Lithium Bull & Other Thoughts, January 3, 2017

Happy New Year!

Lithium, and advanced stage lithium development stocks in particular, remain high on my mind as we enter 2017.

Some other topics of interest to discuss in the weeks ahead are energy metal uranium, as well as zinc and cobalt. Outside resources, I am expanding my mind in the cannibas economy and its intersection with consumer life science themes, as well as with Cancer Moonshots, such as cutting edge immuno-oncology plays.

I believe 2017 will be a good year for Special Purpose Acquisition Company (SPAC) transactions. That old-fashioned stock pickers who out-perform will be back in vogue and some new hot hedge funds will emerge in long-short equity niches, like natural resources and biotech. While ETF and other passive strategies will continue to grow, specialists focused on small and microcap equities – one of a few remaining under-researched investment areas prone to persistent market inefficiencies and mispricings – should generate true alpha.

As 2016 came to a close, a number of thought leaders in lithium and other topics caught my attention.

Joe Lowry's near daily output about the lithium space is informative, intelligent, well-written and witty. I would encourage all of you to follow Joe on Twitter and LinkedIn, including his December 16 and December 31 year-end wrap ups/2017 forecasts

I concur with Joe's mutual admiration for Energy Metals commentator and publisher of the Disruptive Discoveries Journal Chris Berry, and Benchmark Minerals' Simon Moores – I hope the lithium index pricing standard he is setting up will prove a valuable industry standard and even bigger cash cow than his publishing business and well attended World Tour events.

On Trump transition, Ray Dalio, head of the world's largest hedge fund, Bridgewater Associates, framed a constructive discussion in a December 19 Linkedin Post.

2017 – The Year Several Lithium Unicorns Will Be Born?

- It is an exciting time to be investing in the lithium development sector. That disruptive change is occurring on the demand side - Electric Vehicles, Solar and Wind Deployments, Grid Storage – has garnered widespread, mainstream market acceptance in 2016. That supply is severely constrained is less well understood and appreciated.
- Existing lithium producers cannot expand sufficiently from their existing deposits. New deposits and chemical processing plants must be financed and developed as soon as possible.
- Elevated prices of lithium – last quarter and last month showed pricing for contracted volumes at SQM and Galaxy at 2X+ last year's prices -- are expected to remain so for many years.
- Electric Vehicle take up in 2017 should be good, but we are still very much in pioneer days. From 2018, as near mass-market priced Chevy Bolt and Tesla Model 3 are joined by a dozen other EV models currently in development at Daimler, BMW, GM, Nissan etc, the market will be in heavy early adopter territory, to be followed by 2020-2025 mass adoption. This phenomenon is global, supported by the world's largest countries and industrial companies in China, Japan, Korea, the U.S. and Europe.
- Mouthwatering 60-70% EBITDA margins from low cost brines and 30-50% margins from select hard rock operations – assuming input costs don't rise much --- will translate into super strong cash flow for a privileged few companies who, once fully financed, best execute from construction to production. There is no reason to expect that EBITDA and M&A multiples for lithium producers won't stay in the high "specialty chemicals" 12-14X EBITDA range of the last 10+ years.
- **Unicorn math:** A company producing 15K LCE tons, selling for $10K/ton and producing for $5,000 cost will generate $75M EBITDA. 13X multiple is ~$1B.
- This dynamic has translated into lithium animal spirits committing some $400M in new equity capital in 2016 to lithium developers. Some are very advanced and ready for full financing, some are earlier stage exploration stories backed by high profile, proven resource promoters and value creators. The rest are lottery tickets destined to fail, but several will likely secure enough funds from greater fools to make noise and distract for the next couple of years.
- The 2016 lithium financing appetizer should be followed by a 2017 main course of $1-2B in capital commitments over the next 6-12 months to fund advanced lithium development projects into construction. Many, perhaps all, of the following seven companies -- with expected OPEX at the lower quartile of the cost curve, supportive shareholders, strong managements, solid economics and credible production paths expected to begin from 2017-2019 -- could get full funding in 2017.

