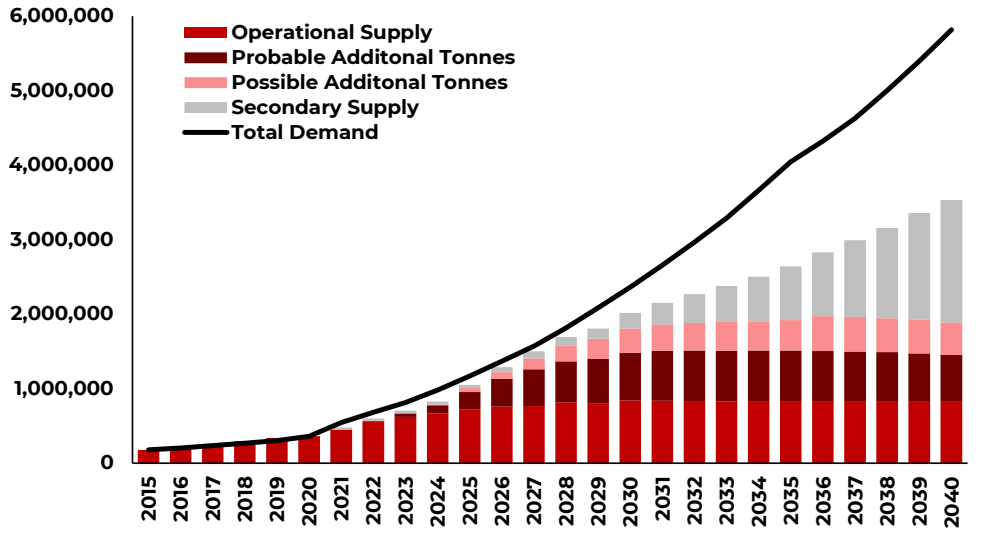
Source: Company Reports

The right time for Canadian lithium. The global lithium market is currently in deficit, and this deficit is expected to worsen over the coming years on the back of increasing demand for EVs and energy storage. With supplies extremely tight, end-users have demonstrated their willingness to pay premium prices; lithium chemicals are currently trading near all-time highs, with Benchmark Mineral Intelligence's Li Index showing YoY increases of >300%. According to the USGS, just four mining operations in Australia, two brine operations in each Argentina and Chile, and two brine and one mining operation in China account for most global Li production. With no significant local Li production, Canada relies entirely on imports – with just four countries (Chile, China, Russia, and the USA) accounting for 91% of the country's imports (**read more**), putting Canada at serious risk of supply chain disruptions. The Government of Canada has taken note and identified Li as one of 31 critical minerals that are considered essential to Canada's economic security and required to support the country's transition to a low-carbon economy. The recent federal budget (**read more**) included a

proposal for up to C$3.8B for the development of a critical mineral supply chain in Canada. **High Li prices and increasing costs have incentivized investment into disruptive technologies such as DLE, which we believe can be used to tap into western Canadian brines to extract lithium in an economically and environmentally responsible way, while softening Canada's ongoing Li supply issues.**

DLE offers a solution to help fulfil the lithium deficit by unlocking western Canadian brines

Figure 2: Lithium supply and demand projections (tonnes LCE)



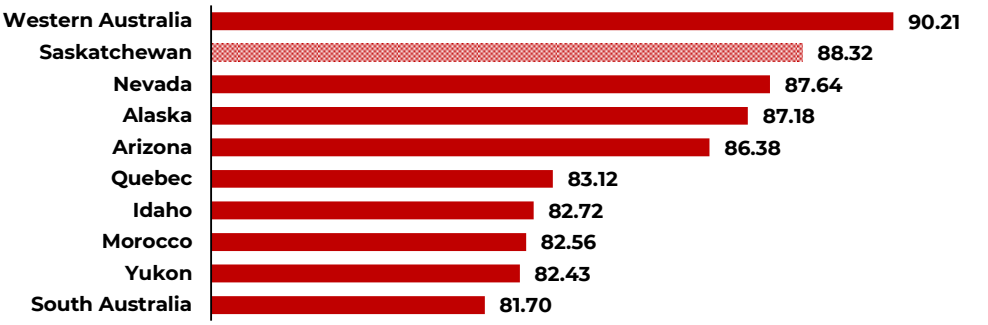
Source: Benchmark Mineral Intelligence

Saskatchewan is ranked #1 mining jurisdiction in Canada by investment attractiveness

Located in one of the best mining jurisdictions globally. Saskatchewan's favourable infrastructure, regulations and taxation regime along with low trade barriers make it a desired resource development destination. According to Fraser Institute's Annual Survey of Mining Companies 2021, Saskatchewan ranks #2 globally and #1 in Canada in terms of investment attractiveness. Being the second largest oil producer in Canada, the province hosts considerable oil and gas infrastructure conducive to Li-brine development, including ~30,000 active oil wells and an extensive network of pipelines, powerlines, and rail. Lithium at the Kindersley project is hosted in reservoirs of the Leduc/Duperow formation, which is well understood due to decades of historical oil and gas development. Additionally, leading R&D facilities and strong support programs such as the Saskatchewan Petroleum Innovation Incentive (SPII) and the Oil and Gas Processing Investment Incentive (OGPII) are directly benefiting local lithium companies in the form of royalty credits, reduced tax rates and other incentives.

Grounded's brines are expected to have efficient and cost-effective deliverability

Figure 3: Investment Attractiveness Index, 2021 – top-ten rankings

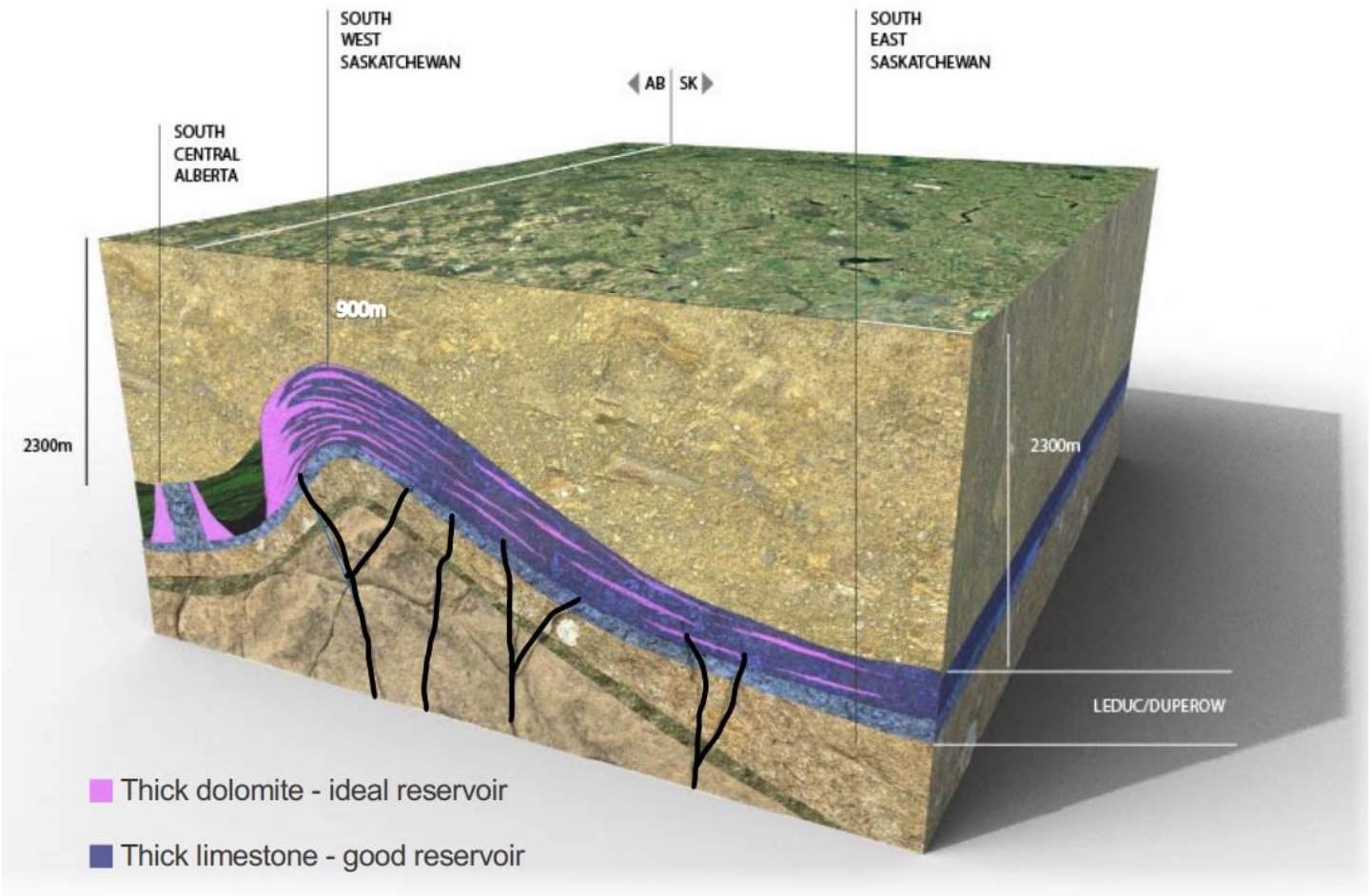


Source: Fraser Institute

Management knows the right ground to acquire

A targeted land acquisition strategy with commercialization in mind. In our view, what the Leduc/Duperow aquifer lacks in grade can be more than compensated by its excellent deliverability. However, not all portions of the aquifer are created equal. Management has been leveraging their knowledge gained from the oil and gas sector to strategically acquire the right ground to not only delineate sizeable Li-brine resources, but to delineate resources that can most efficiently and cost-effectively be brought to surface. This means acquiring ground where reservoir depths are shallow (~900m vs. the ~2,300m depths seen elsewhere), reservoir units are thicker (~265m) and highly porous (up to 34% porosity values, with a minimum 3% effective cut-off), and the geology is favourable (with significant dolomitized rock generally leading to greater permeability). The flow rate potential of its existing ground has been partially confirmed by testing existing wells, with one well returning a sustained rate of ~400 m^3/day. This well was originally designed to produce brine for injection into shallow oil reservoirs and not optimized for lithium extraction, and was flowed using a surface pump. Based on what we have seen from other regional Li-brine developers, we expect optimized flow tests, perhaps using an electric submersible pump, to yield flow rates of at least ~1,500 m^3/day, though we would not be surprised if optimized flow rates came back much higher. Deliverability aside, the company also seeks ground where there are minimal hydrocarbons and sour gas leftover – which may otherwise interfere with certain DLE technologies.

Figure 4: Cross-section through western Canada, showing Grounded's favourable positioning over the Leduc aquifer



Source: Company Reports

Significant resource expansion opportunities

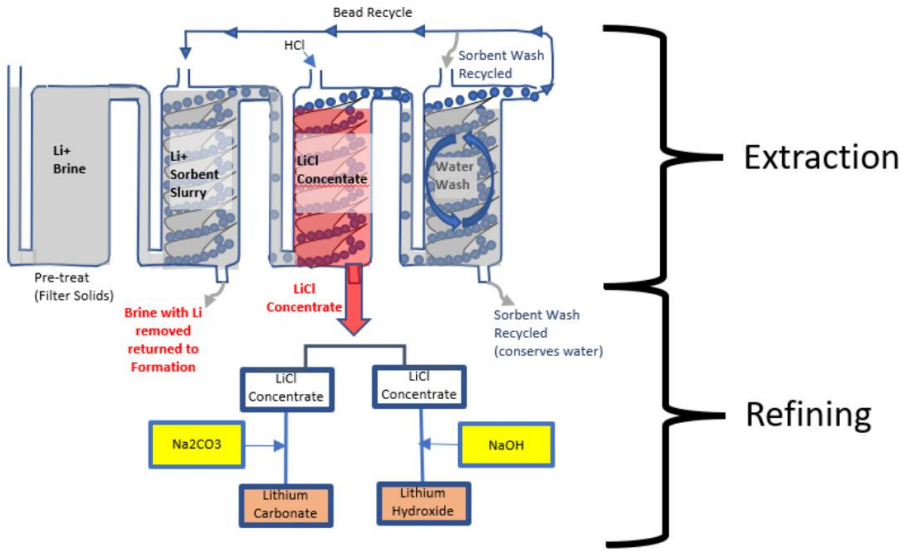
2.9 Mt LCE resource is just the start. The maiden inferred resource estimate was based on an assessment of 215 sections (55,664 ha) of prospective land at Kindersley, which represents a portion of the total land package under Grounded's control. The company holds another ~69 sections which provide considerable exploration upside, as we suspect this ground may host similar resource potential. We also note that Grounded has rapidly grown its land position from 35 sections of ground to ~284 sections in under two years, and we expect this trend to continue going forward. At this rate, we believe there is potential for Grounded to reach 5 Mt LCE in a relatively short timeframe (see page 7). **Grounded's long-term vision is to delineate Li-brine resources across multiple standalone projects, each capable of supporting a >5,000-20,000 tpa LCE operation.**

A vision to define multiple standalone projects, each with production of potential >20,000 tpa LCE

DLE has its benefits. DLE is an emerging technology that selectively isolates lithium from brines without the need for traditional evaporation methods. Most emerging DLE technologies for western Canadian brines employ ion-exchange – a process that has been used for decades in the water softening and uranium sectors – and is only recently being contemplated for lithium extraction. Compared to traditional evaporation methods, DLE offers potential for higher recoveries (>90% vs. ~40%), lower impurities, and quicker extractions (minutes vs. months). With evaporation, grade is highly important, because starting off with a lower grade brine means waiting much longer for the sun to do its work and produce a high-grade Li concentrate. For DLE, grade becomes less of an issue, as production rates are not as dependent on grade (which is why cut-offs for DLE projects often do not use grade, but rather use porosity to constrain the resource) and evaporation rates become irrelevant. Bottom line, DLE opens the door for lower-grade Li brines in areas that are not in desert climates. Not only can DLE bode well economically, but it may also allow for a more ESG-friendly approach to Li extraction. With no large evaporation ponds needed, the environmental footprint is expected to be minimal (<5% of the land use required for typical Li projects). There is also potential for less ground disturbance (as the Li-void brine can be reinjected back into the aquifer, which may also eliminate the need for tailings ponds), potentially less fresh water and energy usage, and overall, fewer carbon emissions (especially for companies like Grounded that aim to direct-ship its final Li-chemical to end-users rather than using an intermediary).

DLE is an ESG-friendly approach to lithium extraction

Figure 5: Generalized Direct Lithium Extraction (DLE) circuit



Source: Company Reports

Led by a team with strong operational track record and skin in the game

Do not bet against the Greg(g)'s when it comes to liquid resources. We expect the winners of the current lithium cycle to be the first-movers: companies that can rapidly commercialize their brines through successful implementation of disruptive technologies like DLE and deliver their product to a well-heated lithium market. Management has thus far demonstrated their ability to move quickly; within two years of incorporation, the team has raised >$5M, grown Grounded's land position more than eight-fold, defined 2.9 Mt LCE at Kindersley, drilled Saskatchewan's second-ever lithium test well, and completed a public listing. At the helm is CEO Gregg Smith – recipient of Saskatchewan's "Oilman of the Year" in 2009. A petroleum geophysicist by trade with over 35 years of experience, Mr. Smith went on to serve as COO of PetroBrank and CEO PetroBakken Resources, where he oversaw oil-equivalent production growth of ~24,000% through strategic acquisitions and successful implementation of optimization strategies. Working closely with him is CFO Greg Phaneuf, who brings over 28 years of financial and capital markets experience in the western Canadian energy space, having been involved in M&A transactions exceeding $7.5B. Other members of the team similarly share significant oil and gas experience, ranging from early-stage development to production, which we view as highly favourable given the overlapping skills required for successfully bringing liquid resources (Li-brines) to surface. Notably, management has participated in every financing round thus far, providing them with a hefty ~14.1% stake in the company.

Catalysts

Upcoming catalysts provide multiple re-rating opportunities

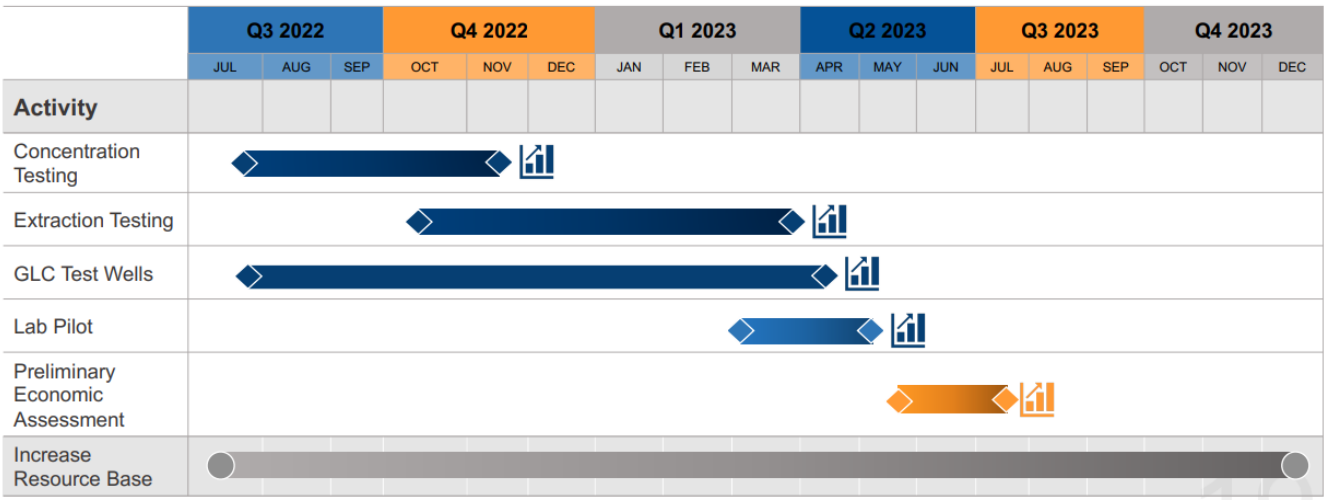
Ready to execute on its well-thought-out business plan. With the RTO behind it and ~$4.7M in the bank (as of June 2022), Grounded is prepared to take the next steps to achieve its goal of commercialization. The company recently drilled its first Li test well at Kindersley (second of its kind in the province), with the purpose of providing samples for concentration testing, as well as to better define reservoir quality and associated deliverability. The test well was also designed to allow for easy conversion to a producing well, which should bode well for a future field pilot and/or commercial operations. As the company increases its land position, we expect it to continue re-entering existing wells and drill new wells, with test well drilling expected to continue through to 2023.

