

Focused on High Quality Tier 1 Gold and Zinc Assets

John Tumazos Conference February 16<sup>th</sup>, 2022

#### Forward Looking Statements



This presentation includes certain "Forward-Looking Statements" within the meaning of section 21E of the United States Securities Exchange Act of 1934, as amended. All statements, other than statements of historical fact, included herein, including without limitation, statements regarding potential mineralization and reserves, exploration results and future plans and objectives of Solitario, are forward-looking statements that involve various risks and uncertainties. There can be no assurance that such statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such statements. Solitario's Golden Crest land position does not cover any of the areas of historical gold production or historical unmined resources but are thought to be on trend with these known areas of mineralization. Certain historical information concerning exploration and gold production in the Black Hills region has been obtained through both public and private sources and are believed to be substantially factual, but Solitario can give no assurances of the accuracy of such information. Development of Solitario's properties are subject to the success of exploration, completion and implementation of an economically viable mining plan, obtaining the necessary permits and approvals from various regulatory authorities, compliance with operating parameters established by such authorities and political risks such as higher tax and royalty rates, foreign ownership controls and our ability to finance in countries that may become politically unstable. Important factors that could cause actual results to differ materially from Solitario's expectations are disclosed under the heading "Risks and Uncertainties" as well as the COVID-19 related risks as disclosed in the Quarterly Report on Form 10-Q for the year ended March 31, 2020, filed with the SEC on or about May 1, 2020 and elsewhere in Solitario's documents filed from time to time with Canadian Securities Commissions, the United States Securities and Exchange Commission and other regulatory authorities.

This presentation contains estimates of mineralized material based upon measured, indicated and inferred mineral resource categories that are recognized and required by Canadian regulations, but the SEC does not recognize them and U.S. reporting companies are normally prohibited from including resource estimates in their U.S. filing. U.S. investors are cautioned not to assume that any part, or all, of mineralized material or mineral resources categories will ever be converted into reserves. The economic significance of Proven and Probable Reserves differ substantially from mineralized material and measured and indicated mineral resources. Furthermore, economic viability has yet to be established by a feasibility report for mineralized material and the Company has not yet determined that any part of the mineralized material can be legally mined. This presentation also contains information about adjacent properties on which we have no right to explore or mine. We advise U.S. investors that the SEC's mining guidelines strictly prohibit information of this type in documents filed with the SEC. U.S. investors are cautioned that mineral deposits on adjacent properties are not indicative of mineral deposits on our properties.

This presentation (including drill hole information and mineral reserve and resource numbers) has been reviewed for accuracy by Mr. Walt Hunt, COO for Solitario Zinc Corp., who is a qualified person as defined by National Instrument 43-101.

# Solitario Investment Proposition

**Major New Gold Initiative** in South Dakota; 2021 exploration results points to potential new district scale gold discovery.

**Significant Joint Venture Interests** in two high-grade zinc development projects, ~12% Zn Eq. M&I resource = 2.5 billion lbs., Inferred = 2.1 billion lbs.

**Florida Canyon Zinc Project** in Peru is a high-grade development asset held jointly with Nexa Resources

**Lik Zinc Project** is a large-tonnage, high-grade, openpittable development project in Alaska, partnered with Teck Resources

**Well-financed** ~US\$6.7 million in cash and marketable securities

Disciplined Capital Structure 62M shares outstanding

**Experienced and Respected Management Team** track-record of creating value by moving assets through feasibility and permitting





# **Capital Structure**



Current Price	US\$0.63/C\$0.80	Market Cap	~US\$39 Mil/C\$49 Mil
Shares Outstanding	62 Mil	Avg. Daily Vol. NYSE/TSX (3month)	152K/7.6K
Options	5.5 Mil	Cash and Marketable Securities	\$6.7 Mil
Fully Diluted	67.5 Mil	Annual Burn Rate	(excluding drilling) \$1.5 Mil
52-Week High	US\$1.25/C\$1.56	Analyst	Heiko Ihle, H.C. Wainwright XPL price target USD\$0.90
52-Week Low	US\$0.41/C\$0.53	Top Holders	Mgmt. and Directors: 5.6 Mil Zebra Hldgs. (Lukas Lundin): 3.9 Mil Newmont Mining: 2.7 Mil