Emerging Lithium Developers/Producers	Mkt Cap (USDM)	Estimated Financing Need (USDM)	12/31/16 Price	52-week high	% from 52-week high	Location	Type
Galaxy – Sal Da Vida	$693	$375	$0.53	$0.58	-9%	Argentina	Brine
Pilbara Minerals	$449	$100	$0.50	$0.87	-43%	Australia	Hard Rock
Nemaska	$299	$400	$1.24	$1.97	-37%	Quebec	Hard Rock
Lithium Americas	$183	$250	$0.80	$1.14	-30%	Argentina	Brine
Altura Mining	$120	$100	$0.14	$0.28	-52%	Australia	Hard Rock
Bacanora	$82	$300	$0.69	$1.02	-32%	Mexico	Clay
N. American Lithium	NA	??				Quebec	Hard Rock
Total		**$1,500+**					

- Key questions are what types of investors will be their financing partners and at what WACC? Will 50-70% debt funding be available? What valuation/how much equity dilution?
- Financial sponsors could include any/all of the following:
  - Low cost, government-supported debt (eg, Quebec, Japan, Korea)
  - Rich Argentines taking advantage of tax amnesty for infrastructure projects
  - Large cap US and China-listed producers making further acquisitions and joint ventures
  - New cathode and/or battery manufacturers providing financing to secure off-take
  - Traditional commodity traders seeking to exploit the significantly opaque, niche lithium market
  - Royalty/Streaming providers
  - Private Equity
  - Public equity Mutual Funds, Hedge Funds, Family Offices, High Net worth investors
  - High yield debt

- I found the late November Sirius Minerals financing on London's AIM market as exceptionally intriguing as an analogue – a $1.2B, 3-tranche financing to fully fund stage 1 development for their UK-based polyhalite fertilizer project. Sirius' market cap at time of financing was ~USD500M.

  Financing Components:

  - $250M Royalty - 5% until 13M tons sold, 1% thereafter
  - $500M Equity Raise - public equity, 90% underwritten, plus rights offer
  - $450M Convert - terms: 7 years, 8.5% coupon, 25% conversion premium; first 3 years no pay

    Lead managers: JP Morgan Cazenove, Liberum

  As SQM can well attest, specialty fertilizers are nowhere near as interesting at present compared to lithium. That Sirius raised $1.2B for a single, risky project in a down fertilizer market shows demonstrable public equity and high yield risk capital is available again for resource development projects.

  The $1-2B required from the above lithium stories is a drop in the bucket in the larger scheme of things and should all be available, presuming strong continued execution by lithium management teams.

Australia Hard Rock – Pilbara and Altura

Will the market value at lower multiples those who produce more commoditized spodumene only and are not vertically integrated producers of end product lithium chemicals? I think so. This influences Galaxy's Mt. Cattlin analysis, could hurt Altura and likely explains Pilbara's MOU to examine vertical integration with their Chinese partner for a downstream processing plant. Likewise, Neometals' downstream ambitions.

But with Galaxy contracting at $905/ton for 6% spod con, all of the Australian producers and near-term producers should be well supported by near-term cash flow focused investors, assuming they execute properly on their mine plan and don't experience metallurgical or other technical hiccups.

Both Altura and Pilbara have announced definitive off-take agreements with Chinese partners, which include minority equity checks to be written from these partners. The cash, though, is not yet in the door. Altura announced December 13 that first tranche would settle by the following week and the second tranche in January – no word confirming first tranche is in as of yet. Likewise Pilbara.

Wondering – is China's clampdown on off-shore investments to support Yuan outflows holding these up? Might a market-perceived bottomless pit of low-ish cost Chinese capital for off-take be less forthcoming or slower?

Pilbara Minerals

Pilbara (PLS) raised AUD 100M (~USD 75M) in April from institutional investors in Australia, Asia, North America and Europe, following the announcement of its pre-feasibility study (PFS). Pilbara's valuation at the time was AUD 322M (~USD242M), which represented ~79% of the AUD 407M NPV 10% reflected in this PFS.

Since then, Pilbara's market cap has grown significantly, as it has ticked off a number of milestones, including announcing Chinese off-take partners, expanding resource and mine life, settling its royalty dispute with Mineral Resources and publishing an updated Definitive Feasibility Study (DFS). That DFS showed expanded mine life, slightly lower production and modest increase in initial capex and a 74% uplift to its NPV to ~AUD 700M (USD 500). At December 31, Pilbara stock price was AUD 50 cents, equating to ~AUD 630M (USD 450M), which represents a valuation of 90% of its BFS NPV.