On the DLE front, Grounded is in talks with various DLE technology providers to deliver brine samples for testing to assess compatibility of each DLE solution with Grounded's specific brine chemistry. There are over 50 companies, each working with their own variations of DLE. Grounded would rather spend money on resource development than on R&D to come up with its own in-house DLE solution (which may still wind up being inferior to the competition), and so it plans to engage with an engineering consultant to narrow-down solutions that may best support commercial-scale operations. The company is taking a staged approach to de-risking its brines. Once a DLE technology provider has been selected, it plans to proceed with a laboratory pilot program in mid-2023, which would then potentially follow with a field-based pilot. The brine concentration and reservoir tests, along with the DLE pilot results, are expected feed into a PEA in H2/23.

Upcoming catalysts for Grounded Lithium include:

1. Additional acquisitions and resource delineation (ongoing)
2. Concentration and deliverability test results (H2/22)
3. DLE test results (mid-2023)
4. Pilot testing (mid-2023)
5. PEA (Q3/23)

Figure 6: Upcoming catalysts for Grounded Lithium



Source: Company Reports

Valuation and Financial Analysis

Our C$0.85/sh price target was derived by applying our probability-weighted valuation methodology to Grounded Lithium's resource growth potential. This methodology accounts for the probability of each scenario being achieved, along with the time and money required to achieve them. Our three valuation scenarios are as follows:

Undervalued, even on its existing resource alone

1. **Lower Case: ~2.9 Mt LCE (C$0.68/sh)** – 10% probability – Our Lower Case assumes no resource growth beyond the already reported 2.9 Mt LCE resource at Kindersley. We see this scenario as least likely, as there is plenty of additional ground that was not covered by the current resource, and this ground is expected to continue to grow. Our Lower Case NAVPS of C$0.68 is still more than double Grounded's current share price, suggesting that the company is undervalued on its existing resource alone.

2. **Middle Case: ~3.8 Mt LCE (C$0.82/sh)** – 60% probability – This case assumes that Grounded delineates additional resources over its landholdings outside of existing resource. We view this scenario as most likely, as the landholdings are already in place. As was the case with the maiden resource, we expect the company to achieve this scenario at a nominal cost in a relatively short time frame, as it possesses ample existing data which could thus eliminate the need for costly drilling to delineate additional tonnes.

Grounded has a shot at growing its resources to ~5 Mt LCE

3. **Upper Case: ~5 Mt LCE (C$1.00/sh)** – 30% probability – Our Upper Case assumes that Grounded Lithium grows its resources to ~5 Mt LCE in one to two years' time. The company has rapidly grown its land package from 35 sections to ~284 sections over the last two years, and at the current rate, we suspect it could have more than enough ground to add these additional tonnes. We expect the costs associated with achieving our Upper Case to be higher due to the need to acquire additional ground.

As outlined in the following figure, in each scenario, we try to account for time, money and the cost of capital to further define the target. To achieve each case, we assume the company's share price progressively increases or decreases with exploration success or failure. Additionally, the capital required to achieve each case is reduced by any work done in a prior case (i.e. to achieve the Upper Case, C$1.9M in additional capital is required to supplement the C$0.1M required to achieve the Middle Case for a total of C$2.0M). We applied an in-situ value of US$10/t LCE based on its DLE developer peers, while adjusting downwards to account for the fact that western Canadian Li-brine developers tend to trade at lower valuations. We account for time value using an 8% discount rate and convert USD to CAD using an FX assumption of 0.75 USD/CAD. **Our C$0.85 price target generates a ~204% return to target and justifies our BUY rating.** We note that with each new piece of exploration data, we plan to adjust our estimates.

Figure 7: Probability weighted valuation estimate

Scenario	Description	Potential Value (C$M)	Cost to Achieve (C$M)	Shares to be issued to achieve this case (M)	Est. Share Count When Achieved	Per Share (C$)	Time to Achieve (Years)	Time Adjusted Per Share Value (C$)	Probability
Lower Case	~2.9 Mt LCE	$38.7	$0.0	0.0	56.9	$0.68	0.0	$0.68	10%
Middle Case	~3.8 Mt LCE	$50.7	$0.1	0.2	57.1	$0.89	1.0	$0.82	60%
Upper Case	~5 Mt LCE	$66.7	$2.0	2.1	59.2	$1.13	1.5	$1.00	30%
							Probability weighted valuation estimate (C$/sh)		**$0.86**

Notes:
Discount rate of 8%
To achieve Lower case, shares issued at current share price
Middle case shares issued in 3 tranches at an average price of $0.45
Upper case shares issued in 3 tranches at an average price of $0.89
Capital to be raised in subsequent cases, reduced by prior case
Assumed that any in the money warrants/options would reduce the required capital to be raised and would have a roughly neutral impact

Source: RCS

Grounded is undervalued relative to its peers

Trading at a steep discount to its peers. Amongst its peer DLE Li-brine developers, Grounded has the lowest EV – even lower than companies that have yet to define a resource. It trades at an EV/t LCE of US$2.9 and P/NAV of 0.32x, a sizeable discount to its peer averages at US$59.8 and 0.34x, respectively. We note that western Canadian brine companies appear to trade at lower multiples than those to the south. Given the vast infrastructure and low political risk in the Canadian oilfields, we suspect that these lower multiples are not due to location, but due to investors dismissing these projects for being lower grade. We reiterate that grade becomes less important for DLE projects, and that having good deliverability should be paramount. However, even amongst its western Canadian peers, Grounded Lithium continues to trade near the bottom. We believe that the likely explanation for this steep discount is simply because Grounded is a new story and the market has yet to learn of its merits. **In our view, a "natural" re-rating could be in order for Grounded Lithium as investors learn of this new story and become familiarized with DLE, and we expect this re-rating to accelerate on upcoming newsflow.**

Figure 8: Peer analysis

Company	Ticker	Price (C$/sh)	Shares (M)	Mkt. Cap C$M	Cash C$M	Debt C$M	EV C$M	Resources Mt LCE	EV/t US$	P/NAV
Grounded Lithium Corp.	**TSXV:GRD**	**$0.28**	**57**	**$15.9**	**$4.7**	**$0.0**	**$11.2**	**2.9**	**$2.9**	**0.32x**
E3 Lithium Limited	TSXV:ETL	$2.26	64	$145.5	$14.7	$0.4	$131.2	24.3	$4.1	0.16x
Alpha Lithium Corporation	TSX:ALLI	$0.92	166	$152.3	$37.9	$0.0	$114.4	3.3	$26.2	NA
Lake Resources NL	ASX:LKE	$0.82	1391	$1,135.8	$65.4	$0.0	$1,070.5	4.4	$182.5	0.41x
Standard Lithium Ltd.	TSXV:SLI	$6.01	186	$1,120.2	$129.1	$0.4	$991.5	4.3	$171.5	0.40x
HeliosX Lithium & Technologies Corp.	TSXV:HX	$0.70	36	$25.4	$0.0	$0.0	$25.4	NA	NA	NA
Pure Energy Minerals Limited	TSXV:PE	$0.58	33	$19.2	$0.3	$0.0	$18.9	0.2	$65.0	NA
EMP Metals Corp.	CNSX:EMPS	$0.45	70	$31.2	$1.5	$0.0	$29.7	NA	NA	NA
Highwood Asset Management Ltd.	TSXV:HAM	$9.00	6	$54.1	$1.0	$0.0	$53.1	18.1	$2.2	NA
Vulcan Energy Resources Limited	ASX:VUL	$6.67	143	$956.6	$236.2	$4.0	$724.4	15.9	$34.3	0.40x
Lithium South Development Corporation	TSXV:LIS	$0.49	102	$49.4	$12.2	$0.0	$37.2	0.6	$48.8	NA
LithiumBank Resources Corp.	TSXV:LBNK	$0.69	37	$25.7	$0.0	$0.0	$25.7	6.0	$3.2	NA
						Median	$53.1	4.4	$34.3	0.40x
						Average	$292.9	8.6	$59.8	0.34x

**Peer financial metrics as of latest financial statements; peer P/NAV based on analyst consensus*

Source: Company Reports, S&P Capital IQ

Well financed to execute on its plans

Capital structure is clean. The company currently has ~56.9M shares outstanding and ~7.4M dilutives (warrants and options), resulting in a fully-diluted share count of ~64.3M. With ~$4.7M in working capital and no debt (as of June 2022), we believe the company is favourably positioned to add value and catch-up to its peers prior to needing to raise additional funds.

Figure 9: Grounded Lithium capital structure

Capital Structure	(M)
Shares outstanding	56.9
Dilutives (Warrants and Options)	7.4
Fully diluted shares	**64.3**

Source: Company Reports

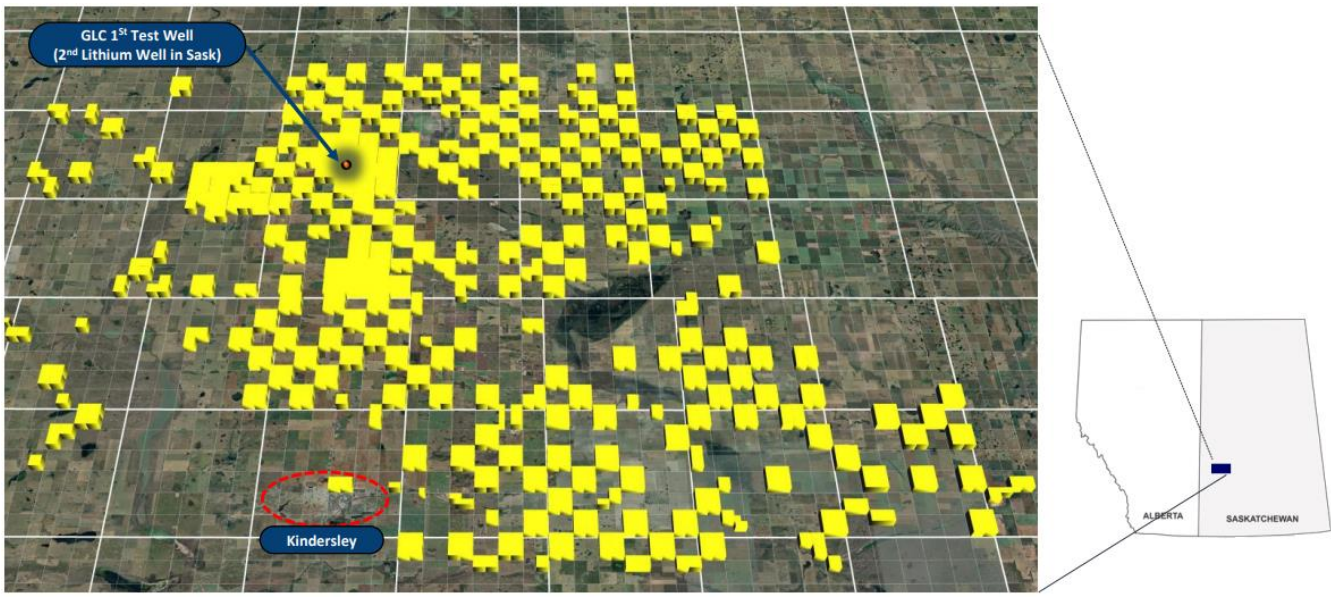
Asset Overview

Kindersley Li-Brine Project

Kindersley covers over 64,500 ha of land in Saskatchewan

The Kindersley project is located in western Saskatchewan and overlies the prolific Leduc/Duperow formation, which spans 100s of sq. km over southern Alberta and Saskatchewan. The project land totals ~64,507 ha (~250 sections) and is in the vicinity of several Li-brine development projects including E3 Lithium's (TSXV:ETL, BUY, C$8.20 target, Koby Kushner) 24.3 Mt LCE and Prairie Lithium's (Private, Not Rated) 4.1 Mt LCE resources.

Figure 10: Kindersley project claims – "checkerboarding" is typical of most early-stage western Canadian Li-brine (and oil and gas) projects



Source: Company Reports

Location & Infrastructure

Excellent infrastructure in place thanks to the oil and gas sector

The project is located in an area that supports oil and gas production and is therefore located close to all required infrastructure and labour for exploration, development and future extraction activities. The property is accessible year-round via air and ground transportation. The nearby town of Kindersley would serve as the resource hub for the project.

Ownership

Most the property area (~90%) is comprised of freehold lands, with the rest being crown land. Grounded controls 100% of the mineral rights underlying its ground, however it does have an agreement with Prairie Sky Royalty Ltd. (TSX:PSK, Not Rated), a royalty trust company, to conduct certain geological work and exploration activities on ~180 sections of freehold land. As Grounded explores the area, it has the right to convert land under the agreement to a mineral lease and pay PSK a negotiated royalty on all mineral production from these lands. Grounded has no rights to petroleum and natural gas from these lands. Initially the royalty rate shall not exceed 5%, but once production is up and running and at a steady state, the royalty could be increased, but not to a percentage greater than 12.5%. The company pays rent on these lands of between C$2/ha and C$4/ha a year. In September 2022, Grounded entered a similar agreement with National Trust Company to acquire another 34 sections of freehold land, growing the Kindersley project area by ~16% (**read more**).

History, Geology & Mineralization

Lithium in brines was discovered in Alberta and Saskatchewan based on the activity of oil developers and producers. One of the first oil wells drilled across the greater Kindersley project area was in 1928. Since then, over 16,000 wellbores have been drilled across the project. While Li brines associated with oilfields have been known for some time, they are typically lower in grade compared to the major lithium deposits of the world such as Salar de Atacama in Chile, Salar de Hombre Muerto in Argentina and Clayton Valley in the USA. With the advancement of modern technology, specifically DLE, extraction of lithium from these lower grade brines becomes more economical.

The Leduc and Duperow formations are laterally equivalent

The project focuses on the development and eventually production of brine from the Devonian-aged Duperow formation, part of the Saskatchewan Group comprised of thick, carbonate reefs segregated into the older aged Duperow and overlaying Birdbear formations. Local reservoir attributes include gross thicknesses exceeding 200m and highly dolomitic lithologies, lending itself to high porosities and permeabilities. We note that the Leduc formation is better recognized amongst Li explorers and developers, however the Duperow and Leduc formations are laterally equivalent, though labeled differently on either side of the Alberta-Saskatchewan border. Importantly, across Kindersley area, not a single wellbore to date has produced oil or gas from the Duperow formation, which bodes well from a project economics standpoint. Hydrocarbons have potential to negatively impact recoveries in certain DLE technologies, and having less could therefore mean less need for pre-treating the brines, translating to lower OpEx and CapEx.

Exploration

Limited wellbores penetrate the Duperow formation as historical drilling indicates this as a well established, non-hydrocarbon bearing acquifer. As a result, oil and gas wells have mostly been targeted at shallower, hydrocarbon-rich reservoirs, such as the Bakken formation. Excluding Grounded's recently drilled lithium test well, 66 wellbores have been drilled to penetrate the Duperow in the project area. Of these, 31 wellbores were drilled to adequate depths (i.e. over the entire stratigraphic unit) necessary to characterize a lithium resource within the formation.

A maiden inferred resource estimate of 2.9 Mt LCE

Prior to Grounded's ownership of the project in April 2021, lithium exploration had not occurred on the property claims. In July 2022, the company published an NI 43-101 technical report which was completed by RPS Energy Canada. The report assesses publicly available data from the 31 wellbores drilled in the project area, which validated concentrations of 70-78 mg/L Li and porosity values up to 34% within the underlying Duperow. The maiden resource estimate was conducted using a 3% effective porosity cut-off, yielding ~7.4B m^3 of brine at an average grade of 74 mg/L Li for total inferred resources of ~2.9 Mt LCE.

Figure 11: Inferred resource estimate of the Kindersley project

SUMMARY	Brine Pore Volume (m3)	Li Concentration (mg/L)	Li (Kg)	LCE (Kg)	Li (Tonne)	LCE (Tonne)
Total Unrisked	7,377,000,000	74	546,000,000	2,906,000,000	546,000	2,906,000

Source: Company Reports

Since the publishing of the technical report, the company has grown the Kindersley land package by ~16% and drilled its first lithium test well at the project. The well is intended to target key zones determined by the company's geological model and provide samples to test concentrations and confirm reservoir quality. The anticipated completion testing of the well is designed to assess the ultimate brine deliverability from the zone, which will provide key data for economic development of the project.

Other Exploration Areas

The company also holds at least 35 sections outside of the Kindersley project. Because it is in the process of acquiring additional lands, Grounded has kept details confidential. However, management has indicated that it has acquired its ground using its targeted acquisition criteria. Based on the robust resource delineated at Kindersley, which was also acquired using this criteria, we suspect that these additional exploration areas may host similar resource potential.

Additional ground outside the main resource area provides platform for growth

Risks

Exploration, development, and mining projects are inherently risky investments given the large initial expenses that are required in advance of any potential revenue. Our view is based on publicly available information and conversations with management. We note that our estimates and views are not without political, technical, geological, or financing risks typical for junior exploration and development companies. For Grounded Lithium Corp., these risks may include:

1. **Geopolitical/jurisdictional risks** – Some of these risks may be out of the control of the company, including royalty and taxation levels, land agreement liabilities, regulatory, environmental and permit requirements and timing, global trade wars and political instability. We note that Grounded Lithium has assets located in Saskatchewan, a top-tier mining jurisdiction with a long history of resource development and extraction activity.

