

West High Yield Resources Ltd. (TSXV: WHY / OTCQB: WHYRF)

Potential for Reducing Reliance on China & Russia for Critical Minerals – Initiating Coverage

BUY

Current Price: C\$0.40

Fair Value: C\$1.95

Risk: 5

Sector / Industry: Junior Resource

[Click here for more research on the company and to share your views](#)

Highlights

- WHY is advancing **Record Ridge – a large/high-grade magnesium project in B.C.** - to production.
- Magnesium is classified as a **critical mineral in North America and the Europe Union**. Its high strength to weight ratio, durability, resistance to impact, and casting characteristics allow it to be used in a wide range of sectors, such as automotive, aerospace, cement, and agriculture. As **North America imports most of its magnesium consumption** from China and Russia, we believe there is a strong need for domestic production.
- Record Ridge's resource (43 Mt @ 25% Mg, implying 11 Mt Mg contained) can **potentially support a mine-life of 170+ years**. WHY has entered into a letter of intent to sell at least 200 Kt of ore per year to a global supplier of magnesium.
- A recently completed Preliminary Feasibility Study (PFS) returned robust economics, with an **AT-NPV5% of US\$872M, and a very high AT-IRR of 72%**, based on US\$1,500/t MgO-98% (in line with spot prices). **WHY is trading at just 3% of AT-NPV5%. We believe the PFS was highly conservative** as it was based on just 8% of the project's resource.
- WHY has developed a green process to produce high-purity MgO, with zero CO₂ emissions. Management is **planning to build a demonstration/pilot plant** to complete a feasibility study, and further de-risk the project.
- WHY also has **two gold projects in B.C.** - the Gold Mine Rejects project (which has non-compliant resources totaling 30 Koz gold in stockpiles), and the past-producing Midnight gold project. A recent drill program at Midnight returned several high-grade intercepts. We believe management is likely to direct all of their resources to the flagship magnesium project, and potentially bring in JV partners to explore the gold assets.
- **Upcoming catalysts** include approval of a mine plan permit, and pilot operations.

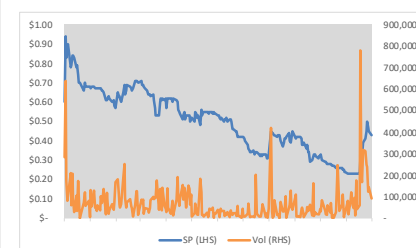
Risks

- The value of the company is **dependent on magnesium prices**
- Development; potential for delays in project development
- Permitting
- **Access to capital and potential for share dilution**
- No assurance that the company will be able to advance all of its projects simultaneously

Sid Rajeev, B.Tech, MBA, CFA
Head of Research

Nina Rose Coderis, B.Sc (Geology)
Equity Analyst

Price Performance (1-year)



	YTD	12M
WHY	-2%	-43%
TSXV	11%	-26%

Company Data

52 Week Range	C\$0.22–C\$0.72
Shares O/S	84M
Market Cap.	C\$34M
Yield (forward)	N/A
P/E (forward)	N/A
P/B	N/A

Key Financial Data (FYE - Dec 31)		
(C\$)	2021	2022 (9M)
Cash	\$133,465	\$1,564,013
Working Capital	-\$3,350,105	-\$4,641,213
Mineral Assets	\$1,508,364	\$1,508,364
Total Assets	\$4,397,510	\$3,324,236
Net Income (Loss)	-\$2,569,821	-\$3,185,319
EPS	-\$0.04	-\$0.04

***Raised \$1.15M subsequent to Q3-2022.**

***See last page for important disclosures, rating and risk definitions. All figures in C\$ unless otherwise specified.**

Magnesium

Magnesium is one of the lightest metals, and can withstand high temperatures. Its **high strength to weight ratio, durability**, resistance to impact, and casting characteristics allow it to be used in a **wide range of sectors** including automotive, aerospace, cement, and agriculture. Magnesium is the third most commonly used metal in construction, after iron and aluminium. Although in early-stages, we note that there is ongoing research on magnesium ion batteries, and its viability to replace lithium-ion batteries.