Pilbara has research coverage from a half dozen sell-side analysts from Australian and UK brokers. Blue Ocean Securities who lead managed the AUD 100M offering in April has the highest target price of AUD 1.25 and presumes a meaningful probability that PLS will double its base case DFS production and follow through on a downstream processing JV with its Chinese partner which is at present at an early MOU stage.

Fosters Stockbroking, which led an earlier AUD 12M financing in late 2015 has a 0.77 target, using 2018 P/E and EBITDA multiples. Fosters is modeling that PLS' revenues will grow from zero in 2017 to AUD248 M in 2018 and AUD 420M in 2019, with EBITDA of AUD 115M in 2018 and AUD 207M in 2019 and suggests its "risked" target price of 0.77 equates to 5X 2018 EBITDA.

Numis in London maintains a 0.80 target, using PLS' DFS as its base case, but then forecasts slightly higher spod prices and a more aggressive 7% discount rate. They arrive at 0.80 cent target based on their logic that PLS should trade at 100% of their NPV.

Pilbara must raise about AUD140M in 2017 to bring its hard rock project into production. The Pilgangoora project is still is not permitted, though this isn't expected to be a problem in Australia.

Altura Mining

Altura (AJM) is developing the 100% owned Pilgangoora lithium project in Western Australia. Production is expected in late 2017 at a run rate of 215ktpa spodumene concentrate for an initial mine life of 14 years. AJM raised AUD20M in June at AUD 20 cents in a transaction led by Canaccord, the most prolific capital raiser for ASX lithium plays. Canaccord's initiation piece, in late September, summarizes their analysis:

"AJM has delivered a DFS on its Pilgangoora project, demonstrating robust economic outcomes which in our view should underpin a final funding decision in the near term. AJM has maintained its aggressive timeline to production (late 2017), which would see the company become the next significant producer in the lithium space. In our view, the project screens attractively, based on the timeline to production, solid margins and a relatively low capex hurdle. We have incorporated the DFS outcomes into our model, resulting in a minor reduction in target price to A$0.26/sh (previously A$0.27/sh)."

The placement was a bit sloppily done, with an extended trading halt following a market leak. The stock traded down almost immediately and has been hovering in the AUD 13-14 cent range for the past many months.

I don't know this project or management as well as most of the others lithium issuers mentioned in this note, but, from what I've observed, their thesis seems largely to be that, despite negatives like low grade, higher cost and short mine life, that they'll be very fast into production with a more modest capex need so they can capture some nice near term cash flows into the current desperation from the Chinese for any spodumene product. Seems logical. Though in my experience, longer lived, lower cost players are preferred by most long-term investors.

Canaccord models AJM's revenues to grow to AUD 42 M in 2018 and AUD 139M in 2019, with EBITDA of AUD 15M in 2018 and AUD 67M in 2019 and suggests its "risked" target price of 0.26 equates ~50% of their NAV, using a 10% discount rate. Canaccord assumes AJM capex requirements of AUD 140M, which it expects will be financed 60% debt (AUD 84M) and 40% equity (AUD 55M). AJM's market at year-end was AUD 167M (USD 120M).

Argentina Brines – Lithium Americas and Galaxy

Orocobre as analogue

A lot of ink has been spilled, justifiably, on Orocobre's technical missteps over the years, but very little on its highly successful capital markets strategy, which has always positioned the company with an elevated valuation and attractive cost of capital. Orocobre had lucky timing to capitalize on the first $1B lithium investment wave in 2011/2012. With Argentina at its worst under Cristina, Orocobre secured super low cost debt with Japanese government guarantees through Toyota Tshucho/JOGMEC at extra high 70/30 debt/equity ratio.

Today's lithium and Argentina investment backdrop is much more favorable than at any time Orocobre has raised equity from institutional investors in Australia, Asia, North America, and Europe.

Around this time last year, Orocobre's treasury was running on fumes and, with a very high working capital burn, they came back to the equity market and raised AUD 85M (USD 60M). This was the sixth and largest equity raise Orocobre completed. Investors into that placement in mid January last year at AUD 2.10 would have doubled their money by year end, with ORE trading at AUD4.20, equivalent to AUD 950 (USD 685M). Not quite a unicorn, but getting there.

A listing of Orocobre's equity financing history is below. Of note is that total equity capex over 5 years was $210M and the weighted average market cap was USD 241M. The lowest ORE ever had to raise capital was USD 182M market cap (in 2012 down lithium time, and around the time of Cristina kicked Repsol out from YPF). Confronting challenging times, Orocobre has been quite good in avoiding substantial equity dilution.