2. **Technical risks** – This covers a wide variety of issues that we see associated with resource companies including exploration, development and exploitation strategies and methods. It would cover such issues as accuracy of geological interpretation, resource/reserve estimates and economic studies and inputs such as commodity prices, cost and grade fluctuations, assay reconciliation, metallurgical issues and exploration success. Our positive view relies on using existing technical data, recent exploration results and to a limited extent, expected positive results from future drilling. Future results may differ and negatively impact our assumptions. We note that extraction of lithium from brine using DLE technology has only seen limited commercial-scale production in Argentina and China, to our knowledge.

3. **Corporate risks** – These may include project execution by management, investor relations effectiveness, or market sentiment. Management pedigree and performance are paramount, and market sentiment may also be an issue. While we expect the current lithium market to remain robust in the near future, our estimates may be negatively impacted by a change in market sentiment.

4. **Financial risks** – These may occur at the project or corporate level, including variation in valuation parameters/metrics, commodity price or foreign exchange fluctuations, access to credit including debt, equity financing or potential for shareholder dilution.

As new information becomes available, we plan to refine our estimates and forecasts.

Appendix: Management, Directors, and Advisors

Gregg Smith – President & CEO, Director
Mr. Smith brings over 35 years of combined technical and managerial experience from the oil and gas industry. He served as a COO with both PetroBank and PetroBakken Resources. At Petrobank he led the Canadian Business unit's growth from 2,000 barreld of oil equivalent per day (BOEPD) to over 22,000 BOEPD. In 2009 he led the spinout of the business unit from Petrobank to form the new enterprise PetroBakken, which subsequently grew to over 50,000 BOEPD. Production growth evolved from aggressive drilling in resource plays following the strategic acquisitions of under-developed assets through transactions in excess of $4.5bn. Throughout his career Mr. Smith was fortunate to work in technical and executive roles across Western Canada, Offshore Louisiana & Texas, and international projects in the Middle East. In 2009 Mr. Smith received the honour of receiving "Saskatchewan Oilman of the Year" for the achievements of the multi-discipline team he led in optimizing drilling and completion techniques in the PetroBakken play providing a major increase in oil productivity per well. Mr. Smith also served in multiple roles on numerous corporate boards within the oil and gas industry.

Greg Phaneuf – VP Finance & CFO, Director
Mr. Phaneuf brings over 28 years of combined experience in finance and leadership disciplines. He was formerly co-founder and CFO of two upstream resource companies (Seven Generations Energy, Toro Oil & Gas), and served as CFO of two technology companies. Mr. Phaneuf has led both domestic and international corporate development divisions for small and large enterprises with operations in North America, China, Latin America and the Middle East. Most notably, he was the SVP Corporate Development for Ivanhoe Energy. He was also the Treasurer and part of the deal team for Western Oil Sands' $7 billion corporate divestiture to Marathon Oil. Over his career, Mr. Phaneuf has led or assisted in financings in excess of C$2 billion and was involved in M&A transactions, inclusive of the Western Oil Sands' divestiture, in excess of C$7.5 billion. His areas of expertise include corporate finance, M&A, modeling, capital markets, financial reporting and strategic planning.

Dale Shipman – VP Operations
Mr. Shipman brings over 30 years of progressive experience in technical leadership and managerial experience in the oil and gas industry, with extensive knowledge of diverse reservoirs across the Western Canadian Sedimentary Basin. His background features a broad spectrum of skillsets including exploitation, production, reservoir, operations, economics and project management. Mr. Shipman most recently built his skills working with Ridgeback Resources, NAL Resources, Alberta Clipper Energy, Ember Resources, Husky Energy and Numac Energy. In more recent years he led teams developing light oil resource plays in the Cardium and Montney zones as well as liquids-rich gas in the Spirit River play. Under Mr. Shipman's leadership, these plays achieved 30,000 BOEPD, while managing annual capital budgets up to $500 million. While leading PetroBakken's Cardium team the production grew from 5,000 to 20,000 BOEPD over a 4 year period. Dale is a member of The Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS).

Geoff Speers – VP Exploration
Mr. Speers brings over 15 years of combined technical experience in the oil and gas industry. He has successfully executed multiple exploration and development drilling/completion programs targeting conventional and unconventional reservoirs including Shale Oil/Gas, Steam-Assisted Gravity Drainage (SAGD), and Coalbed Methane (CBM). Mr. Speers initiated and managed the development plans for over $1.0B of investment in the drilling of over 300 wellbores including 150+ horizontal multi-stage stimulated wellbores across the Western Canadian Sedimentary Basin while serving as Senior Geologist at Pengrowth Energy Corporation. He has also served as a principle geologic advisor on multiple corporate A&D initiatives resulting in over $3.0B of successful corporate acquisitions by Pengrowth. Mr. Speers holds a B.Sc honours degree in addition to being a registered Professional Geologist with APEGA and is a Certified Petroleum Data Analyst registered with the PPDM. Geoff is a member of The Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS). Mr. Speers provides volunteer leadership with his professional organization the Canadian Society of Petroleum Geologists (CSPG).

Wayne Gaskin – VP Geophysics & IT
Mr. Gaskin brings over 27 years of combined expertise in data analysis for mining and petroleum exploration and development. He has provided technical support for exploration and development plays in South America and Canada. He was part of a team effort for the early adoption and development of horizontal drilling and multistage fracture technology (Montney). Mr. Gaskin has provided geophysical drilling support for 300+ wells with 97% success rate and 30 MMBOE of reserves. His areas of expertise include the integration of geological, geophysical, and engineering, technology. Companies of note include Potash Corporation of Saskatchewan (M.Sc), Veritas Seismic, Numac Energy, Hunt Oil Company of Canada, Advantage Oil and Gas, Crew Energy and Enerplus. Mr Gaskin is a member of The Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS).

Lawrence Fisher – VP Land & Regulatory
Mr. Fisher brings considerable industry experience with respect to all aspects of land negotiation and administration, acquisition & divestiture mandates, government regulation and executive leadership. Mr. Fisher also taught land management and administration classes at the University of Calgary and Mount Royal University for 15 years, educating many of the land professionals and administrators working in the Western Canadian resource development industry today. Prior to joining the Company, Mr. Fisher was the Manager, Land & Business Development at Novus Energy (2017 to 2022) and Vice President, Land at Ridgeback Resources Inc. and it's predecessors (2010-2017), with his latter role highlighted by his negotiation and closing of greater than $1.5 billion of transactions. Mr. Fisher is a 27-year member of the Canadian Association of Land and Energy Professionals.

John Wright – Chairman & Director
In addition to his role at Grounded Lithium, Mr. Wright also serves as the Chairman of two other resource development companies in the oil and gas sector (Touchstone Exploration, Alvopetro Petroleum). He is the former CEO of Petrobank, Ridgeback and others. Mr. Wright is a Professional Engineer and a Chartered Financial Analyst. Mr. Wright also manages a private corporate finance advisory service firm since 2017.

Mark McMurray – Director
Mr. McMurray has over 35 years in the energy industry holding a variety of technical, executive, and strategic advisory roles. He was a technical specialist in subsurface reservoir architecture with Imperial Oil and Exxon Production Research Company prior to advising domestic and international clients in production optimization and corporate M&A. In 2003, Mr. McMurray catalyzed the managed buyout of a Calgary transaction advisory firm which was rebranded, built out and merged into the energy investment bank of RBC Capital Markets. While in the transaction advisory space, Mr. McMurray directed an extensive array of strategic asset and corporate situations deploying expertise and building executive relationships across North America. After retiring as Managing Director of RBC Rundle in 2014, he has engaged as an expert witness, and assumed independent board positions at a number of private businesses that have included Rifleshot Oil Corp, Sproule, and Sitka Exploration. Mr. McMurray has also held volunteer board roles at Calgary Opera, the Petroleum A&D Association, the Canadian Energy Executive Association, and the Southern Alberta Art Gallery.

Dave Antony – Director
Over 30 years' experience in assisting companies in structuring transactions, accessing capital, and corporate governance. Extensive experience as a director and officer of numerous companies in many industries, including the resource industry. Was involved with the TSXV as the Chairman of the Alberta Local Advisory Committee for 7 years and as a Member of the National Advisory Committee for 5 years. Obtained his Bachelor of Management from the University of Lethbridge and is a past member of the Institute of Chartered Accountants of Alberta.

Brian Bidyk – Advisor
Mr. Bidyk is a partner in McCarthy Tetrault's Business Law Group and Energy Group, located in the firm's Calgary office. His practice encompasses a variety of corporate/commercial matters, with a specialization in M&A and divestitures in the oil and gas, electricity and renewable power industries. Mr. Bidyk is often called upon to advise major energy and project developers and producers in respect of mergers, acquisitions, divestitures, as well as the development and construction of projects.

Gurpreet Sawhney – Advisor
Mr. Sawhney is a reservoir evaluation specialist with 30 years of resource industry experience. He has deployed reservoir modelling technology for maximum enhanced oil recovery (EOR) both domestically and internationally.

Dave Allen – Advisor
Mr. Allen is a geologist with over 35 years experience in senior leadership roles across broad business functions. Dave has extensive experience working with diverse teams to build, characterize, and optimize drilling prospect inventories for use in guiding corporate asset acquisition, disposition, and capital programming activities. He currently serves as VP Exploration for North American Helium. Prior to this, he served as VP Exploration for Grounded Lithium and Pengrowth Energy, and VP Geoscience for Grafton Asset Management, Pipestone Energy, and Pipestone Oil.

Koby Kushner | Mining Analyst
Alina Islam | Senior Research Associate
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Disclosure Statement
Updated September 28, 2022

Recommendation / Target Change			Red Cloud Securities has this percentage of its universe assigned as the following:	
Date	**Rating**	**Target**	**Status**	**%**
2022-03-03	NA	NA	BUY	70%
			BUY (S)	24%
			HOLD	0%
			TENDER	1%
			NA	2%
			UNDER REVIEW	2%

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Company Specific Disclosure Details

Company Name	Ticker Symbol	Disclosures
Grounded Lithium Corp.	TSXV:GRD	3,4

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2. The issuer paid for or reimbursed the analyst for a portion or all of the travel expense associated with a visit.
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- Not Rated or NA – currently restricted from publishing, or we do not yet have a rating
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Koby Kushner, P.Eng., CFA | Mining Analyst
research@redcloudsecurities.com

HeliosX Lithium & Technologies Corp. (TSXV:HX)

A Compelling Call Option on Direct Lithium Extraction

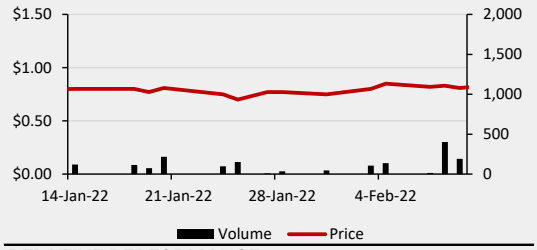
Initiating Coverage
September 29, 2022

(Currency is C$ unless noted otherwise)

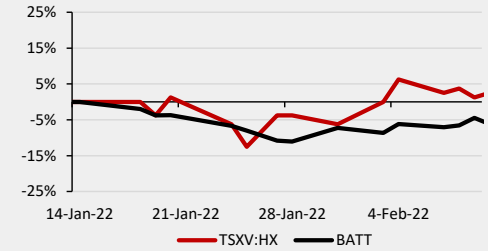
Closing Price (C$/sh)	$0.70
Rating	BUY (S)
Target (C$/sh)	NA
Return to Target	NA
52 Week Low / High (C$/sh)	$0.42 / $1.18

CAPITALIZATION	Basic	Diluted
Shares Outstanding (M)	36.2	49.7
Market Capitalization (C$M)		$25.4
Enterprise Value (C$M)		$24.0
Cash (C$M)		$1.4
Total Debt (C$M)		$0.0

STOCK CHART



RELATIVE PERFORMANCE



RELATIVE VALUATION	EV (C$M)
HeliosX Lithium & Technologies Corp.	$24.0
Peers (including resource-stage)*	$235.0
Peers (pre-resource only)*	$25.6

** S&P Cap IQ Pro*

MAJOR SHAREHOLDERS

Management & Insiders (13.66%)

DISCLOSURE CODE:

(Please refer to the disclosures listed on the back page)

Source: RCS, Company Information, S&P Capital IQ

Company Description

HeliosX is an integrated lithium exploration company, incorporating the latest in direct lithium extraction (DLE) technologies, to unlock potential commercial opportunities in Alberta (Canada), Nevada (USA) and Jujuy (Argentina). The company holds over 560,000 lithium brine acres across three prospective lithium jurisdictions, providing potential exposure to multiple lithium brine play types. The company has selected specific DLE technologies which it believes will maximize potential lithium opportunities in each operational jurisdiction and continues to move forward with technical modeling and information gathering to better delineate the prospective lithium resources.

We are initiating coverage on HeliosX Lithium & Technologies Corp. (TSXV:HX) with a BUY (S) rating and no target price. HeliosX is advancing a suite of Li-brine projects in producing and emerging lithium districts (Argentina, Nevada, and Alberta), and has partnered with multiple Direct Lithium Extraction (DLE) providers to help it do so in an environmentally friendly and cost-efficient manner. The technically savvy team is taking a top-down approach to development; starting with determining the viability of commercializing each brine asset and working backwards to resource definition. **With a portfolio of high-quality assets and the right team and partners in place to fast-track development, we believe HeliosX is well positioned to deliver on its near-term catalysts and delineate a significant Li-brine resource base throughout the Americas.**

- **Acreage across the Americas.** HeliosX's projects span >560,000 acres in Alberta (Fox Creek), Nevada (Teels Marsh and Alkali Spring), and Argentina (Guayatoyoc). Alberta is an emerging Li hub, while Nevada and Argentina are amongst the few Li-producing jurisdictions in the world. This provides HeliosX with plenty of ground upon which to delineate Li-brine resources and built-in geopolitical diversification.
- **Potential re-rating upon resource delineation.** Fox Creek is surrounded by known Li-brine occurrences, and several regional developers have defined exceptionally large resources in the same aquifers that HeliosX is targeting. At Guayatoyoc, high-grades have been sampled at surface, and another operator has already defined a nearby resource on the same salar. A maiden resource is expected by year-end.
- **Attracting the right partners.** Brine chemistries vary by project, so HeliosX partnered with three different DLE technology providers: Lilac Solutions, Litus Energy, and Koch Separation – with plans in place for pilot/demo testing in 2023. DLE partners aside, HeliosX's Guayatoyoc project is being advanced as a joint shareholder with Litica – a subsidiary of leading Argentinian oil and gas producer, Pluspetrol.
- **Li extraction optionality.** HeliosX still has evaporation to fall back on. Evaporation works best in hot, arid environments, making HeliosX's projects in Nevada and Argentina potential suiters. Notably, Guayatoyoc benefits from low impurity levels, and management has already run the economics with evaporation in mind.
- **A team with the right know-how.** CEO Christopher Brown is a reservoir engineer by trade with experience in bringing projects to commercialization in Alberta's oilfields.

We are initiating coverage with a BUY (S) rating. Resource definition and project/DLE de-risking could lead to a re-rating. **Upcoming catalysts:** 1) Guayatoyoc sampling results and maiden resource (H2/22), 2) Drilling across all projects (2023), 3) DLE demo/pilot testing (2023), 4) Potential acquisitions. **Lithium exploration and extraction are inherently risky** and HeliosX is subject to various geopolitical, technical, corporate, or financial risks.