Magnesium is on the list of critical minerals in the U.S. and the EU

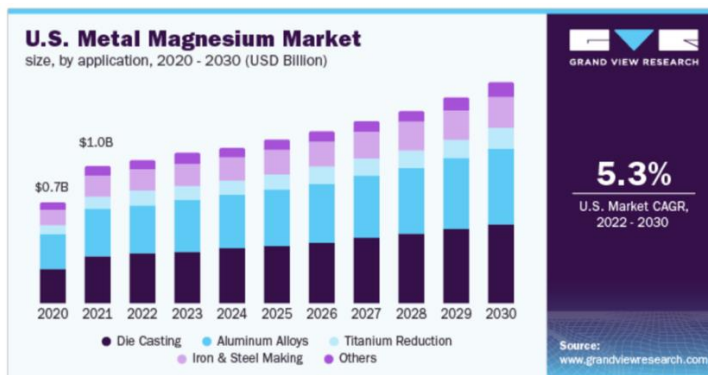
China is the largest consumer, accounting for 40% of global demand

China accounts for 88% of global production

Russia (49%) and China (22%) account for 71% of global reserves

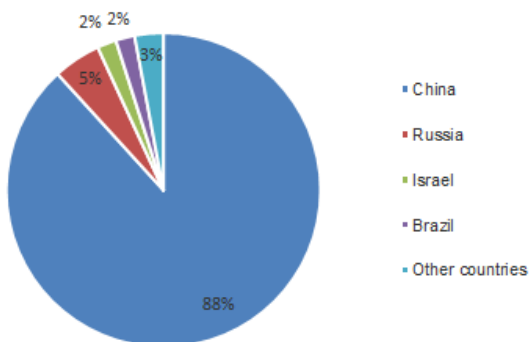
Global demand is expected to grow by 5.2% over the next decade (Source: CM Consulting)

North America imports most of its consumption, as it has only one primary magnesium producing mine, indicating that there is need for additional domestic producers



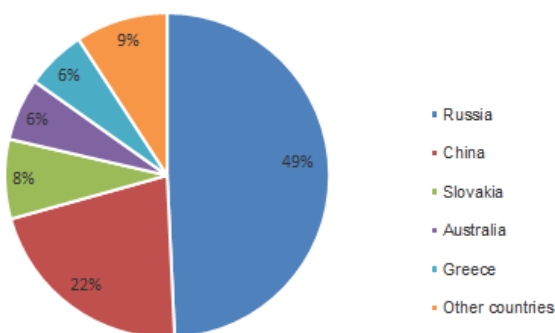
Source: Grand View Research

2022 Magnesium Production



Source: USGS

Global Magnesium Reserves



Source: Statista

Prices have declined from their peaks in late 2021, but remain well above their 10-year average (US\$3,200/t vs US\$2,400/t)

Magnesium Ingot (99.9%) Prices - China



Source: Trading Economics

Note that the above chart presents prices for Mg ingot (99.9% purity), while the recently completed PFS on Record Ridge was based on MgO (98% purity) production. **WHY's PFS indicates that they can produce 98% pure magnesia (MgO) for US\$350/t vs the spot/contract price of US\$1,500/t, reflecting robust margins.** We believe WHY's OPEX is lower than comparable magnesium projects, as its deposit is open-pittable, and as B.C. has relatively low energy/power costs.

Although we are not expecting a global deficit in magnesium supply (as global production capacity is higher than demand), we believe North American projects, such as Record Ridge, have significant upside potential, considering that **magnesium trades at a premium in North America** (due to lack of domestic production and transportation costs from China).

Record Ridge Magnesium Project Location, Accessibility and Infrastructure

The property, covering 8,972 hectares, is located in an established mining district near the town of Rossland, B.C.