# SOLITARIO VALUATION:



SIGNIFICANTLY UNDERVALUED HIGH-GRADE ZINC ASSETS

DEPOSIT	INDICATED	INFERRED			
	LBS. ZN-EQ	LBS. ZN-EQ			
FLORIDA CANYON + LIK	2.55 billion	2.10 billion			
Average Grade approximately 11% Zn-Eq					

EXCEPTIONAL POTENTIAL FOR MAJOR GOLD DEPOSITS AT GOLDEN CREST

<u>Upside</u> Au

Value

Zn

- Potential to become one of North America's most important new green fields gold project
  - Significant high-grade gold occurrences over 35 square km area
- These new targets are not "dusted off" marginal prospects or lowquality geochemical anomalies, but true grass roots discoveries that are totally untested adjacent to 70 million ounces of gold

#### Northern Black Hills, South Dakota A Super Giant Gold Province



**Blacktail Channel** Gilt Edge Maitland ~10,000,000 oz Au 1.070.000 oz Au 3.4 Moz Au Sundance Homestake Wasp **Richmond Hill** 947.000 oz Au 68.260.000 oz Au 125,000 oz Au 270,000 oz Au Portland Trojan Ruby Basin Ragged Top **Tinton placers** Strawberry Ridge 650.000 oz Au 0.3 Moz Au; 15 Moz Ag 470,000 oz Au Wharf complex 8.2 Moz Au & 30 Moz Ag Approx. 93 million ounces of gold in a 120 km<sup>2</sup> region More endowed per km<sup>2</sup> than the Carlin Trend of Nevada! Solitario Land Package Homestake Mining Company's monopoly on land position In 20th Century suppressed exploration Solitario has assembled a >110 km<sup>2</sup> land position in this prolific district 1 km that is near completely unexplored

## Solitario Re-engages in Gold Exploration



 Solitario's exploration team is responsible for five gold discoveries in the US totaling 5 million ounces and resulting in US\$250 million in value to shareholders in three transactions

Golden Crest Project – South Dakota

- 28,000 acres of mining claims in safe, accessible jurisdiction
- Greenfields district-scale exploration in the shadow of a Super Giant Gold Deposit - Homestake/Wharf district
- Several large robust gold anomalies have been located covering >30 sq. km; open in all directions
- Excellent potential for stacked carbonate-hosted high-grade gold deposits at depths of no more than 200 to 400 meters <u>and</u> Precambrian hosted high-grade vein deposits.

# Where do you find gold? Next to existing gold deposits



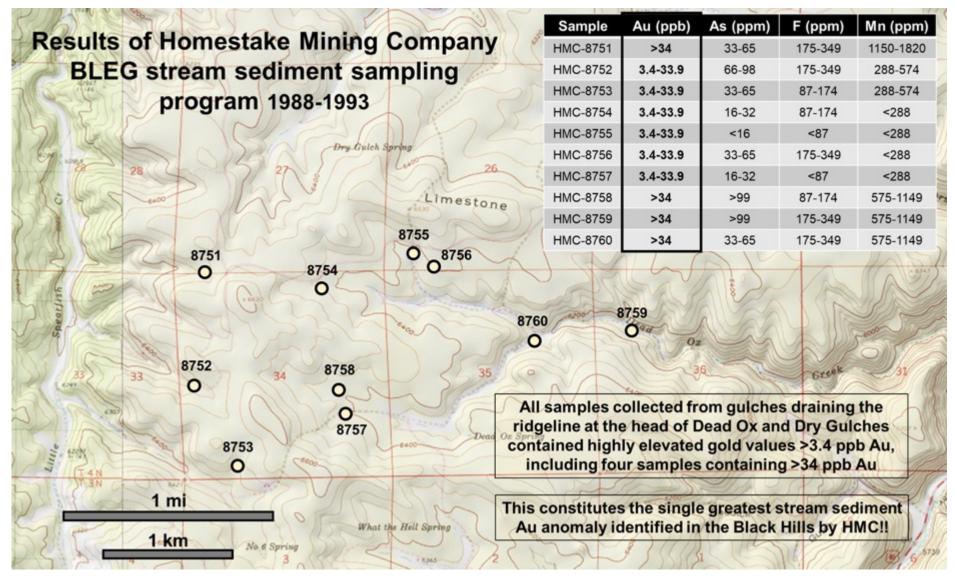
Except conventional wisdom holds there is no more gold to be found next to the Homestake-Wharf mining district

If the Super Giant Homestake-Wharf gold district is not an isolated Super Giant, then there is an enormous endowment (+100 million ounces) of undiscovered gold – where is it? Why hasn't it been found?