Koby Kushner, P.Eng., CFA | Mining Analyst

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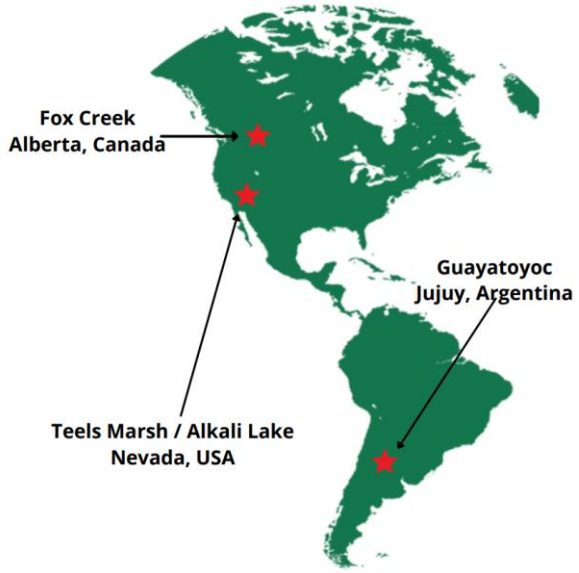
Investment Thesis

Focused on developing lithium brines across the Americas. HeliosX is a relatively new lithium-brine player, having completed its RTO listing in January 2022 via merger with Dajin Lithium Corp. The amalgamation brought together >560,000 acres of brine rights across Argentina, Nevada, and Alberta, along with a revamped management team with a track record of commercialization. The company's assets have attracted key partnerships with major players, including Pluspetrol, a leading oil and gas company in South America, and several Direct Lithium Extraction (DLE) technology providers, including Lilac Solutions, Koch Separation Solutions, and Litus Energy & Environmental Solutions. With ~$7.3M in the bank (pending closing the ongoing financing), HeliosX is well financed to de-risk its asset base in 2022 through exploration, reservoir modelling, and resource definition, followed by drilling and DLE test programs in 2023. **In our view, HeliosX has the right ingredients in place that make for a compelling lithium story: quality assets with nearby infrastructure and strong resource potential, a highly technical management team with the expertise needed for commercializing liquid resources, and an attractive valuation for investors to get in early ahead of major catalysts materializing amidst a well-heated Li market.**

Over 560,000 acres of Li-brine rights across the Americas

Figure 1: Locations of HeliosX's projects across the Americas



Source: Company Reports

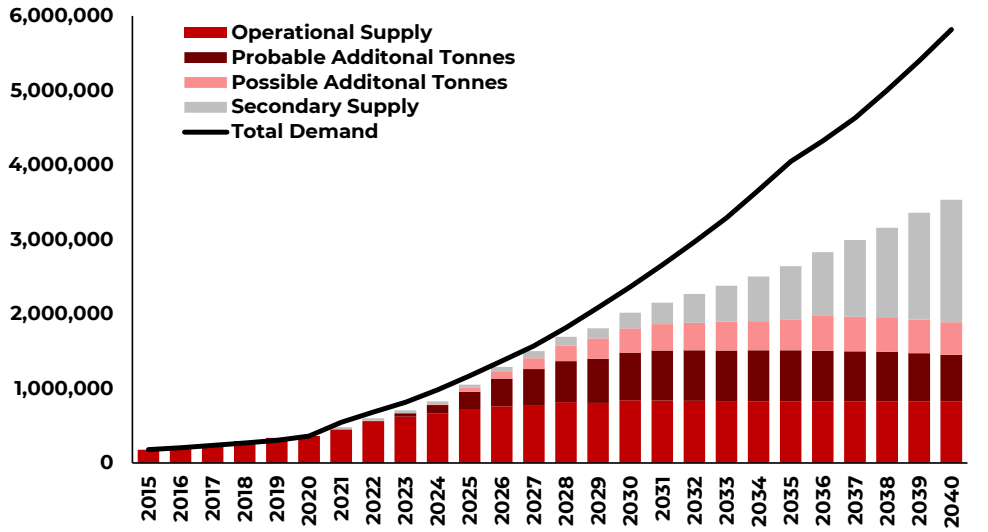
A favourable macro and geopolitical backdrop for lithium

The world needs more lithium, and DLE may be the answer. According to the USGS, just four mining operations in Australia, two brine operations in each Argentina and Chile, and two brine and one mining operation in China account for the majority of global Li production – which puts lithium at risk of global supply chain disruptions. Governments across the globe have taken note, with lithium being deemed a critical mineral in several countries, including Canada and the USA. The recent Canadian federal budget (**read more**) included a proposal for up to $3.8B in support of developing a local critical mineral supply chain. Similarly in the US, the Biden Administration signed an executive order pertaining to the development of its local supply chains, and later invoked the Defense Production Act with the goal of stimulating domestic production of critical minerals. Despite the push to increase production, the fact remains that the

global lithium market is currently in deficit, and this deficit is expected to worsen over the coming years on the back of increasing demand for EVs and energy storage. In order to meet 2030 demand, the world would need to come up with ~5x the 2021 lithium supply levels. Production rates and scale-up of hard-rock mines and traditional brine projects tend to be limited by the geometry of the orebody and evaporation rates/pond footprint, respectively. With DLE, we believe production would likely be more of a function of capital investment – i.e. scaling up a DLE brine operation may involve increasing capacity and/or number of DLE facilities, concurrent with increasing the number of production wells. **It is our view that emerging technologies, such as DLE, will be required to help bridge the widening lithium supply-demand gap.**

DLE has potential to make previously uneconomic brines become economic

Figure 2: Lithium supply and demand projections (tonnes LCE)



Source: Benchmark Mineral Intelligence

DLE is not a "one size fits all" solution, and HeliosX knows it

A bespoke approach to DLE. Faster scale-up aside, DLE brings several other benefits, with potential for improved project economics (through lower costs, higher and quicker recoveries, more effective impurity removal), and a smaller environmental footprint (no large pits or evaporation ponds required, minimal freshwater usage). Recognizing these benefits, several DLE technology providers have emerged over the last decade, each with their own proprietary DLE solution. HeliosX is not in the business of creating its own DLE technology – rather, it has chosen to partner with existing DLE providers. Further, DLE is not a "one size fits all" solution; each technology's performance may vary by brine chemistry. Management is aware of this, hence why they have chosen to partner with different DLE providers that best suit each of its projects. In Argentina, where HeliosX holds 49% of the shares of a partnership company with Litica for the development of its Guayatoyoc project, the company has engaged with Koch Separation Solutions and Craig Brown, advisor to DLE developer Standard Lithium (TSXV:SLI, Not Rated), to develop the next generation Lionex DLE process. In addition, HeliosX has engaged Lilac Solutions – one of the first pure-play DLE providers, backed by Bill Gates-led Breakthrough Energy Ventures, and is the technology partner of choice for brine developer Lake Resources (ASX:LKE, BUY, A$3.15 target, David A. Talbot). The coordination with Lilac could provide HeliosX with access to the DLE technology needed to tap into its 100%-owned Nevada assets, Alkali Spring and Teels Marsh. Meanwhile, at HeliosX's 100%-owned Fox Creek project in

Quality partnerships in place

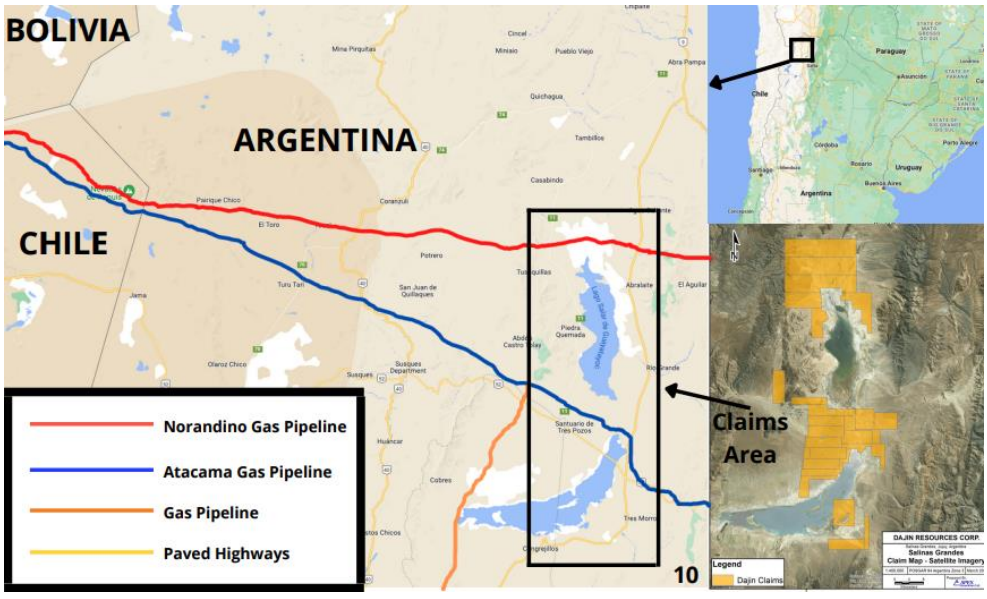
Alberta, the company engaged with Litus Energy & Environmental Solutions – developer of a DLE sorbent material tailor-made for western Canadian petrobrines.

Argentina is a well-established lithium producer

The right real estate for developing lithium brines. Guayatoyoc is favourably located in Argentina, the fourth biggest Li producer globally, in the heart of the Lithium Triangle, host to most of the world's Li reserves. HeliosX's claims are located ~60km east of the Cauchari and Olaroz salars, where major Li-brine projects are being developed by Ganfeng Lithium (SHE:002460, Not Rated), Lithium Americas (TSX:LAC, Not Rated) and produced by Allkem (TSX:AKE, Not Rated). The project has key infrastructure in place to support future commercial operations, including natural gas pipelines, highway access, and proximity to railway and electrical power. In Nevada, the road-accessible Teels Marsh and Alkali Spring projects are in the same neighbourhood as Albemarle's (NYSE:ALB, Not Rated) Silver Peak Li-brine project, which has been producing since 1966 and is currently the USA's only domestic source of lithium. We also note that Nevada is consistently ranked amongst the top jurisdictions for mining investment in the Fraser Institute's Annual Survey of Mining Companies and is a growing hub for battery end-users. While Alberta does not currently produce lithium, we have seen a record increase in Li-brine resources being delineated in the province's oilfields in 2022, with three companies alone now posting combined resources of ~49.4 Mt LCE. Decades of oil and gas development has brought skilled labour, paved road networks, powerlines, gas pipelines, and thousands of existing oil and gas wells to the Fox Creek project area. The province appears supportive of breaking into lithium, having passed Bill 82, which places lithium development under the same regulatory body as its successful oil and gas industry. **We believe having multiple projects, each with varying brine chemistries, across three lithium-friendly jurisdictions, provides HeliosX with built-in risk diversification.**

Nevada is a top-ranked mining jurisdiction and is currently the USA's only source of domestic lithium production

Figure 3: Guayatoyoc project location, showing nearby infrastructure



Source: Company Reports

Alberta is an emerging lithium hub

HeliosX has resource potential. We are particularly bullish on the resource potential in Alberta and Argentina. In Alberta, the company has ~315,000 acres surrounded by known Li-brine occurrences, with the Fox Creek area

showing the largest concentration of high-lithium formation water values in the province, up to 140 mg/L Li. Nearby, several other Li-brine explorers have delineated exceptionally large resources in the same aquifers that HeliosX is targeting. With heaps of historical data available from the oil and gas sector, these regional explorers were able to delineate multimillion-tonne LCE resources without the need for drilling new wells. Meanwhile in Argentina, seismic data indicates potential for prospective brine reservoirs up to ~1.8km deep at the Guayatoyoc Basin. The project comprises two salars, with potential to connect subsurface. The southern salar (Salinas Grandes) has seen the bulk of historical exploration, with 25 brine surface samples returning 281-1,353 mg/L Li, with only two samples returning <300 mg/L Li (a commonly used resource cut-off grade for evaporation brines in the region). Other nearby explorers have similarly delineated resources in the area; in fact, at least one resource of ~239kt LCE at 795 mg/L Li has been delineated in the same salar that HeliosX is targeting. We think more work is needed in Nevada to better gauge the resource potential at Teels Marsh and Alkali Spring, however, results thus far have been encouraging, with brine samples at Teels Marsh returning up to 79 mg/L Li – in line with the reserve grade (84 mg/L Li) at Albemarle's (NYSE:ALB, Not Rated) nearby Silver Peak Li-brine operation. **A lack of a resource may explain why HeliosX trades at a discount to its peers, and so we suspect a re-rating may be in order upon delivery of a maiden resource.** The figure below shows hypothetical NAVPS estimates for HeliosX based on an in-situ valuation approach (i.e. applying EV/t LCE multiples to resources). We expect HeliosX may fetch different multiples depending on where its resources are delineated; notably, South American brine developers tend to trade at higher multiples than their western Canadian counterparts (see page 7).

Resource delineation may trigger a re-rating in HX's share price

Figure 4: Potential in-situ valuation showing hypothetical NAVPS estimates (calculated pro forma of ongoing financing)

		In-Situ Multiple (US$EV/t LCE)							
		US$ 15	US$ 30	US$ 45	US$ 60	US$ 75	US$ 90	US$ 105	US$ 120
Mt LCE	0.5	C$ 0.40	C$ 0.63	C$ 0.86	C$ 1.09	C$ 1.32	C$ 1.55	C$ 1.78	C$ 2.01
	1	C$ 0.63	C$ 1.09	C$ 1.55	C$ 2.01	C$ 2.47	C$ 2.93	C$ 3.39	C$ 3.85
	2	C$ 1.09	C$ 2.01	C$ 2.93	C$ 3.85	C$ 4.77	C$ 5.69	C$ 6.62	C$ 7.54
	4	C$ 2.01	C$ 3.85	C$ 5.69	C$ 7.54	C$ 9.38	C$ 11.22	C$ 13.06	C$ 14.90
	8	C$ 3.85	C$ 7.54	C$ 11.22	C$ 14.90	C$ 18.59	C$ 22.27	C$ 25.96	C$ 29.64

**Hypothetical NAVPS calculated as follows: ((Resource x Multiple / 0.75 FX) + C$7.3M Cash) / 43.43 Shares*

Source: RCS

DLE or not, HeliosX has optionality. While several companies are making great strides to advance DLE technology, using it may not necessarily be required for HeliosX to commercialize. We recognize that modern DLE technologies are still in their early stages, and that scaling up from laboratory tests, to demonstration plants, to commercial scale operations, comes with risks that are difficult to qualify. Fortunately, HeliosX may still have conventional methods to fall back on, particularly in Argentina and Nevada, where the hot, arid climate may support high evaporation rates. Because of the weather, the high-grade nature (see prior paragraph), and low impurity levels (low Mg/Li ratios), Salinas Grandes was originally evaluated as a conventional evaporation project. HeliosX ran the numbers on a 5,000 tpa and 20,000 tpa LCE evaporation facility and reported positive internal economic estimates, with a pre-tax $NPV_{5\%}$ of ~US$3.6B and CapEx of US$328M for the 20,000 tpa scenario (100% basis) with a small operational footprint spanning <1% of the land package. **We think of HeliosX as a call**

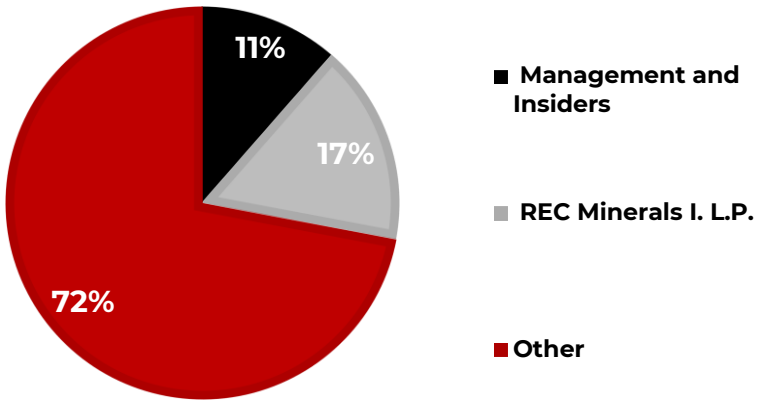
The Salinas Grandes project may be amenable to conventional evaporation methods

option on DLE: its production potential is backstopped by conventional extraction methods, but should it find success with DLE, the upside may be vast. We believe this type of optionality is a unique trait amongst most of HeliosX's DLE peers – several of which have brines that are less likely to be amenable to traditional evaporation methods.

A highly technical team with real operational experience

Management knows their stuff. We highlight that Li-brine extraction shares parallels to oil and gas, and having operational experience in bringing liquid resources to commercialization is paramount. At the helm is CEO and Director Christopher Brown – a seasoned executive with over 25 years of experience in engineering, operations, and capital markets. A reservoir engineer by trade, Mr. Brown went on to work as an equity research analyst before founding the Helios Group of companies. With Helios and its First Nation partners, he started one of the largest tailings operating companies in Alberta's oilsands, with >70 employees. He has a strong ability to attract capital, as evidenced by HeliosX's ongoing $6.12M raise which is expected to bring in a reputable institutional investor at a premium pricing (**read more**). The rest of the team is comprised of those with diversified experience across the finance, mining, and oil and gas sectors. We are also encouraged to see management and insiders holding a healthy level of company stock (~14% pre-financing, ~11% post-financing).

Figure 5: HeliosX ownership structure (shown pro forma of ongoing financing)



Source: Company Reports

Catalysts

Exploration results and ongoing project de-risking. The remainder of 2022 is expected to focus on de-risking HeliosX's asset base through exploration and reservoir modelling, along with planning for DLE pilot and/or demonstration programs. In Argentina, the company is undertaking indigenous consultations and environmental data collection, with surface sampling and geophysics to follow. Drilling of deep reservoir target wells and initial DLE pilot facilities (~1 tpd LCE capacity) are planned for 2023. In Nevada, HeliosX has received permits for drilling at Teels Marsh, and the company is now looking to secure drill rigs. In Alberta, the company plans to leverage the available brine data to conduct a resource review and determine potential well locations for drilling in 2023. In conjunction, HeliosX is conducting internal prefeasibility work on a DLE facility using Litus' technology, with a potential field demonstration plant to follow. In the background, management is conducting a global review of Li-brine opportunities, which may lead to additional project acquisitions.

A top-down approach to development: starting from proof-of-concept and working backwards to resource definition

Upcoming catalysts for HeliosX include:

1. Guayatoyoc sampling results and reservoir model (near-term)
2. Guayatoyoc maiden resource (H2/22)
3. Drilling across all projects (2023)
4. DLE demo/pilot testing in Alberta and Argentina (2023)
5. Fox Creek potential maiden resource (2023)
6. Potential acquisitions (ongoing)

Financial Analysis

We are initiating coverage with a BUY (S) rating and no target price. Considering HeliosX's low enterprise value, we believe the market has yet to recognize the resource potential across its projects (see page 4). With limited publicly available drill data and no resources upon which to base a discounted cash flow or in-situ valuation upon, we believe HeliosX is too early-stage to warrant a price target at this time. We do not put too much weight on HeliosX's preliminary economic modeling work for Guayatoyoc (see page 12), however, we are also hesitant to dismiss it given management's strong operational experience. While non-compliant by 43-101 standards, HeliosX's market capitalization represents <2% of the project's internally modeled pre-tax $NPV_{5\%}$ of ~US$1.8B (49% basis, 20,000 tpa LCE scenario). If HeliosX is even partially correct about the economic viability of one of its assets, then a significant re-rating may be in order.

Cashed up with ~C$7.3M in the bank

HeliosX has a clean balance sheet with no debt and ~$7.3M in the bank pending the close of its ongoing financing (**read more**), making it well funded to explore its brines, de-risk its DLE, and potentially acquire more ground. The company currently has 36.2M shares, ~3.4M options, and ~10.1M warrants outstanding on a pre-financing basis, and ~43.4M shares, ~3.4M options, and ~17.3M warrants outstanding on a post-financing basis.