Located 5 km north of the U.S.-Canada border

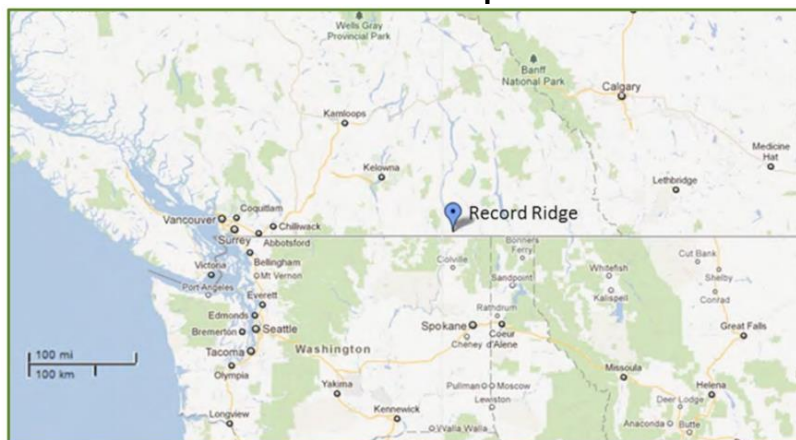
Excellent infrastructure in place, including rail access, power, water, and natural gas

Delineated a 7.5 km² mineralized zone

The current resource estimate accounts for just 8% of identified mineralization

A large high-grade open-pit resource

Location Map



Source: Company

Mineralization and Resource

Between 2007 and 2011, 77 holes (10,310 m) were drilled on the project. All of the holes encountered mineralization.

Mineralized Zone of Record Ridge Magnesium Project



Source: SRK Consulting

A 2013 NI 43-101 resource report stated a **large M&I resource of 43 Mt, with a relatively high grade of 24.6% Mg (10.6 Mt of contained Mg).**

Updated Resource Estimate (2013)

Resource Category	%Mg Cut-off	Total Mt	%Mg Grade	Contained Mg (Mt)
Measured	21.9	28.4	24.82	7.05
Indicated		14.6	24.21	3.54
M&I		43.0	24.61	10.59
Inferred		1.07	24.37	0.26

Source: SRK Consulting

2022 PFS and Proprietary Hydrometallurgical Process

In November 2022, WHY completed a PFS, based on annual production of 86,500 tonnes MgO (98%). The project’s mine plan includes a conventional open-pit operation, following by crushing, and processing, using a hydrochloric acid (HCl) leaching process, as shown below.

WHY’s proprietary technology (developed in 2019) has the potential to produce premium (>99%) magnesium products (MgO and MgOH₂), with nickel and silica as by-products

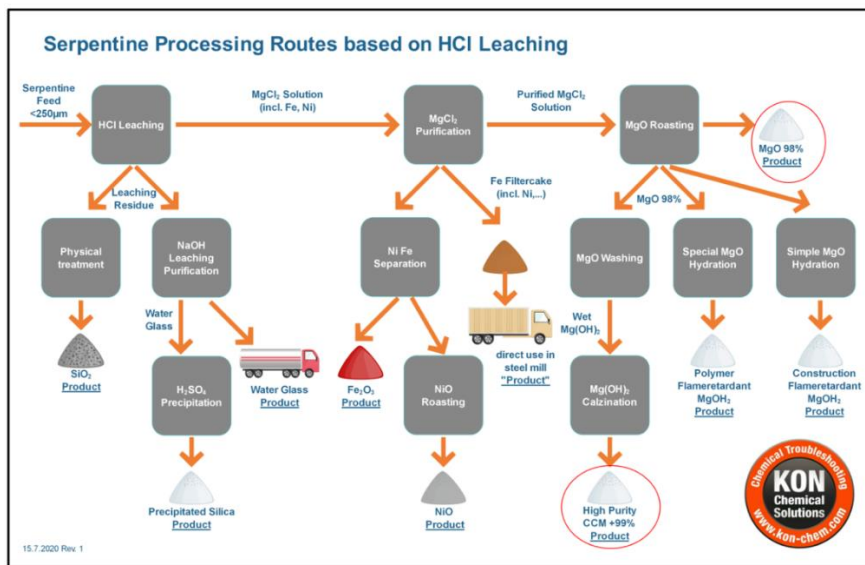
A closed-loop process with zero CO₂ emissions, and low energy consumption