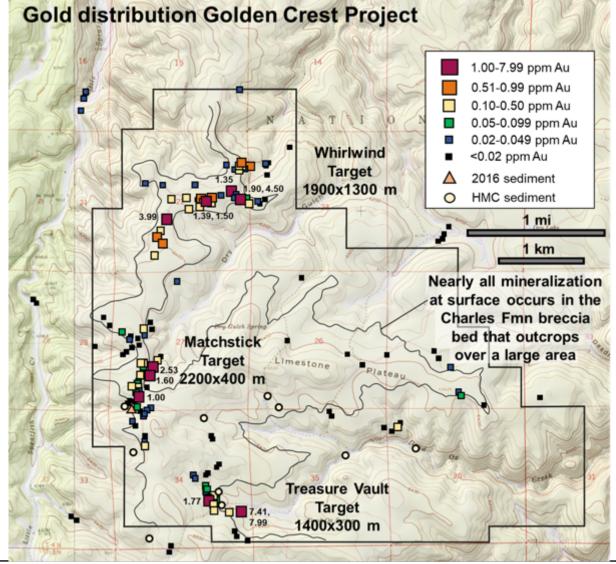
- Virtually no historic or modern exploration conducted to the west of the district – It has long been assumed that Homestake Mining Co. (HMC) thoroughly explored the region
- HMC conducted virtually no exploration work west of the Homestake mine during its entire 140-year history in the area
- Almost all the bedrock is covered by a thin layer of soil, and rocks that are exposed look barren

#### Golden Crest: HMC Stream Sediment





#### A Compelling Au Anomaly of District-Scale





#### Initial Sampling Results 2020 Surface Grab (Rock) Samples:

103 contained gold values >20 ppb Au (41% of samples)

61 contained gold values >50 ppb Au (24% of samples)

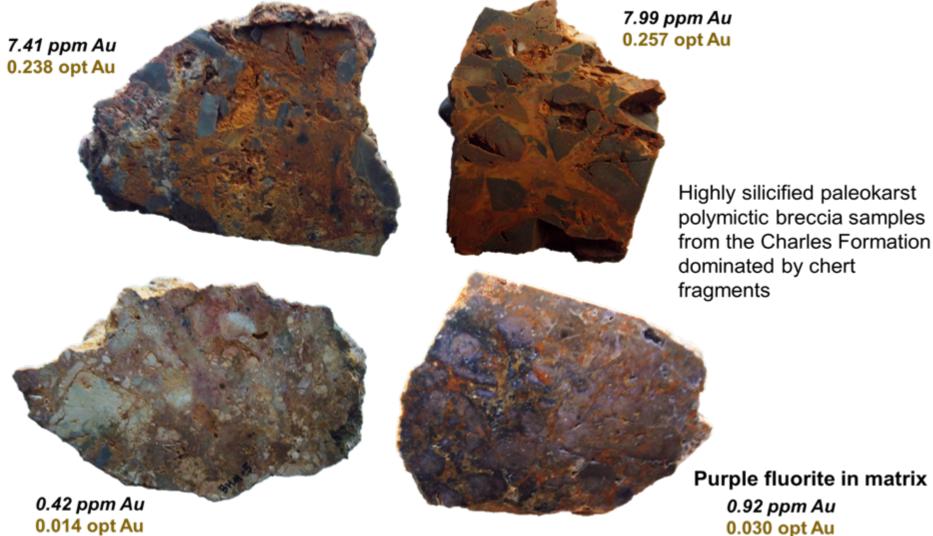
45 contained gold values >100 ppb Au (18% of samples)

12 contained gold values >1.0 ppm Au

Compared with typical early-stage exploration results in similar systems in Nevada, this is a compelling result, particularly with 80 million historical ounces of gold within a 20 km radius