Trading at a discount to peers

Room to re-rate. With a maiden resource on the horizon, we included more advanced, resource-stage DLE brine developers in HeliosX's peer group. On average, HeliosX trades at a relative discount, with an EV of ~$24M vs. peers at ~$235M. Controlling for pre-resource stage companies only, the discount persists, with pre-resource peers trading at an EV of ~$26M. To no surprise, resource-stage companies tend to trade at higher valuations, hence, we expect a re-rating may be in order upon delivery of a maiden resource. Amongst its peers, HeliosX is the only DLE company with Li-brine exposure in more than two countries, providing it with geopolitical diversification that in our view, should warrant a premium valuation. We also believe a premium should be warranted due to HeliosX's strong management and because of HeliosX's optionality regarding potential extraction methods.

Figure 6: Peer analysis – all peers are aiming to use, or have expressed interest in using, DLE technology

Company	Ticker	Price (C$/sh)	Shares (M)	Mkt. Cap C$M	Cash C$M	Debt C$M	EV C$M	Resources Mt LCE	Consensus P/NAV	US$EV/t LCE
HeliosX Lithium & Technologies Corp.	**TSXV:HX**	**$0.70**	**36**	**$25.4**	**$1.4**	**$0.0**	**$24.0**	**NA**	**NA**	**NA**
E3 Lithium Limited	TSXV:ETL	$2.26	64	$145	$14.7	$0.4	$131.2	24.3	0.16x	$4.0
Highwood Asset Management Ltd.	TSXV:HAM	$0.00	6	$0	$1.0	$0.0	-$1.0	18.1	NA	$0.0
Vulcan Energy Resources Limited	ASX:VUL	$6.67	143	$957	$236.2	$4.0	$724.4	15.9	0.40x	$34.3
LithiumBank Resources Corp.	TSXV:LBNK	$0.69	37	$25.7	$0.0	$0.0	$25.7	6.0	NA	$3.2
Lake Resources NL	ASX:LKE	$0.82	1389	$1,134	$65.4	$0.0	$1,068.4	4.4	0.41x	$182.1
Standard Lithium Ltd.	TSXV:SLI	$6.01	186	$1,120	$129.1	$0.4	$991.5	4.3	0.40x	$171.5
Alpha Lithium Corporation	TSX:ALLI	0.92	166	$152.3	$37.9	$0.0	$114.4	3.3	NA	$26.2
Grounded Lithium Corp.	TSXV:GRD	0.28	58	$16.3	$2.3	$0.0	$14.0	2.9	NA	$3.6
CleanTech Lithium Plc	AIM:CTL	0.61099	79	$48.3	$0.0	$0.0	$48.3	1.5	NA	$24.0
Lithium Chile Inc.	TSXV:LITH	0.55	197	$108.5	$43.1	$0.0	$65.4	1.4	NA	$34.5
Lithium South Development Corporatior	TSXV:LIS	$0.49	102	$49.5	$12.2	$0.0	$37.3	0.6	NA	$49.0
Pure Energy Minerals Limited	TSXV:PE	$0.58	33	$19	$0.3	$0.0	$18.9	0.2	NA	$65.0
EMP Metals Corp.	CNSX:EMPS	$0.45	70	$31.3	$1.5	$0.0	$29.9	0.0	NA	NA
Spey Resources Corp.	CNSX:SPEY	$0.23	93	$21.4	$0.3	$0.3	$21.4	0.0	NA	NA
Peer Avg. (all peers)							$235.0		0.34x	$49.8
Peer Avg. (pre-resource only)							$25.6		NA	NA
Median (all peers)							$42.8		0.40x	$30.2

**Peer financial metrics as of the latest financial statements; EV/t LCE based on attributable M&I+I resources, excludes any non-Li resources and by-products*

Source: Company Reports, S&P Capital IQ, RCS

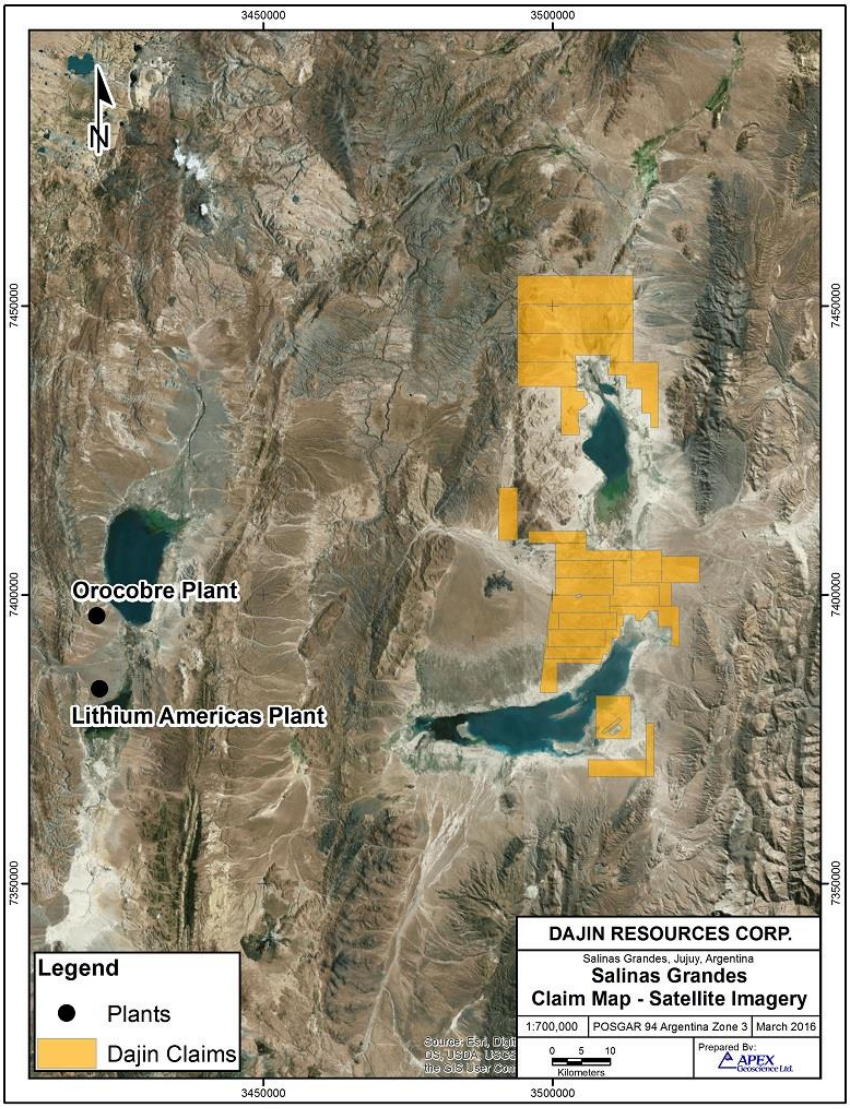
Asset Overview

Guayatoyoc Basin, Argentina

Located within the Argentinian "window of commercialization"

Located in Jujuy, Guayatoyoc comprises 25 concessions totaling ~230,000 acres, approximately 60km east of Lithium Americas' (TSX:LAC, Not Rated) Cauchari-Olaroz (~24.6 Mt LCE) and Allkem's (TSX:AKE, Not Rated) Olaroz (~16.2 Mt LCE) Li-brine projects, all within South America's renowned Lithium Triangle. The claims span two main salars, Guayatoyoc to the north and Salinas Grandes to the south, that are separated by an international highway connecting Argentina to the Chilean shipping port of Antofagasta (Figure 3). There is a separate project area on the south shore of Salinas Grandes, referred to as San Jose-Navidad. **The Guayatoyoc Basin is well within the Argentinian "window of commercialization" with access via paved highways and proximity to several local population centres, a railway, and ports. Of any prospective salars in the country, Guayatoyoc is closest to both natural gas and electrical power supplies, with a high-pressure natural gas pipeline transecting the property and a 345 kV transmission line ~60km south.**

Figure 7: Map of Guayatoyoc claims



Source: Company Reports

Ownership

The project is held under a 51/49 share structure with Litica Resources in an Argentinian registered company. Litica is a wholly owned subsidiary of leading private Argentinian oil and gas producer, Pluspetrol. The company is called Dajin Resources S.A., and Litica is the majority shareholder. An operating agreement with Litica is in place to conduct fieldwork under the joint oversight of HeliosX management.

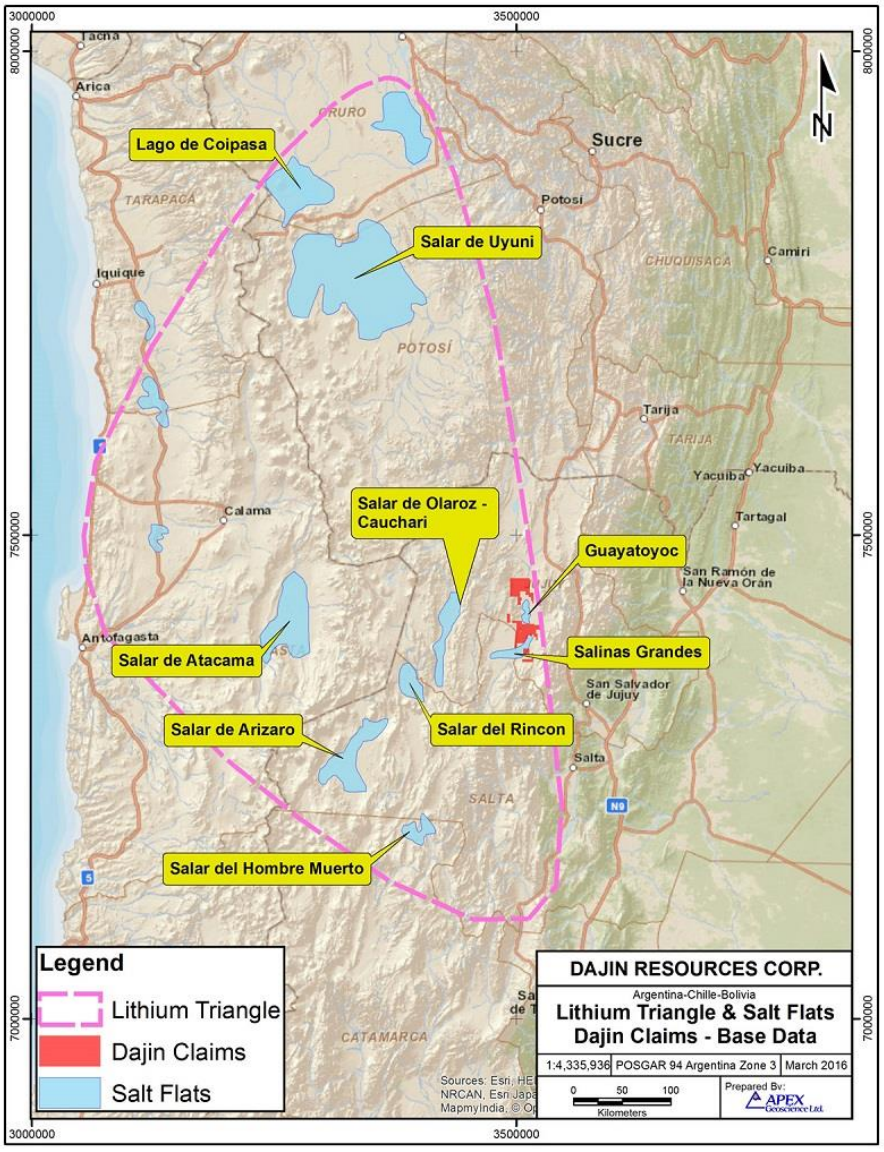
Being advanced with leading oil and gas producer, Pluspetrol

Exploration and Geology

Trending parallel to the axis of the Andes are a series of high elevation closed topographic basins that host salars (i.e. salt water lakes). Mineral enriched brines are believed to occur when water, which has leached lithium, potassium, and boron from the surrounding rock, becomes trapped and subsequently concentrated by evaporation. These salars within the Lithium Triangle are thought to host ~54% of global lithium reserves, with Salar de Atacama in Chile and Salar del Hombre Muerto in Argentina being the two biggest producers.

The Lithium Triangle hosts over half the world's Li reserves

Figure 8: Map of Lithium Triangle, showing renowned Li-bearing salars

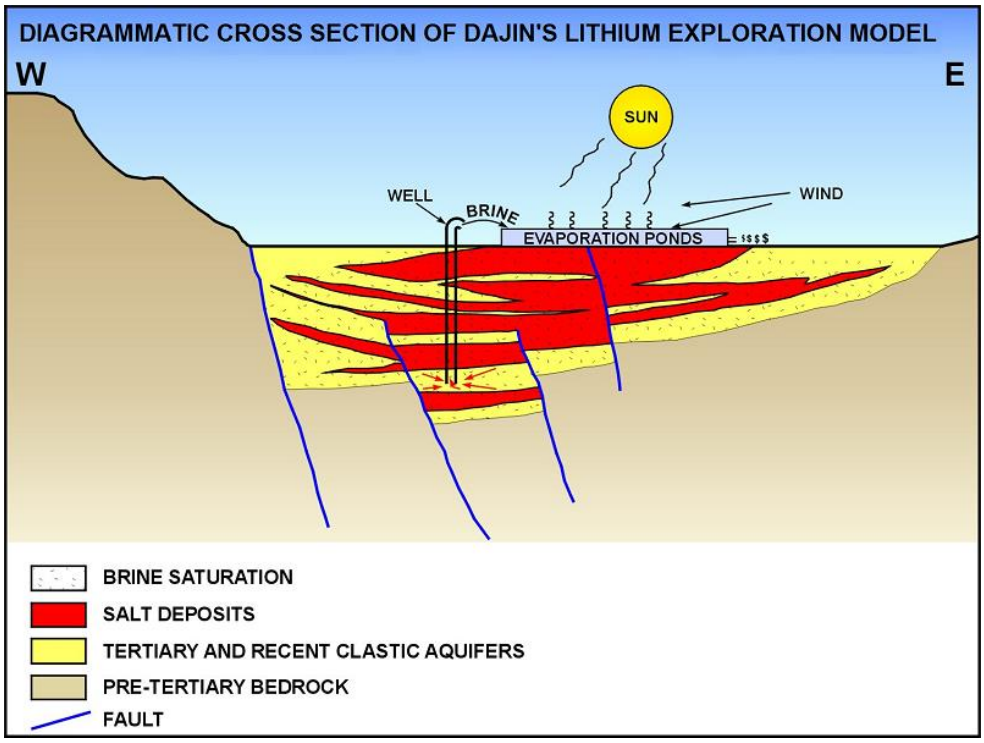


Source: Company Reports

Like other regional salars, the Guayatoyoc sedimentary basin runs deep (up to ~2.5km) and is prospective for lithium, potassium, and boron, although lithium has been the focus of recent exploration. The salars are contained in a closed Tertiary-aged sedimentary basin bounded by east-dipping faults. Seismic survey data indicates basin thicknesses up to ~1,800m with several interbedded salt layers of varying ages. It has been suggested that greater Li concentrations may be found in the older, deeper brines than the younger, near-surface brines due to the more extreme climatic conditions (i.e. warmer temperatures) present when the older salt deposits were precipitated. Anomalously high lithium concentrations in the near-surface brines are believed to potentially be due to recharge of the salar via seepage of paleo brines along the bounding faults.

Potential for higher grades at depth

Figure 9: Deposit model for Guayatoyoc Basin

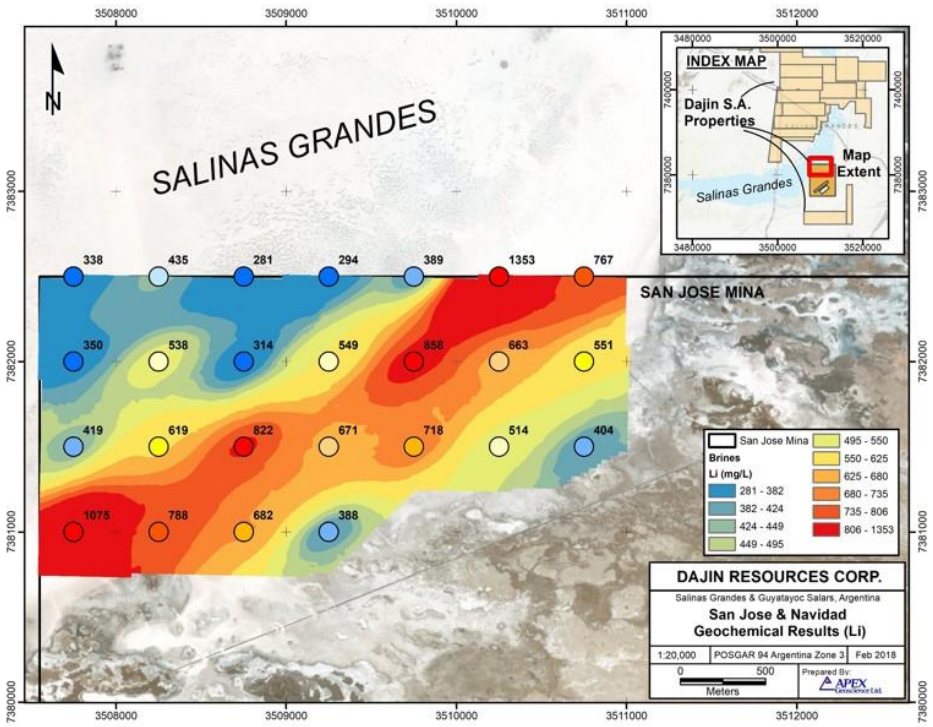


Source: Company Reports

The bulk of modern lithium exploration focused on southern portion of the Salinas Grandes salar at the San Jose-Navidad concessions. In 2017, 25 brine samples were collected from this area via auger drilling to a depth of ~2m. The samples returned Li concentrations ranging between 281-1,353 mg/L and averaged 591 mg/L, with most samples returning >500 mg/L and only two samples grading <300 mg/L (a commonly used cut-off grade for conventional evaporation projects).