The PFS returned robust economics, including an AT-NPV5% of US\$872M, a very high AT-IRR of 72%, and a quick payback period of 1.5 years, using US\$1,500/t MgO

We believe the PFS was highly conservative, as it was based on just 8% of M&I resources

The PFS was based on a 20-year mine life; we believe the mine can operate for 170+ years, if 100% of M&I resources are used

Relatively low initial CAPEX of US\$205M, and OPEX of US\$375/t



Source: Company

The main mineral source of MgO products in China is Magnesite (MgCO₃), which is processed by calcination at high temperatures, resulting in high CO₂ emissions. However, **WHY’s ore (serpentine) is silicate-based**, allowing the use of HCl leaching at low temperatures, resulting in minimal environmental impact, emissions, and waste.

2022 PFS

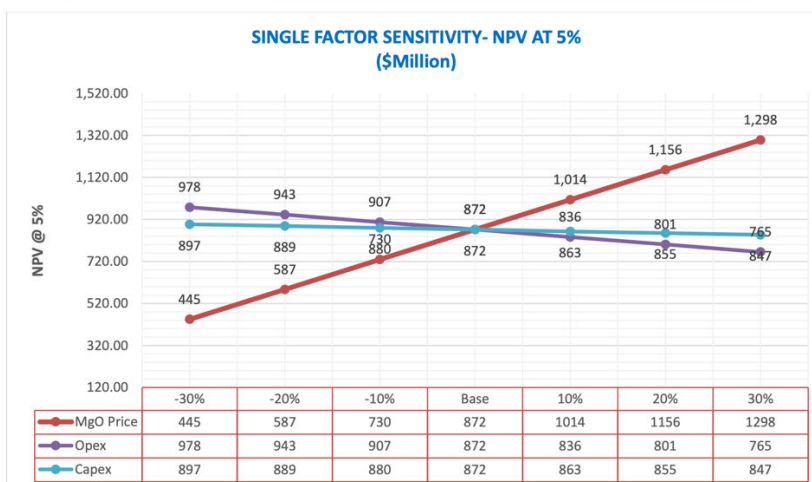
Project Parameters	2022 PFS
After Tax NPV5%	US\$872M
After Tax IRR	72%
Initial CAPEX (50% debt: 50% equity)	US\$205 M
LOM Annual Production MgO Production (98% purity)	86.5 Kt
LOM Ore Production	250 Kt
Recovery Rate	85%
Project Life	20 years
Payback	1.5 years
OPEX	US\$375/t
MgO Price	US\$1,500/t

Source: Company

Sensitivity Analysis

Product		>99% MgO	>98% MgO	Mg Ingot
	Unit	US\$	US\$	US\$
Product Price		\$2,200	\$1,500	\$6,000
NPV 5% Pre-tax	\$ Million	\$1,417	\$994	\$1,636
IRR Pre Tax	%	73.5	80	53
NPV 5% Post Tax	\$ Million	\$1,254	872	1,139
IRR Post Tax	%	64.5	72	41
Initial Capex	\$ Million	325	250	275
LOM Average Annual Production	Mt	90K	90K	50K
LOM Average Mineralization Mined	MT	300	300	
LOM Strip Ratio	Waste/Ore	0.8	0.8	
Mine Life	years	172	172	172
Payback	Years	<2	<2	<2
Net After Tax Income Year 1	\$ Million	90	74	160

AT-NPV5% decreases to US\$445M, if MgO prices are lowered by 30%, and increases to US\$1.3B, if MgO prices are increased by 30%