Orocobre - Equity Offerings	USD	AUD(M)	Pre-$ Mkt Cap USD (M)	Price AUD	Price USD	Shares Issued
1/20/16	$58.7	$85.1	$244	$2.10	$1.45	40,500,000
6/29/15	$23.6	$32.3	$210	$1.90	$1.39	17,000,000
2/5/15	$39.0	$50.0	$263	$2.55	$1.99	19,611,766
11/21/13	$27.0	$30.0	$223	$2.10	$1.89	14,296,771
11/5/12	$27.0	$26.0	$182	$1.70	$1.77	14,550,211
2/25/11	$19.8	$20.0	$292	$3.21	$3.21	6,959,000
2/11/11	$15.2	$15.0	$292	$3.21	$3.21	4,672,898
Total Raised	$210.3	Weighted Avg	**$241**		**$1.93**	

Orocobre's CEO Richard Seville gave a long interview on Seeking Alpha last month which is a good, straight-from-the-horses-mouth read. I found his following quote addressing lessons learned from their repeated technical/production mistakes, particularly telling:

"…And the pitfalls that we've had to deal with because of the ***intellectual property of these plants lies within the operating companies*** *and not within the engineering houses and so* ***all that nuance of design*** *that avoids errors you shouldn't make* ***exists within the operators*** *rather than the engineering houses…"*

Lithium Americas

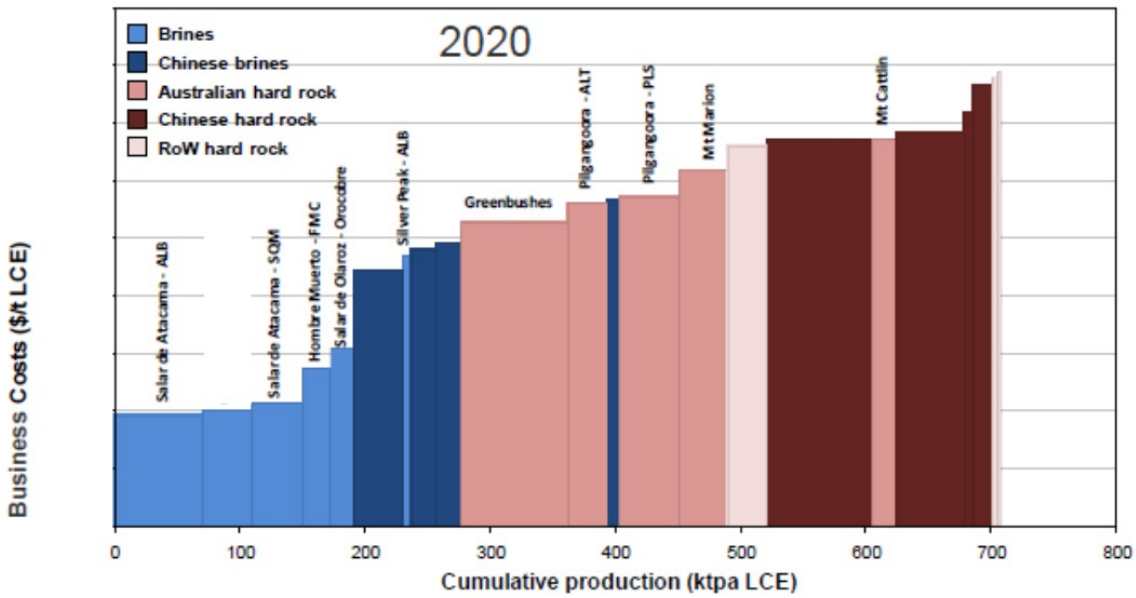
In late March 2016, a large number of investors scoffed at what they interpreted as the stupidity of Lithium America's management to sell 50% of their low cost, permitted Cauchari-Olaroz deposit across from Orocobre's for only USD25M. Richard Seville's quote essentially says that the brine operating companies - ie, ALB, SQM and FMC - are the ONLY places to find lithium brine IP. Among these three, SQM is largely considered to have the highest quality lithium technical team. My read is that LAC management, in negotiating what appears to be very genuine 50/50 partnership with SQM, effectively sold their soul to the Angel. They are on a de- risked path to super low cost production.