Most samples returned grades well-above economic cut-off

Figure 10: Map over Salinas Grandes / San Jose, showing sampling results



Source: Company Reports

Another operator has defined a resource at Salinas Grandes

Other regional explorers have extensively explored both salars, including Orocobre, now known as Allkem (TSX:AKE, Not Rated). Orocobre has completed drilling and pit sampling on separate concessions contiguous to HeliosX/Pluspetrol. At Salinas Grandes, Orocobre reported some of the highest average Li and K concentrations from any sampling program undertaken in Argentina, with results up to 3,117 mg/L Li and 35,309 mg/L K. The near-surface brines at Guayatoyoc were interpreted as being more diluted, hence the lower sampling grades. In 2012, Orocobre released a maiden inferred resource for Salinas Grandes of **~239kt LCE grading 795 mg/L Li** to a shallow average depth of 13.3m with a specific yield of 4.1%. Both salars are characterized as having low Mg/Li ratios compared to other salars, which could translate to lower-cost processing and/or higher-quality Li concentrate products.

Figure 11: Comparisons of brine chemistries across South American salars

Salar	*Salinas Grandes*	*Guayatoyoc*	Atacama	Hombre Muerto	Rincon	Olaroz	Cauchari	Uyuni
Country	*Argentina*	*Argentina*	Chile	Argentina	Argentina	Argentina	Argentina	Bolivia
Operator	*Orocobre*	*Orocobre*	SQM	Livent	Rio Tinto	Orocobre	Lithium Americas	-
Li (mg/L)	*775*	*67*	1,835	744	397	796	618	424
K (mg/L)	*9,289*	*2,185*	22,626	7,404	7,513	6,600	5,127	8,719
Mg (mg/L)	*2,117*	*115*	11,741	1,020	3,419	2,289	1,770	7,872
Ca (mg/L)	*1,450*	*628*	379	636	494	416	401	557
B (mg/L)	*232*	*144*	783	420	331	822	1,360	242
Mg/Li ratio	*2.7*	*1.7*	6.4	1.4	8.6	2.9	2.9	18.6

**Data collected from Orocobre's 2010 Salinas Grandes-Guayatayoc technical report and may be outtated and/or not apply to HeliosX's concessions*

Source: Orocobre Ltd.

Preliminary Commercialization Plans – Evaporation

With the prospect of higher recoveries, improved economics, and a smaller environmental footprint, the project is now being contemplated as a DLE operation. However, it was previously evaluated as a traditional evaporation

brine opportunity. HeliosX has compiled all geological data to date and modelled two evaporation scenarios for Salinas Grandes: a 5,000 tpa LCE facility, and a 20,000 tpa LCE scale-up. While the study is internal and non-compliant by 43-101 standards, preliminary results show positive economics at prices of US$25,000/t LCE (Figure 12). While the CapEx/NPV$_{5\%}$ ratio is modest for both scenarios (<0.15), the 5,000 tpa LCE scenario has a more manageable CapEx, and could therefore represent a potential starter operation prior to being scaled up. Importantly, the preliminary study outlined a small operational footprint of 370 acres and 1,480 acres for each respective scenario.

Figure 12: Preliminary economics for evaporation at Salinas Grandes

Scenario (tpa LCE)		Yearly Gross CapEx (US$k) Year 1	Year 2	Year 3	Year 4	Total	Pre-tax NPV$_{5\%}$ (US$M)
5,000	Brine Extraction Wells	$225	$588	$4,652	$3,334	$8,799	**$887**
	Evaporation Ponds	-	$3,370	$12,336	$11,635	$27,341	
	Lithium Carbonate Plant	-	-	$9,987	$22,184	$32,171	
	Infrastructure & General	$1,126	$3,581	$10,255	$15,271	$30,233	
	Total	***$1,351***	***$7,539***	***$37,230***	***$52,424***	***$98,544***	
20,000	Brine Extraction Wells	$749	$1,959	$15,506	$11,114	$29,328	**$3,617**
	Evaporation Ponds	-	$11,234	$41,120	$38,783	$91,137	
	Lithium Carbonate Plant	-	-	$33,290	$73,946	$107,236	
	Infrastructure & General	$3,753	$11,938	$34,183	$50,903	$100,777	
	Total	***$4,502***	***$25,131***	***$124,099***	***$174,746***	***$328,478***	

**100% basis; management's preliminary estimates; totals are subject to rounding errors*

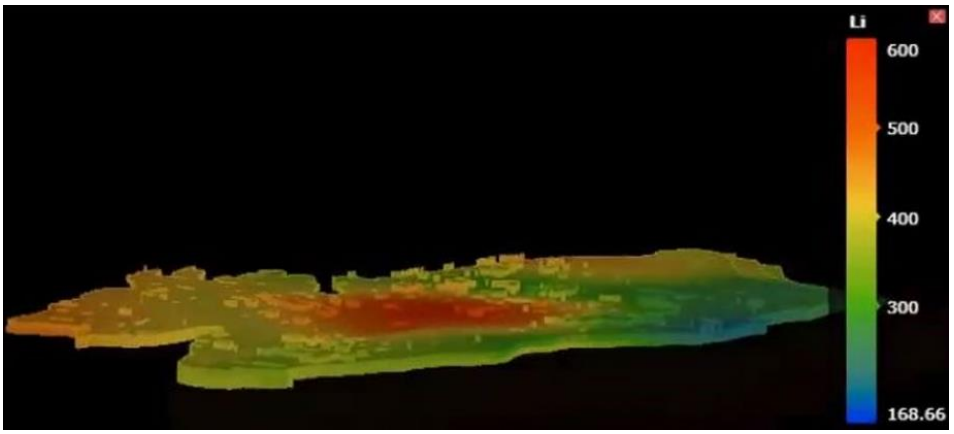
Source: Company Reports

Next Steps

HeliosX is working with Pluspetrol to analyze all geological data collected to better quantify the opportunity. The teams are currently evaluating the impact of near-surface freshwater on the Li-bearing brine reservoirs below using FEFLOW – a simulation tool for modelling groundwater flow. This work, combined with 3D geological modelling and additional sampling, is expected to provide a better indication of the grade distribution and potential operating parameters. Sampling, environmental data collection, and geophysics is underway, with results expected in H2/22. The program is expected to potentially define a maiden resource as well as reservoir targets for well drilling in 2023.

Working to defining a maiden resource

Figure 13: 3D geologic model of Salinas Grandes, showing Li concentrations



Source: Company Reports

Working with Koch Separation Solutions as a DLE partner

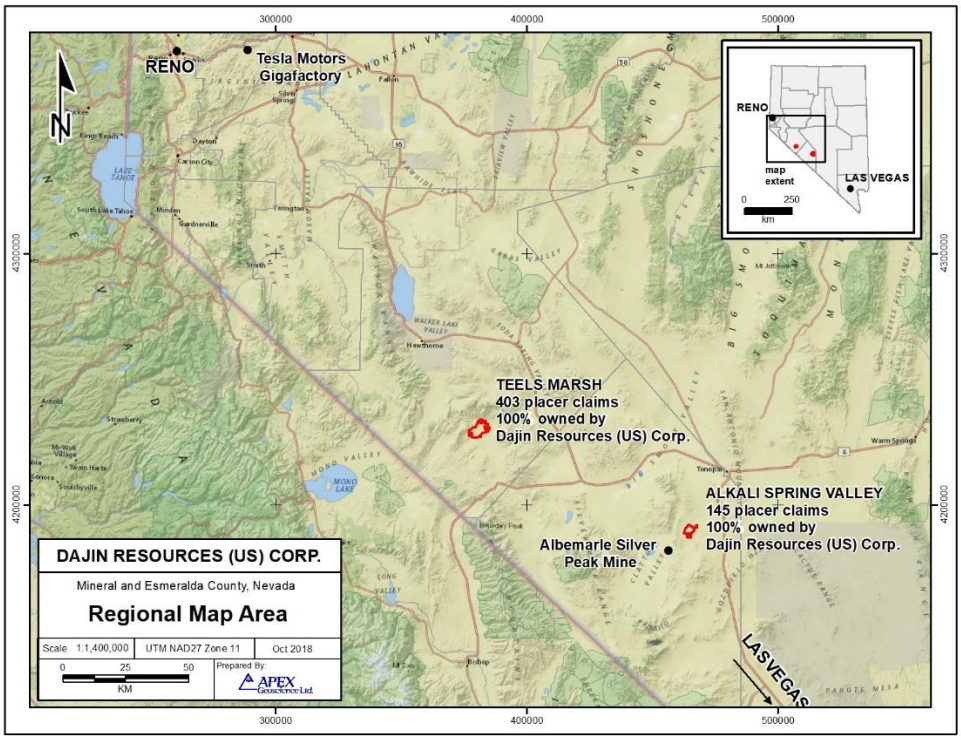
Concurrently, HeliosX is working with Koch Separation Solutions and Craig Brown, advisor to DLE developer Standard Lithium (TSXV:SLI, Not Rated), to develop the next generation Lionex DLE process for Guayatoyoc. Discussions are ongoing for mobilizing a Lionex DLE pilot facility to site in 2023 with production capacity of ~1 tpd LCE.

Teels Marsh and Alkali Spring, Nevada

The Teels Marsh and Alkali Spring projects are respectively located Mineral County and Esmeralda County, within proximity to Albemarle's Silver Peak Li-brine operation (~80km NW and ~12km NE of Silver Peak, respectively). Located in Clayton Valley, Silver Peak has been operating since 1966, and is currently the USA's only source of domestic Li production. Teels Marsh comprises 403 placer claims covering 7,914 acres, while Alkali Spring claims cover 2,780 acres.

Two projects near Silver Peak, Nevada

Figure 14: Nevada map showing Teels Marsh and Alkali Spring locations



Source: Company Reports

Teels Marsh is also accessible by a gravel road that runs off Highway 360 to the historic mining town of Marietta. Alkali Spring is similarly accessible via well-maintained gravel road off Highway 95 south from Tonopah, where powerlines cross the highway.

Both projects are road accessible

Ownership

HeliosX, as Dajin, acquired a 100% interest in Teels Marsh through staking in 2014. The following year, Dajin staked a 100% interest in the Alkali Spring claims.

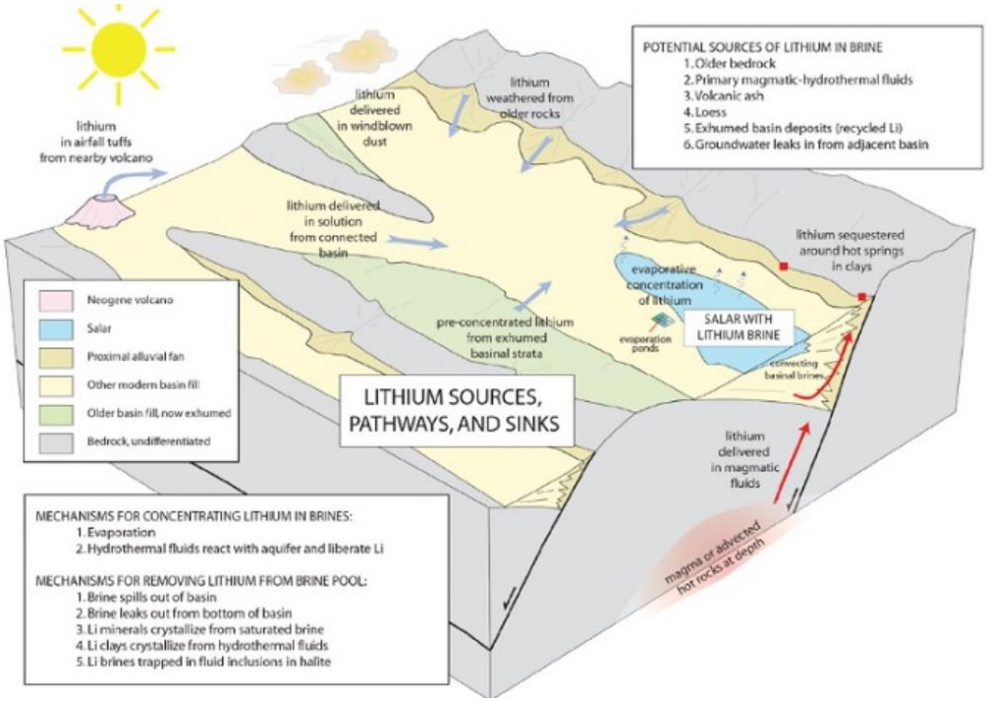
Exploration and Geology

Both Teels Marsh and Alkali Spring are believed to be classic, fault-bounded closed desert basins, akin to Clayton Valley, host of the Silver Peak brine operation. These basins lie within the Basin and Range Province and can extend multiple kilometres in depth. Compared to several of the halite-rich

"mature" basins in South America, the closed basins in Nevada are generally considered "immature," meaning that they occur at higher and wetter elevations and contain a mixture of clastic and evaporite sedimentary sequences. These sediments generally have higher porosity and permeability, which can make for more easily extractable brines. While wetter conditions may make for lower grade brines than that which is seen in South America, the lower grades may be offset by this superior deliverability. Further, it is theorized that higher-grade brines may be present at depth, as near-surface brines are occasionally diluted by periodic flooding.

Potential for superior deliverability

Figure 15: Deposit model for Nevada brine projects



Source: Company Reports

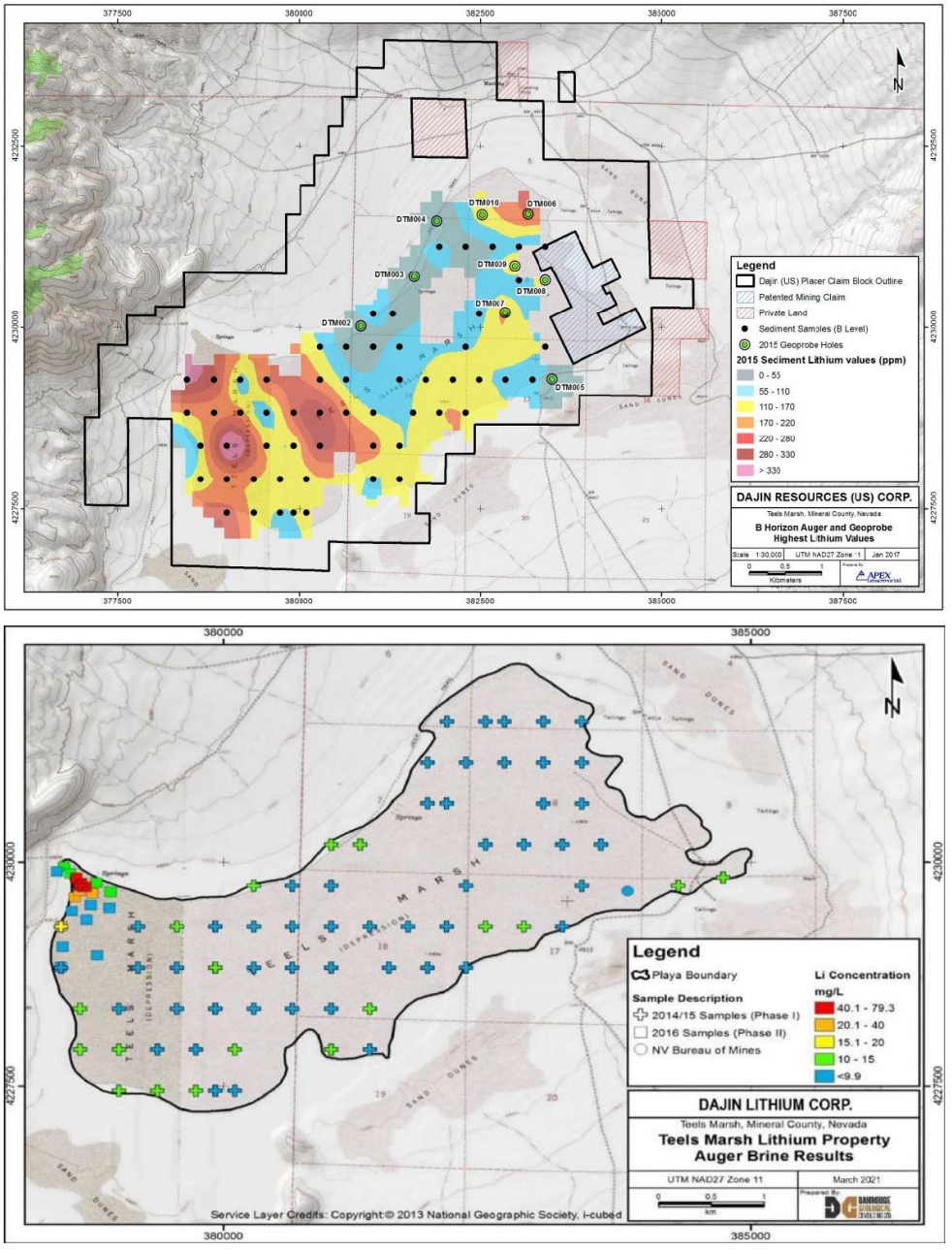
Lithium enrichment is believed to be associated with geothermal activity. Hot geothermal fluids are interpreted to have dissolved surrounding host rock, liberating boron, lithium, and other elements, which were then brought to surface over time, with the bounding faults serving as fluid pathways. The Alkali Hot Spring, an active geothermal system, is situated along the southern margin of the Alkali Lake basin. An active geothermal system has also been identified at the Teels Marsh basin.

Near-surface brine samples returned 79 mg/L Li

Mineral exploration in the Teels Marsh area dates back to the late-1800's, when borax was discovered and subsequently mined. Lithium was first evaluated in the late-1960's and again in the 1970's, with shallow auger holes and surface sediment sampling returning highly anomalous lithium concentrations. Modern lithium exploration at the project commenced in 2014 by HeliosX (as Dajin). Dajin conducted auger drilling and a detailed gravity survey, which respectively confirmed the presence of near-surface lithium and revealed basin depths of ~2.5km. Auger brine samples returned up to 79 mg/L Li with low magnesium concentrations (<5 mg/L), while auger sediments returned up to 740 ppm Li. Higher-grade near-surface samples were encountered towards the northwest portion of the playa. Additional sampling, including geoprobe drilling up to ~60m deep, and

geophysics (seismic surveys), led to a detailed structural interpretation upon which has been used to define drill targets.