	\$ 871 774 903	\$ 1050	\$ 1200	\$ 1350	\$ 1500	\$ 1650	\$ 1800	\$ 1950
3.50%	\$ 527 859 780	\$ 690 024 438	\$ 852 189 097	\$ 1 014 353 756	\$ 1 176 518 414	\$ 1 338 683 073	\$ 1 500 847 732	
4.00%	\$ 498 407 986	\$ 653 474 697	\$ 808 541 408	\$ 963 608 119	\$ 1 118 674 830	\$ 1 273 741 540	\$ 1 428 808 251	
4.50%	\$ 470 901 899	\$ 619 323 495	\$ 767 745 090	\$ 916 166 686	\$ 1 064 588 282	\$ 1 213 009 877	\$ 1 361 431 473	
5.00%	\$ 445 190 452	\$ 587 385 269	\$ 729 580 086	\$ 871 774 903	\$ 1 013 969 720	\$ 1 156 164 537	\$ 1 298 359 354	
5.50%	\$ 421 135 594	\$ 557 490 414	\$ 693 845 234	\$ 830 200 054	\$ 966 554 874	\$ 1 102 909 695	\$ 1 239 264 515	
6.00%	\$ 398 611 079	\$ 529 483 798	\$ 660 356 517	\$ 791 229 235	\$ 922 101 954	\$ 1 052 974 673	\$ 1 183 847 391	
6.50%	\$ 377 501 374	\$ 503 223 423	\$ 628 945 473	\$ 754 667 522	\$ 880 389 571	\$ 1 006 111 620	\$ 1 131 833 669	

Source: Technical Report

Upcoming Catalysts

The company is planning to build a demonstration plant to de-risk the project, and complete a feasibility study.

Management is aiming to commence commercial production by 2028, which we believe is a realistic timeline

#	Milestones	MTHS	2022				2023				2024				2025				2026				2027				2028			
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
	DEMO PLANT	36																												
M1	Engineering and Procurement																													
M3	Commissioning																													
M4	Operation																													
M5	Disassembly																													
	COMMERCIALISATION	42																												
M6	Engineering and Procurement																													
	Feasibility and Engineering																													
	Procurement																													
M7	Execution																													
	Construction																													
	Commissioning																													
	Operation																													

Source: FRC

Management and Directors

Share Ownership

Management and Board	Shares	% of Total
Frank Marasco Jr. – President, CEO & Director	46,834	0.06%
Barry Baim – Independent Director	191,786	0.23%
Patricia L. Nelson – Independent Director	12,500	0.01%
Maria Marasco - Director	300	0.00%
Total	251,420	0.30%

Insiders own 30% of the total outstanding shares

Institutions / Others	Shares	% of Total
Big Mountain Development Corp. Ltd. (Marasco Family)	24,708,644	29.32%
Total	24,708,644	29.32%

Total- Management/ Directors / Institutions	24,960,064	29.62%
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Source: Management Information Circular/FRC

Brief biographies of the management team and board members, as provided by the company, follow:

Frank Marasco Jr. – President, CEO & Director

Mr. Marasco is also President and Director of Big Mountain Development Corp. Ltd. Over the course of 45 years, Frank has built and sold numerous successful businesses, in Retail, Hospitality, and Commercial Real-estate. Frank's experience in resource development outside of his 16 years leading WHY Resources is based in the oil and gas sector. He had purchased 81 oil and gas development sections in Saskatchewan in the Bakken, as well as thirteen gold mines in Rossland.

Shelina Hirji, CPA, CM- CFO

Shelina Hirji is a designated accountant with over 38 years of experience in infrastructure construction, oil and gas exploration, and mining. Ms.Hirji has been

engaged in the oil and gas industry since early 1990, starting with various senior accounting and management roles in both public and private companies with extensive participation in growth opportunities.

Barry Baim – Independent Director

Mr. Baim brings over 35 years activating and inspiring teams to achieve profitable revenue growth. His senior experience is diverse having held executive positions with both private and public companies including Tier one CPG and in the natural resource sector mining site development projects in oil sands and other service-related entities in energy, oil, and gas. He is currently a director for SGV Canada and a past board member with Millennium Seismic, Paradigm Chemical Technologies and Siksika Resource Developments Ltd.