LAC is due to announce soon an updated DFS for the JV, but SQM has already provided substantial details into what this will look like in terms of production and capex. LAC will need to fund ~$250M, inclusive of VAT, for their half share capex for stage one 25,000 tons production.

LAC ended 2016 at CAD 80 cents, or CAD 241M (USD 178M), a valuation that is lower than Orocobre has ever raised equity financing. Ex-Cormark lithium analyst Alec Meikle before he left his position to join LAC for a capital markets interface and business development role, had a CAD 1.70 price target, suggesting the company should trade at 90% of his forecasted NPV, using a 10% discount rate. This is a similar valuation to the 90% of NAV at which Pilbara currently trades. Dundee's David Talbot target prices for LAC is a bit higher, CAD 1.80.

Just before Christmas, Lithium Americas posted on their website an updated investor presentation. It's a substantially improved articulation of this story. The lithium market and comparables analysis in the Appendix constructively line up various development projects and their relative valuations.

Also included is the best lithium cost curve I've come across, from consultancy CRU.



Source: CRU, September 2016

Amazing how much lower cost brine projects are relative to hard rocks. This chart is based on 2020. With a 2025-2030 year view, I wonder if those blue left Argentina and Chile brine bars will represent a much larger proportion on this cost curve slide.

In terms of financing, there is likely no shortage of potential Asian, European or North American off-take partners, though it's unclear if Japan's JOGMEC is still providing sweetheart support as they did with Orocobre. LAC may benefit from Argentina-based funding - in May, President Macri announced a tax amnesty on an estimated $500 billion of unregistered funds stashed abroad to pay pensioners and help fund a multi-billion dollar infrastructure program. Lithium development projects qualify as infrastructure.

Galaxy

Galaxy (GXY) published a DFS for their Sal da Vida (SDV) brine project in August which had a range of $1 –1.4B post-tax NPV depending on 8% or 10% discount rate for a 25K ton/year operation. Capex of ~USD375 and Opex is $3,369 before potash credit.

In late December, Galaxy confirmed significantly stronger than expected pricing for 2017 for Mt Cattlin production. 2017 pricing finalized at a benchmark price of US$905/t for 6% Li2O, much higher than the $650/ton it guided the market six months ago was likely.

With the market pricing in much of Mt Cattlin's immediate commercial production and Galaxy to benefit from near term cash flow there, the key question is will they follow Orocobre's build-it-alone strategy and try to raise $375M? Or will they seek to follow LAC's Joint Venture strategy or be bought out entirely?

The choice is not a simple one, given the shortage of brine operational IP. SQM has placed a bets with LAC – seems unlikely they would also join SDV. FMC is theoretically logical as it operates the other side of SDV, but they have not seemed particularly interested in greenfield development. ALB would seem a likely possibility, but I wonder, given their slow ramp of La Negra, if they have operational brine capacity and interest for another start-up in a new country for them.

Canaccord suggests a price target of AUD 60 cents for GXY vs. year-end AUD 52.5 cents, a valuation which would equate to AUD 1.2B (USD840M) valuation, with Mt Cattlin valued at AUD690M (~USD500M) and SDV at AUD 433M (USD 311M). EBITDA from Mt Cattlin is forecasted to be AUD 102M in 2017 and 133M in 2018.

Quebec and Mexico – North American Lithium, Bacanora and Nemaska

North American Lithium

North American Lithium (NAL) is currently private, having undertaken a bankruptcy restructuring following RB Energy's failure to get to commercial production at the Quebec Lithium Project and was unable to fund working capital and debt repayments. The Lundin group's RB Energy bought the project via take-over of Canada Lithium, expecting RB's iodine business cash flows to see them through production.

With ever generous Quebec government support and under new ownership by China's Jilin Jien, a known quantity in Quebec having made $1.5B investments in nickel, North American Lithium seems poised to finance and construct the re-start of spodumene and LCE production. As a private company, little is known about NAL plans but, as the 3rd of 3 companies to have received collectively USD 1B in the 2010/2012 lithium development capital raise period, I expect NAL will have similar success reaching near-term (2017/2018) production and cash flow in the same way Galaxy has in working through its Mt. Cattlin issues and Orocobre has in working through its Olaroz issues.