Figure 16: Map showing Teels Marsh sampling gradients for sediments (top) and brines (bottom)



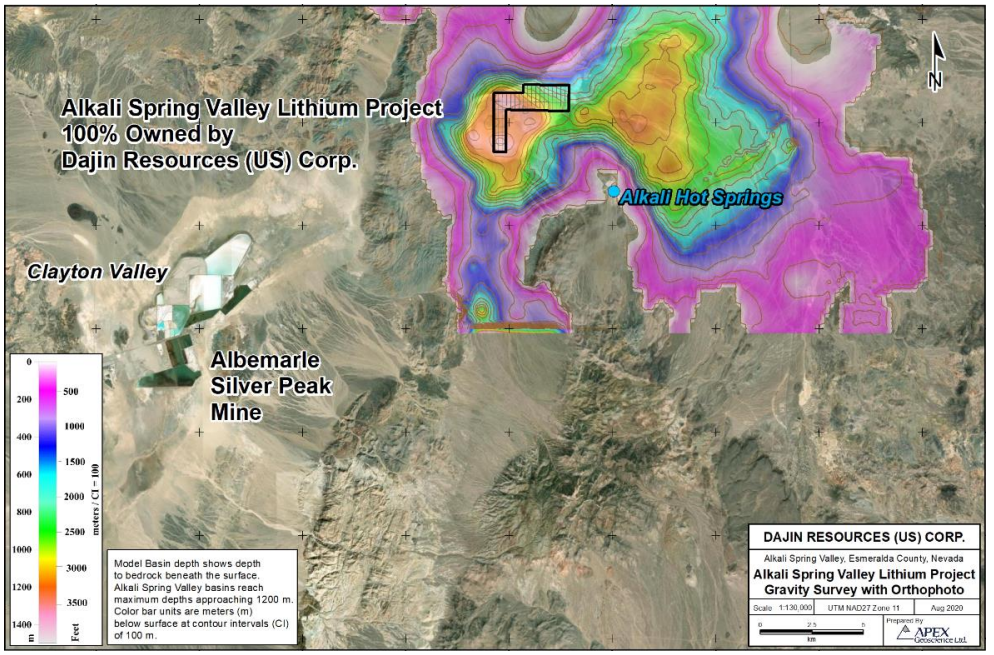
Source: Company Reports

Teels Marsh is drill ready

Comparatively, exploration at Alkali Spring has been limited, having only commenced after Dajin staked the property in 2015. A gravity survey was completed that year that identified two potential deep-seated basins underlying the property area: the main target is a circular basin, ~1.2km deep, and the second basin is ~3km eastwards, ~1-1.2km deep. The basins are separated by NW-SE trending shear zone. Sampling was also completed that year, including the collection of five surface grab samples that returned 91.7-382 ppm Li, and nine near-surface auger samples that returned 73.2-94.7 ppm Li. Brines have yet to be identified, though the project has yet to be drill tested at depth.

Geophysics identified two potential basins underlying the sediments

Figure 17: Map showing Alkali Spring claim area and gravity survey results



Source: Company Reports

Drilling in 2023

Next Steps

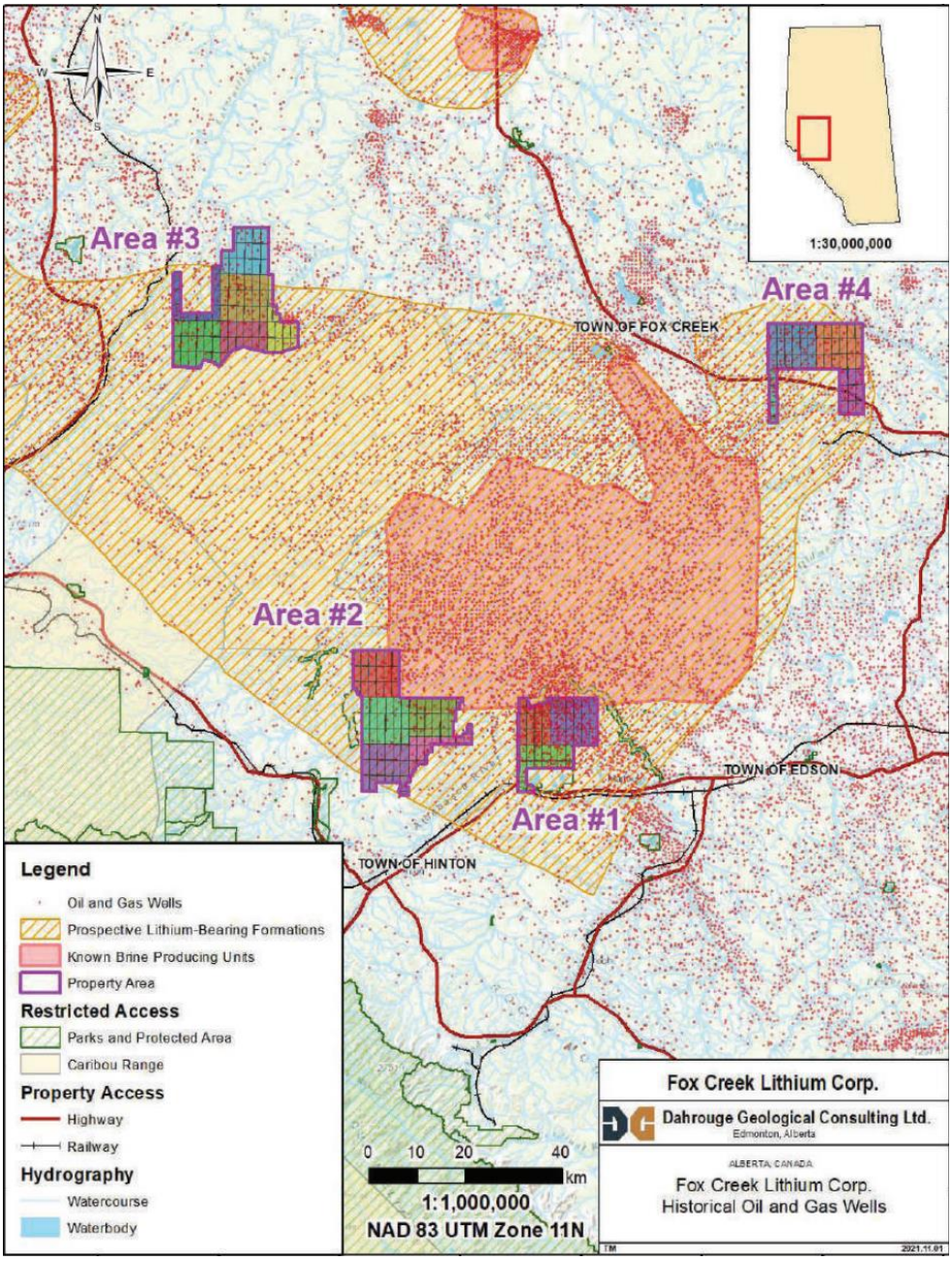
With geophysics and sampling completed, HeliosX is well-prepared to begin drilling Teels Marsh. The company has completed construction of access roads and two large drill pads, with the drill pads designed to support the drilling of four, large, production-diameter wells. Permits are in place, and water rights have been granted with approval to pump-test volumes up to 20 acre-feet per well. The company is actively reviewing potential drill rigs and contractors with the hopes of drilling in 2023. At Alkali Spring, HeliosX is in the process of selecting potential well target locations.

Fox Creek, Alberta

Located in western Alberta's oilfields is the Fox Creek project, which comprises ~315,000 acres of mineral rights spread across four individual permit areas. These permits are located ~220-350km NW of the provincial capital of Edmonton, and are proximal to the towns of Hinton, Grande Cache, and Fox Creek. Decades of oil and gas (O&G) development has brought plenty of plenty of infrastructure to the region, including highways, gravel roads, powerlines, railways, pipelines, and thousands of existing O&G wells. In Alberta, HeliosX is targeting Li-bearing brines hosted in carbonate reef complexes at depths below ~1.9km, as opposed to self-contained salars (as is the case in Nevada and Argentina).

Fox Creek is located in Alberta's oilfields

Figure 18: Fox Creek claim map showing nearby infrastructure and O&G wells



Source: Company Reports

Ownership

The four property areas of contiguous metallic permits were staked in June 2021 on behalf of a wholly-owned subsidiary of HeliosX, that holds a 100% interest in the project. The permit area is situated entirely on crown land.

Located entirely on crown land

Exploration and Geology

No exploratory work has been conducted at Fox Creek by HeliosX thus far. However, the area has been extensively explored by petroleum companies, hence the regional geology is well documented and understood. In the 1990's, the Alberta Research Council / Geological Survey analyzed an extensive database of formation water characteristics from O&G drilling across the province, to characterize the distribution of several dissolved elements including lithium. Most regional work focused on the two Devonian-age reefal carbonate units: the Swan Hills Formation of the

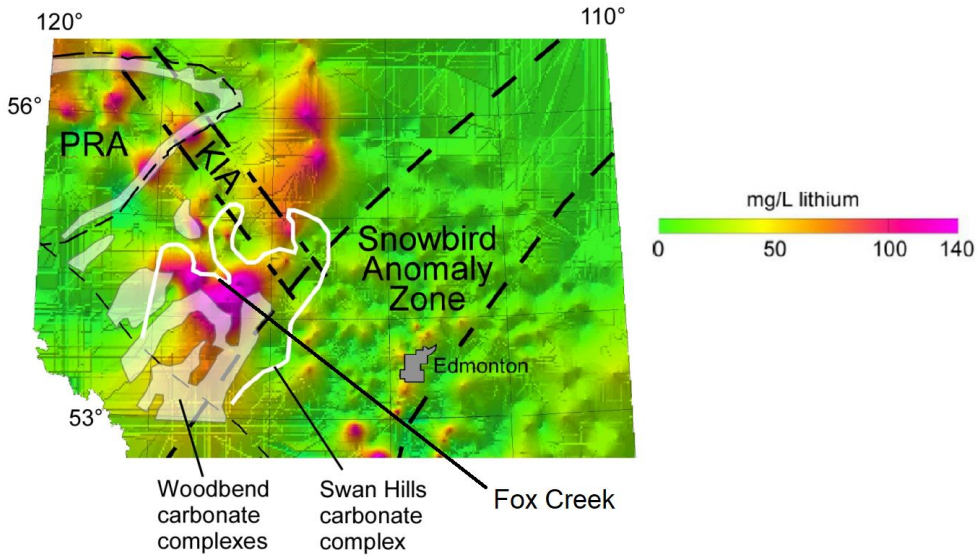
Beaverhill Lake Group, and the Luduc Formation of the Woodbend Group. These units are separated by the Cooking Lake and Waterways Formations, but in some areas (e.g. south of Fox Creek), the prospective Li-bearing units are stacked. Within these two units, three areas with potential for economic Li extraction were identified:

1) Northern Leduc reef – with an average thickness of 12m, porosity of 6%, and permeability of $2.5x10^{-14}$ m^2.
2) Southern Leduc reef – with an average thickness of 25m, porosity of 6%, and permeability of $2x10^{-14}$ m^2.
3) Swan Hills Formation – with an average thickness of 46m, porosity of 7%, and permeability of $4.3x10^{-14}$ m^2.

The regional geology is well understood thanks to the oil and gas industry

Subsequent analyses in 2010 confirmed the presence of an anomaly that represents the largest concentration of high-lithium formation water values in the province, up to 140 mg/L Li.

Figure 19: Li concentration gradient map, showing formation water outlines



Source: Company Reports

The largest concentration of high-Li formation water values in Alberta

Multiple historical resource estimates were conducted by the Alberta Research Council, that cover a portion of the formation waters in west-central Alberta, outlining 515 kt Li or ~2.74 Mt LCE. While this estimate is non-compliant, there have since been multiple, nearby resource estimates undertaken by other regional lithium explorers. The closest 43-101 compliant resource to Fox Creek, to our knowledge, is LithiumBank Resources' (TSXV:LBNK, Not Rated) Boardwalk project. The Boardwalk project (formerly known as Sturgeon Lake) hosts ~5.97 Mt LCE in inferred resources at an average grade of 67.1 mg/L Li within the Leduc Formation. The average porosity used in the Boardwalk resource estimate is 5.3%, with indications of potential flow rates of 1,100 m^3/day for a single well. Further south towards Calgary, other companies such as E3 Lithium (TSXV:ETL, BUY, C$8.20 target, Koby Kushner) and Highwood Asset Management (TSXV:HAM, Not Rated) have delineated exceptionally large resources in the Leduc. E3's Bashaw and Rocky inferred resources comprise ~23.4 Mt LCE at 74.5 mg/L Li and ~0.9 Mt LCE at 52.9 mg/L Li, respectively, while Highwood's Drumheller Leduc inferred resources comprise ~16.7 Mt LCE at 48.3 mg/L Li.

The regional geology is well understood thanks to the oil and gas industry

Next Steps

HeliosX is currently reviewing and compiling available geological data for Fox Creek prior to the selection of well locations. The company anticipates drilling of at least one well by year-end 2023, the results of which are expected to guide additional drilling and/or feed into a maiden resource estimate.

Drilling planned by year-end 2023

Due to the unique brine characteristics, HeliosX has engaged Litus Energy & Environmental Solutions, a DLE provider that specializes in Alberta brines. Litus developed a nano-composite sorbent material that has a high affinity for lithium and a high absorption rate, and is optimally designed for lower-grade brines (<150 mg/L), with the ability to efficiently work in high magnesium environments. HeliosX intends to complete an internal study to determine the feasibility of utilizing Litus' technology for Fox Creek, with installment of a field demonstration facility tentatively planned for early next year.

Litus Energy specializes in Alberta brines

Risks

Exploration, development, and mining projects are inherently risky investments given the large initial expenses that are required in advance of any potential revenue. Our view is based on publicly available information and conversations with management. We note that our estimates and views are not without political, technical, geological, or financing risks typical for junior exploration and development companies. For HeliosX, these risks may include:

1. **Geopolitical/jurisdictional risks** – Some of these risks may be out of the control of the company, including royalty and taxation levels, land agreement liabilities, regulatory, environmental and permit requirements and timing, global trade wars and political instability. We note that HeliosX has assets located in jurisdictions that are generally regarded favourably for resource development.

2. **Technical risks** – This covers a wide variety of issues that we see associated with resource companies including exploration, development and exploitation strategies and methods. It would cover such issues as accuracy of geological interpretation, resource/reserve estimates and economic studies and inputs such as commodity prices, cost and grade fluctuations, assay reconciliation, metallurgical issues and exploration success. Our positive view relies on using existing technical data, recent exploration results and to a limited extent, expected positive results from future drilling. Future results may differ and negatively impact our assumptions. We note that extraction of lithium from brine using DLE technology has only seen limited commercial-scale production in Argentina and China, to our knowledge.

3. **Corporate risks** – These may include project execution by management, investor relations effectiveness, or market sentiment. Management pedigree and performance are paramount, and market sentiment may also be an issue. While we expect the current lithium market to remain robust in the near future, our estimates may be negatively impacted by a change in market sentiment.

4. **Financial risks** – These may occur at the project or corporate level, including variation in valuation parameters/metrics, commodity price or foreign exchange fluctuations, access to credit including debt, equity financing or potential for shareholder dilution.

As new information becomes available, we plan to refine our estimates and forecasts.

Appendix: Management and Directors

Christopher Brown – CEO & Director
Mr. Brown has more than 25 years engineering, capital markets and Indigenous partnership experience. Worked as a financial analyst for BMO Capital Markets and Canaccord on international energy and infrastructure opportunities. Has more than 10 years direct energy experience managing budgets in excess of $300 million. Restructured Huntington Exploration Inc. as Director, President & CEO (listed on TSXv (HEI)) into a junior gold exploration company.

Sameer Uplenchwar – CFO & Director
Mr. Uplenchwar has more than 15 years of financial and business development experience. Served as Managing Director of Global Hunter Securities in Calgary, and Head of US Research with GMP Capital in Houston. Was Senior Energy Analyst supporting a $550MM gross long/short strategy fund in New York for Surveyor Capital LLC. Worked for Morgan Stanley in New York, as well as KPMG and Lasalle/ABN AMRO Bank..

Brian Findlay – President & Director
Mr. Findlay brings decades of senior management experience in corporate development, international mining, mergers and acquisitions, exploration and development, mine operations, corporate social responsibility; and managing, financing and administration of public companies. Helped raise more than $200 million in capital for junior resource and technology companies. An expert at managing public companies with international interests.

Bob Verhelst – Director
Mr. Verhelst has more than 20 years of senior management experience, including 11 as Partner, Director and Officer of several Western Canada brokerage firms. During this time, he was also President and CEO of a US (FINRA) regulated foreign broker dealer. He has senior risk management experience at CIBC and 11 years combined experience in enforcement for the RCMP, Alberta Securities Commission and Vancouver Stock Exchange. He also has management and board experience with TSX Venture Exchange companies and brings a strong corporate governance background to the Board.

Frank Busch – Director
Mr. Busch is a member of Nisichawayasihk (Nee-chise-away-a-see) Cree Nation. Bachelor's degree in Indigenous Studies from the University of Manitoba, 5 certificates from the Canadian Securities Institute and Post-Graduate Certificate in Finance from Harvard University. CEO of NationFUND, and in addition to HeliosX, also on the Board of Huntington Exploration Inc. and Kelso Technologies Inc.; a publicly traded, cross-border, industrial technology company, and as such, is a registered 'insider' on the Toronto and New York Stock Exchanges.