Patricia L. Nelson – Independent Director

Ms. Nelson was the Vice Chair and Director of the In Situ Oil Sands Alliance, the Controller for Sabre Petroleum and also Petroterra Resources. She also served as the Manager of Financial Control for Suncor Inc. She is currently a member of the Board of Directors of Altalink, and also Optiom Inc.. Mrs. Nelson served 15 years as an elected Member of the Legislature of Alberta, and was appointed as the Minister of Energy, the Minister of Economic Development and Tourism, the Minister of Government Services, and finally the Minister of Finance.

Maria Marasco – Director

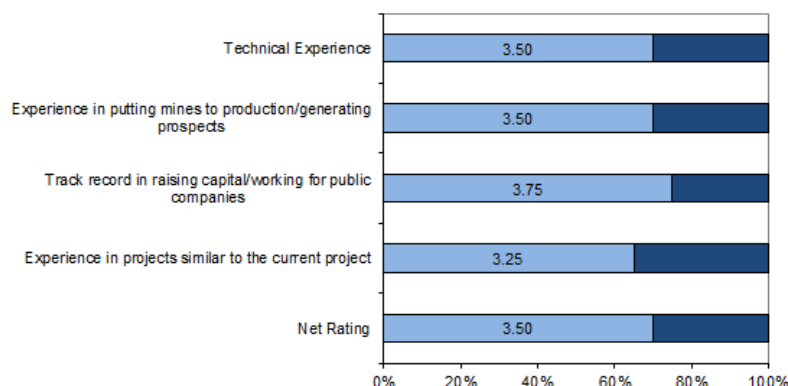
Mrs. Marasco is an independent businesswoman who has provided services in corporate restructuring finance, acquisitions, and strategic planning. She is also responsible for overseeing management information systems, human resource strategies, and property management systems.

Fouad Kamaledine, Phd, P.Eng – Advisor

Dr. Kamaledine is the founder/principal of AIS Inc., an integrated mining consulting partnership that provides technical services to mining companies including processing and metallurgy, project development, and engineering studies. He has been an officer and director of many public and private mining companies. Dr. Kamaledine has over 20 years of academic and industry experience with demonstrated success in conducting challenging industrial research leading to several inventions and multiple achievement awards.

Our net rating on the company's management team is 3.5 out of 5.0

Management Rating



Two out of four board members are independent

Strength of Board

	Poor	Average	Good
Two out of four board members are independent		X	
Directors' share ownership			X
The audit committee is composed of two board members, both are independent		X	
The compensation committee is composed of two board members, both are independent		X	

Source: FRC

Financials

At the end of Q3-2022, WHY had a working capital deficit, due to a \$3.7M loan from the largest shareholder (the CEO's family)

Raised \$1.15M subsequent to Q3

In-the-money options/warrants can bring in \$3.39M

(in C\$)	2021	2022 (9M)
Cash	\$133,465	\$1,564,013
Working Capital	-\$3,350,105	-\$4,641,213
Current Ratio	0.46	0.27
Monthly Burn Rate (G&A)	-\$113,659	-\$135,634
Cash Spent on Properties	-\$204,746	-\$1,947,031
Cash from Financing Activities	\$4,088,262	\$1,842,755

Options	#	Exercise Price	Amount
Total	8,350,000	\$0.33	\$2,767,200
In-the-Money	6,602,000	\$0.33	\$1,980,600

Warrants	#	Exercise Price	Value
Total	8,298,611	\$0.54	\$4,519,693
In-the-Money	5,860,611	\$0.54	\$1,406,547

Source: FRC / Company

FRC Valuation and Rating

DCF Valuation Summary

Production	250 Kt ore / 86.5 Kt MgO
Mine Life (in years)	20
Average Product Price (US\$/t)	\$1,500
Average Operating Costs (US\$/t)	\$375
Initial CAPEX (in US\$M)	\$205
C\$:US\$	1.35
Fair Value - C\$ @ 15%	\$391,063,630
Discount	50%
Discounted Fair Value - C\$	\$195,531,815
Working Capital (C\$), assuming a \$5M equity financing	\$523,116
Number of Shares*	100,756,795
Value Per Share (C\$)	\$1.95