Bacanora Minerals

Bacanora (BCN)'s USD 10M pilot plant has been operating continuously for more than six months processing material from their large clay-based resource in Sonora, Mexico. The company recently announced that off-take discussions are at an advanced stage with an Asian partner, the announcement of which will be an important milestone in advance of a DFS by the summer. Based on PFS announced last March, production plan is for a 35K ton/year project in two stage of 17.5K t/year, post-tax NPV is USD 542M based on 8% discount rate. Estimated capex funding need is USD 300M.

Led by Peter Secker, one of the few lithium developer CEOs who has built resource development projects in the past (eg. Sino Mining (sold to Eldorado Gold) and Canada Lithium before its sale to RB Energy), Bacanora's board also features Chairman Mark Hohnen, who had spectacular success and contacts in Asia, selling Namibian uranium assets to China Guangdong Nuclear Power Corporation for USD 1B+. Bacanora's operational team running the pilot plant is comprised of 3 ex-FMC lithium engineers.

Bacanora has raised some USD30M through two placements with marquee London investors, M&G and Blackrock, most recently at 79 pence, which was equivalent to USD 112M market cap, about 14% higher than the 69 pence BCN ended the year trading. Year end market cap is about USD 80M equivalent.

In early December, Liberum initiated coverage suggesting a target price of GBP 1.2. The analysts' headline summary:

"…Bacanora owns the world's largest known lithium clay deposit in Sonora, Mexico. It is unique in the lithium space in that it can be quick to market like new hard rock supply but is significantly lower cost, competitive with brines. It is the only aspiring producer currently sending lithium carbonate samples from an operational pilot plant to potential customers. Finalized offtake agreements in the months ahead would provide a platform for financing. We initiate with a £1.20 target price, set at 75% of NPV… Our NPV is £1.61/shr applying $7,500/t Li2CO3, growing to £2.09 by first production. At 50% gearing and equity raised at 70p, post-dilution FCF yield is >50% by 2022…"

Nemaska

Nemaska (NMX) is developing in Quebec a vertically integrated producer of lithium hydroxide and lithium carbonate using proprietary methods for which patent applications have been filed. The mine is fully permitted and, based on a DFS last April, has an after-tax NPV of USD 1.16B based on 8% discount rate. Capex is USD 440M, for a 26-year mine life, 28K/y production. Opex is below $2,800/ton. In addition to its proprietary IP, Nemaska's expected opex is so low due to Quebec's low cost hydro power – conversion of hard rock to LCE is energy intensive.

Nemaska has a strategic partnership and off-take with Johnson Mathey and a second off-take agreement with FMC. Investment arms of the Quebec government have also been immensely supportive.

Last July, Nemaska completed a CAD 69M (USD 50M) equity raise through a unit deal led by Dundee at CAD 1.15 with half warrant exercisable at CAD 1.50. In USD terms their pre-money market cap was USD 217M. Blackrock in London was an anchor investor in the placement and now owns nearly 5%. Based on USD 440M DFS capex, Nemaska appears to need another nearly USD400M to be fully financed in 2017.

Nemaska closed 2016 at CAD 1.24, or CAD 384M (USD 284M) market value. Dundee's David Talbot, in a mid December note reiterated his CAD 2.30 target price based on 80% NAV multiple to 10% DCF model. Dundee's financial model suggests Nemaska revenue growing from zero to CAD 60M in 2018 and CAD 296M by 2019, EBIT of CAD 30.7M in 2018 and CAD 196M in 2019.

Accompanying comments:

*"…**Shawinigan Phase 1 Demo Plant is on schedule and budget.** Expect construction to be completed around year-end 2016, with subsequent turnover to the ops team. Start-up in Q1/17 at 435 tpa LCE and will begin by toll milling for Johnson Matthey (Not Rated). Then the Demo Plant will begin to prep commercial samples for qualification in Q2/17, directly from its own Whabouchi concentrates. It has hired 20 highly skilled operators with mechanical, chemical and electrical backgrounds. A range of technical work experience includes chemical plant start-up…*

***Financing progressing.** Quebec Government has committed the last $125 MM ($75 debt; $50 equity) of the $300 MM debt, $200 MM equity envisioned. Lead bank and syndicate is to be announced in January, with debt in place early Q2/17. Expect an equity raise around then as well. Sample qualification will have just begun, but we expect considerable technical de-risking between the expected concentrate and back end demo plant success and existing off-takes…"*

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