Koby Kushner | Mining Analyst
Alina Islam | Senior Research Associate
Daniel Kozielewicz | Research Associate
Shikhar Sarpal | Research Associate

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Disclosure Statement
Updated September 28, 2022

Recommendation / Target Change			Red Cloud Securities has this percentage of its universe assigned as the following:	
Date	**Rating**	**Target**	**Status**	**%**
2022-02-10	NA	NA	BUY	70%
2022-03-07	NA	NA	BUY (S)	24%
2022-04-08	NA	NA	HOLD	0%
			TENDER	1%
			NA	2%
			UNDER REVIEW	2%

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Company Specific Disclosure Details

Company Name	Ticker Symbol	Disclosures
HeliosX Lithium & Technologies Corp.	TSXV:HX	

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Koby Kushner | Mining Analyst
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E3 Lithium Ltd. (TSXV:ETL)

The First Mover in the Western Canadian Lithium-Petrobrines

Company Overview
September 29, 2022

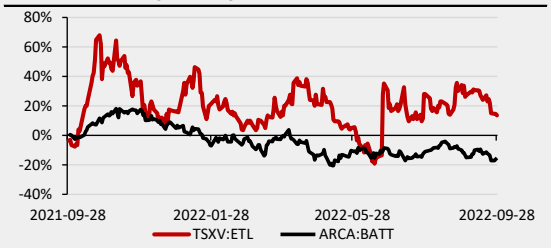
(Currency is CAD$ unless noted otherwise)

Closing Price	$2.26
Rating	BUY
Target ($/sh)	$8.20
Return to Target	263%
52 Week Low / High	$1.59 / $3.49

CAPITALIZATION	Basic	Diluted
Shares Outstanding (M)	60.7	71.4
Market Capitalization ($M)		$137.1
Enterprise Value ($M)		$116.1
Cash ($M)		$21.0
Total Debt ($M)		$0.0

STOCK CHART

RELATIVE PERFORMANCE



VALUATION	C$M	C$/sh
Alberta Li project	$1,005.26	14.08
Adjustments	($6.80)	($0.10)
Corporate NAV	**$998.46**	**13.98**

RELATIVE VALUATION	US$EV/t LCE	P/NAV
E3 Lithium Ltd.	$3.6	0.16x
Peers*	$69.0	0.49x

** S&P Cap IQ Pro*

MAJOR SHAREHOLDERS

Management (2.58%), FMR LLC (0.83%)

DISCLOSURE CODE: 1,2

(Please refer to the disclosures listed on the back page)

Source: RCS, Company Information, Capital IQ

Company Description

E3 Lithium is a lithium brine development company that hosts ~24Mt of lithium carbonate equivalent Inferred within the world-class Leduc Reservoir. It owns a 100%-interest in the Alberta petro-lithium project covering an area of over 600,000 hectares located in Alberta. The company was founded in 2016 and is headquartered in Calgary, Canada.

E3 Lithium is advancing its 100%-owned Alberta Li-brine project, host to one of the largest Li resources globally (>24 Mt LCE), within the world-class Leduc reservoir. To tap into its vast resources, E3 developed its own proprietary Direct Lithium Extraction (DLE) technology. **With a PFS in the works and DLE laboratory testing showing promising results, we believe E3 has the best shot at becoming one of the first of its western Canadian peers to commercialize.**

- **Resources recently increased by 247%.** The new Bashaw district resource brought together the Clearwater and Exshaw prospects and defined 23.4 Mt LCE. Combined with the Rocky prospect, this brings the Alberta Li project's total resources to 24.3 Mt LCE inferred, which to our knowledge, is the largest 43-101 Li resource ever published (**read more**). Resources have yet to be defined on ~31% of the land package.
- **Fantastic project economics using <2% of the resource.** The 2020 Clearwater PEA demonstrated the potential to produce 20,000t LHM/year for 20 years, at an initial CapEx of $813M and OpEx of $4,936/t LHM. At prices of US$14,079/t LHM, the after-tax $NPV_{8\%}$ and IRR returned ~$1.1B and ~27%, respectively. While these economics are compelling as is, we feel that the real long-term prize is for E3 to scale-up production and tap into the full extent of its resource base.
- **Pioneering its own DLE technology.** E3 developed its own sorbent material for use in DLE. E3 has built a lab-based DLE pilot prototype, which we recently visited (**read more**), to test the process. Results thus far recovered up to 97% Li whilst removing >99% of impurities (**read more**). The first commercial-scale manufacture of its proprietary sorbent was recently completed (**read more**), and later this year, E3 plans to construct a larger-scale, field-based pilot plant.
- **Backed by Imperial Oil.** E3 has in place a strategic collaboration agreement with major oil producer Imperial Oil (TSX:IMO, Not Rated), whereby IMO would help advance E3's Clearwater project by providing technical support and access to its freehold lands. IMO also invested $6.35M into E3 (**read more**).
- **Racing to be the first of its peers to commercialize.** We believe management has put the right plan in place to de-risk its technology and begin producing in 2025-26. E3 stands out from the crowd: amongst its western Canadian peers, it is the first to develop a DLE solution tailor-made to western Canadian petrobrines, the first to attract a major investment by Big Oil, the first to deliver a PEA, and the first to drill a Li test well in Alberta (**read more**).

We maintain our BUY rating and C$8.20 target price. Our target is based on 0.6x our fully diluted NAVPS estimate of $13.98. E3 continues to trade at a discount against its peers with a P/NAV of 0.16x and US$EV/t LCE of $3.6 (peers at 0.49x and $69.0, respectively). **Upcoming catalysts**: 1) Test well sampling program (ongoing), 2) Field-based pilot testing (H2/22-H1/23), 3) Resource update (2023), 4) PFS (2023), 5) Commercial production ('25-26).

Koby Kushner | Mining Analyst
Alina Islam | Senior Research Associate
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2021-07-15	NA	NA	BUY	70%
2021-08-17	NA	NA	BUY (S)	24%
2021-10-20	NA	NA	HOLD	0%
2022-03-03	NA	NA	TENDER	1%
2022-04-08	NA	NA	NA	2%
2022-04-26	NA	NA	UNDER REVIEW	2%
2022-05-02	BUY	7.50		
2022-06-24	BUY	7.50		
2022-07-12	BUY	8.20		
2022-07-18	BUY	8.20		

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Company Specific Disclosure Details

Company Name	Ticker Symbol	Disclosures
E3 Lithium Ltd.	TSXV:ETL	1,2

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- Not Rated or NA – currently restricted from publishing, or we do not yet have a rating
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David A. Talbot | MD, Mining Analyst
research@redcloudsecurities.com

Lake Resources NL (ASX:LKE)

DLE Demo Plant Set to Begin Brine Processing Shortly

Company Overview
September 29, 2022

(Currency is A$ unless noted otherwise)

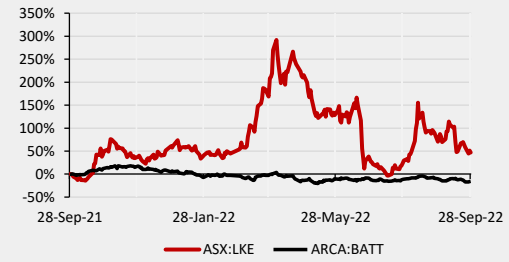
Closing Price (A$/sh)	$0.92
Rating	BUY
Target ($/sh)	$3.15
Return to Target	242%
52 Week Low / High	$0.53 / $2.65

CAPITALIZATION	Basic	Diluted
Shares Outstanding (M)	1,390.0	1,418.5
Market Capitalization ($MM)		$1,278.8
Enterprise Value ($MM)		$1,103.8
Cash and Cash Equivalents ($MM)		$175.0
Total Debt ($MM)		$0.0

FYE: JUN 30	2021A	2022E	2023E
LCE produced (t)	0	0	0
Total cash costs (US$/t)	0	0	0
EPS (A$/sh)	0.00	0.00	-0.02
CFPS (A$/sh)	0.00	0.00	-0.02

STOCK CHART

RELATIVE PERFORMANCE



RELATIVE VALUATION	C$ EV/t LCE	P/NAV
Lake Resources NL	$220.6	0.26x
Peers*	$93.2	0.45x

**S&P Capital IQ*

MAJOR SHAREHOLDERS

Management (7.49%), State Street Global Advisors, Inc. (5.47%), The Vanguard Group, Inc. (4.51%), Acuity Capital Investment Managemen (2.88%), JPMorgan Chase & Co, Private Bankin (2.76%)

DISCLOSURE CODE: 3,4

(Please refer to the disclosures listed on the back page)

Source: RCS, Company Information, S&P Capital IQ

Company Description

Lake Resources NL is a clean lithium developer utilising clean, direct extraction technology for the development of sustainable, high purity lithium from its flagship Kachi project, as well as three other lithium brine projects in Argentina. The projects are located in a prime location within the Lithium Triangle, where 40% of the world's lithium is produced at the lowest cost. The Kachi project covers 70,000 ha over a salt lake, just south of Livent Corp.'s lithium operation in Argentina, and hosts a large indicated and inferred resource estimate of 4.4Mt LCE.

Lake Resources NL is a lithium developer planning to use clean, direct extraction technology (DLE) for the development of sustainable, high purity lithium from its 70,000 ha, flagship Kachi project, and three other Li brine projects in Argentina. The projects are in a prime location within the Lithium Triangle. Lake hosts a large resource estimate of 4.4Mt LCE. The company was incorporated in 1997 and is based in Sydney, Australia.

- **Kachi hosts attractive economics.** Plans are to build a 25,500tpa mine, scalable to 51,000tpa. With a 25-year LOM, Kachi's post-tax NPV8% is US$1,580M and IRR is 35% (**read more**). It hosts 4.4Mt LCE.
- **Using more efficient ion exchange.** Lake has created a high-purity (99.97%) LCE which should lead to higher expected margin. Using this IX technology instead of traditional evaporation reduces the ESG footprint since it utilizes less CO2, water and land.
- **Lilac solutions partnership.** LKE's earn-in and partnership agreement with Lilac Solutions to allow it to use Lilac's DLE technology, engineering teams and on-site demo plant in exchange for 25% in Kachi (**read more**). Pilot plant construction is underway. Primary advantages of Lilac's ion exchange lithium extraction are as follows: 1) faster process and faster to market, 2) high recovery, 3) sustainable – low water/land impact, 4) cost competitive and scalable, and 5) proven in pilot plant work, with extensive test work.
- **Partnership overview.** Lilac can earn a 25% stake in Kachi via the following performance-based milestones: 1) initial 10% - Lilac funds completion of testing of its technology, 2) further 10% - Lilac funds demo plant and satisfies all testing criteria, and 3) final 5% - Kachi Li product achieves highest agreed qualification standard. Lilac is to contribute US$50M to Kachi once the earn in is complete.
- **Offtakes signed; 70% of Kachi funded.** LKE has a formal Expression of Interest (EOI) from the UK's Export Credit Agency (ECA), UK Export Finance (UKEF), to fund 70% of total Capex of Kachi (**read more**). It also has a non-binding MOU with Ford (NYSE:F, Not Rated) for an offtake of 25ktpa LCE from Kachi. In conjunction with the recent off-take and strategic collaboration with Hanwa of Japan, Lake has now covered 100% of its proposed production from Kachi (**read here** and **here**).
- **Target 100 program.** Target 100's objective is to produce 100,000 tpa lithium by 2030 to address the anticipated market supply deficit. A US$15M, 10-hole (4,000m) drill program will target the vicinity of Olaroz mine of Allkem Ltd. (ASX:AKE, Not Rated) and Chauchari operations of Lithium Americas (TSX:LAC, Not Rated) – Ganfeng (SZSE:002460, Not Rated) JV.
- **Setting up shop in the Americas.** Lake plans to re-locate HQ to Miami, USA, to be closer to assets, partners, and customers. It will top up its team and board with production, operations, and market experience.

We recommend LKE with a BUY rating and target price of A$3.15/sh. Our target price is derived using a DCF to which we apply a 1.0x multiple. **Upcoming catalysts:** 1) Updates on commissioning of demo plant (Q4/22), 2) Finalize Hanwa and Ford offtakes (Q4/22), 3) Resource update (Q4/22), 4) DFS and ESIA (H2/22), 5) Project financing (H2/22), 6) Assays from Argentina brine projects (H2/22), 7) Construction decision (H2/22), 8) Production (H2/24).

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2021-09-29	NA	NA	TENDER	1%
2021-10-12	BUY	1.25	NA	2%
2021-10-13	BUY	1.25	UNDER REVIEW	2%
2021-10-21	BUY	1.25		
2021-12-16	BUY	1.25		
2021-12-17	BUY	1.25		
2022-01-19	BUY	2.20		
2022-03-03	BUY	2.20		
2022-03-30	BUY	2.20		
2022-04-11	BUY	3.15		
2022-04-26	BUY	3.15		
2022-06-22	BUY	3.15		
2022-07-14	BUY	3.15		

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Company Specific Disclosure Details

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Koby Kushner | Mining Analyst
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LithiumBank Resources Corp. (TSXV:LBNK)

The Dominant Holder of Canadian Lithium Brine Rights

Company Overview
September 29, 2022

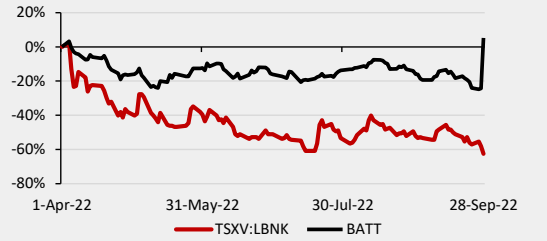
(Currency is CAD$ unless noted otherwise)

Closing Price ($/sh)	$0.69
Rating	NA
Target ($/sh)	NA
Return to Target	NA
52 Week Low / High	$0.69 / $2.10

CAPITALIZATION	Basic	Diluted
Shares Outstanding (M)	37.2	48.6
Market Capitalization ($MM)		$25.6
Enterprise Value ($MM)		$20.3
Cash and Cash Equivalents ($MM)		$5.4
Total Debt ($MM)		$0.0

STOCK CHART

RELATIVE PERFORMANCE



MAJOR SHAREHOLDERS

Management (13.82%)

DISCLOSURE CODE:

(Please refer to the disclosures listed on the back page)

Source: RCS, Company Information, Capital IQ

Company Description

LithiumBank Resources Corp. is an exploration and development company focused on direct brine lithium resources in Western Canada. LithiumBank has over 3.2 million acres of potential Direct Lithium Extraction (DLE) amenable assets. The company was incorporated in 2019 and is based in Vancouver, Canada.

LithiumBank Resources is a new exploration and development company focused on Li resources in Western Canada. LithiumBank has >3.7 million acres of Li-brines spread across Alberta and Saskatchewan and plans to use Direct Lithium Extraction (DLE) to tap into it. **In our view, LBNK has assembled a portfolio of high-quality assets in an emerging Li district, and holds more prospective ground than any of its regional peers, providing a strong platform upon which to grow its resource base.**

- **The dominant holder of Li-brine rights in Canada.** LithiumBank holds over 3.76M acres of mineral titles; 3.44M acres in Alberta and 326k acres in Saskatchewan. The oil and gas sector has provided both provinces with a well-developed regulatory framework for liquid resource extraction and with significant infrastructure, including roads, rail, power, labour, and >1,000 existing wells across LBNK's projects which can be used to delineate resources on the cheap.
- **5.97 Mt LCE inferred resource at Boardwalk.** Boardwalk is located in west-central Alberta, 270km from Edmonton. The project spans ~572k acres of contiguous ground that is 100%-owned with no freehold lands, and covers a portion of the prolific Leduc aquifer, in an area well-known for its high deliverability. Recent well testing returned higher grades than the current resource grade, suggesting room for upside.
- **Upcoming Boardwalk PEA to leverage DLE.** Hatch, a reputable engineering firm, has been retained to help design, test, and manage LithiumBank's ongoing DLE programs. The firm has shortlisted potential third-party DLE technologies for Boardwalk, with test results expected to feed into an upcoming PEA expected in Q4/22. Compared to conventional methods, DLE can potentially offer a more environmentally and cost-effective solution to lithium extraction.
- **Park Place – the next project of focus.** Located immediately south of Boardwalk, Park Place comprises ~1,361k acres of contiguous ground and has seen historical samples up to 130 mg/L Li. A hydrogeological study is ongoing and is expected to feed into a maiden resource in H1/23, with a PEA to follow in H2/23.
- **Other projects provide optionality.** Aquifers and brine chemistries differ by project, and we believe having exposure to several projects which can be advanced concurrently across two provinces helps diversify LBNK's risk profile. At least three more resource estimates are planned by YE2023, with the goal of delineating at least 10 Mt LCE.
- **Backed by a strong management team.** The board includes Paul Matysek, a geologist by trade who has sold six resource companies, in aggregate worth >$2B, through his >40-year career. With him is CEO Rob Shewchuk, a capital markets expert who went on to become Chairman of Standard Securities until its merger with Wolverton Securities, where he served as Managing Director until its sale in 2016.

We do not currently rate or value the stock. However, we like LithiumBank for its strategic landholdings, its robust resource at Boardwalk, and management's track record. **Upcoming catalysts:** 1) Boardwalk resource update & PEA (H2/22), 2) Park Place resource & PEA (2023), 3) Kindersley resource & PEA (2023), 4) DLE field pilot plant (2023).

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Disclosure Statement
Updated September 29, 2022

Recommendation / Target Change			Red Cloud Securities has this percentage of its universe assigned as the following:	
Date	**Rating**	**Target**	**Status**	**%**
			BUY	70%
			BUY (S)	24%
			HOLD	0%
			TENDER	1%
			NA	2%
			UNDER REVIEW	2%

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Company Specific Disclosure Details

Company Name	Ticker Symbol	Disclosures
LithiumBank Resources Corp.	TSXV:LBNK	

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