*calculated based on the treasury stock method

Valuation Sensitivity	Product Price (US\$/t)	Discount Rate (%)				
		5.0%	10.0%	15.0%	20.0%	25.0%
	\$1,200	\$3.49	\$1.96	\$1.11	\$0.61	\$0.30
	\$1,300	\$4.07	\$2.34	\$1.39	\$0.82	\$0.47
	\$1,400	\$4.65	\$2.73	\$1.67	\$1.04	\$0.64
	\$1,500	\$5.23	\$3.12	\$1.95	\$1.25	\$0.81
	\$1,600	\$5.81	\$3.50	\$2.22	\$1.46	\$0.97
	\$1,700	\$6.39	\$3.89	\$2.50	\$1.67	\$1.14
	\$1,800	\$6.97	\$4.28	\$2.78	\$1.88	\$1.31

Source: FRC

We are initiating coverage with a BUY rating, and a fair value estimate of \$1.95 per share. We believe the market has yet to realize the significance of magnesium, especially considering its critical mineral status, and that North America and Europe are heavily dependent on China and Russia for supply. WHY is one of the very few publicly listed companies in the world offering exposure to magnesium.

Risks

We believe the company is exposed to the following key risks (not exhaustive):

- The value of the company is **dependent on magnesium prices**
- Development; potential for delays in project development
- Permitting
- **Access to capital and potential for share dilution**
- No assurance that the company will be able to advance all of its projects simultaneously

Our DCF valuation is \$1.95 per share

Our OPEX/CAPEX assumptions are in line with the recent PFS

For conservatism, we have used a high discount rate (15%), and have applied an additional 50% discount to our AT-NPV15% estimate to account for permitting / development / financing risks

Our fair value estimate is highly sensitive to MgO prices

As with most junior exploration / development companies, we are assigning a risk rating of 5 (Highly Speculative)

Fundamental Research Corp. Equity Rating Scale:

Buy – Annual expected rate of return exceeds 12% or the expected return is commensurate with risk

Hold – Annual expected rate of return is between 5% and 12%

Sell – Annual expected rate of return is below 5% or the expected return is not commensurate with risk

Suspended or Rating N/A— Coverage and ratings suspended until more information can be obtained from the company regarding recent events.

Fundamental Research Corp. Risk Rating Scale:

1 (Low Risk) - The company operates in an industry where it has a strong position (for example a monopoly, high market share etc.) or operates in a regulated industry. The future outlook is stable or positive for the industry. The company generates positive free cash flow and has a history of profitability. The capital structure is conservative with little or no debt.

2 (Below Average Risk) - The company operates in an industry where the fundamentals and outlook are positive. The industry and company are relatively less sensitive to systematic risk than companies with a Risk Rating of 3. The company has a history of profitability and has demonstrated its ability to generate positive free cash flows (though current free cash flow may be negative due to capital investment). The company's capital structure is conservative with little to modest use of debt.

3 (Average Risk) - The company operates in an industry that has average sensitivity to systematic risk. The industry may be cyclical. Profits and cash flow are sensitive to economic factors although the company has demonstrated its ability to generate positive earnings and cash flow. Debt use is in line with industry averages, and coverage ratios are sufficient.

4 (Speculative) - The company has little or no history of generating earnings or cash flow. Debt use is higher. These companies may be in start-up mode or in a turnaround situation. These companies should be considered speculative.

5 (Highly Speculative) - The company has no history of generating earnings or cash flow. They may operate in a new industry with new, and unproven products. Products may be at the development stage, testing, or seeking regulatory approval. These companies may run into liquidity issues and may rely on external funding. These stocks are considered highly speculative.

Disclaimers and Disclosure

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The distribution of FRC's ratings are as follows: BUY (65%), HOLD (3%), SELL / SUSPEND (32%).

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