### Mineralized Jasperoidal Grab Samples, Golden Crest





#### **Highly Elevated Pathfinder Elements**



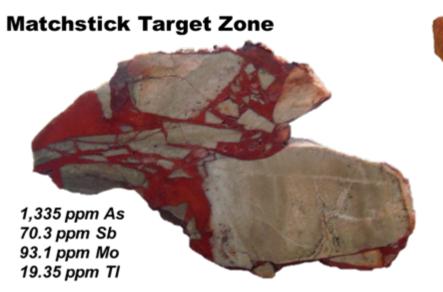
#### Whirlwind Target Zone

0.14 ppm Au 0.09 ppm Ag 1,560 ppm As 134.5 ppm Sb 118 ppm Mo 36.1 ppm TI 1.99 ppm Hg



Even in samples with very low gold values, the pathfinder elemental suite of As-Sb-Mo-TI-Hg is very high across all three target zones.

#### **Treasure Vault Target Zone**





1,415 ppm As 57.5 ppm Sb 43.4 ppm Mo 27.5 ppm Tl 7,671 ppm As 11.2 ppm Sb 376 ppm Mo 19.1 ppm Tl



#### Rock Geochemistry Statistics For Sampled Target Areas

Prospect	No of Samples	Au ppb (max)	Au ppb (avg)*	Ag ppm (max)
Buena Vista	24	3246	215	0.8
Yellow Jacket	26	132	33	0.8
Shoofly-Fireball	42	64	18	2.7
Treasure Vault	44	3990	516	3
Matchstick	119	8740	480	1.8
Whirlwind	167	7990	399	1040
Citadel	60	30	13	11
11th Hour Gulch	12	10	7	0.2
Maurice	10	349	85	2
Lockout	6	61	25	11.8
Downpour	16	50200	8677	28.9
Log Jam	10	807	198	2.2
Dustbowl	7	62	62	0.7
Land's End	21	323	96	0.7

ppb = parts per billion; 1,000 ppb = 1.0 gram

\*of samples with detectable gold

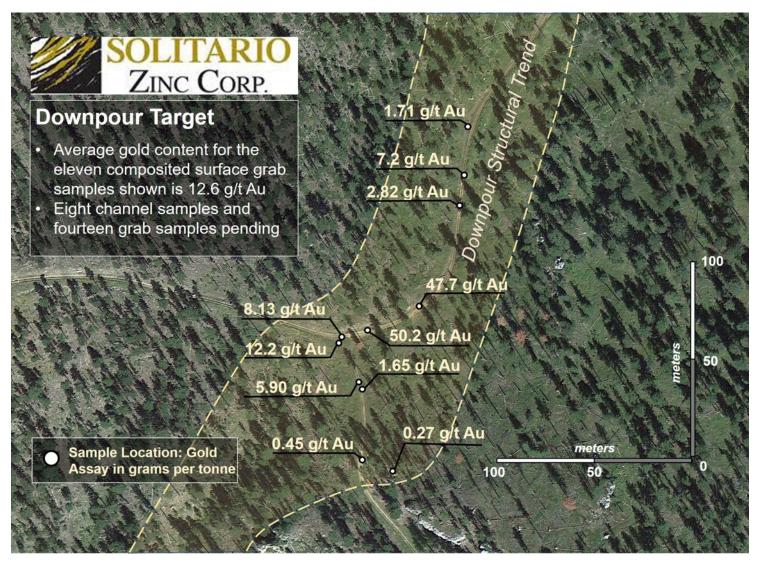
# Downpour Assay Results for Reconnaissance Rock Grab Samples<sup>1</sup>

Sample Number	Gold gpt	Silver gpt
2399	12.20	8.9
2400	50.20	2.6
2401	47.70	18.4
2402	0.27	16.9
2403	2.82	6.5
2404	7.20	28.9
2405	1.71	2.0
6055020 <sup>2</sup>	8.13	<0.1
6055021 <sup>2</sup>	5.90	<0.1
6055022 <sup>2</sup>	0.45	1.6
6055023 <sup>2</sup>	1.65	<0.1

<sup>1</sup>Reconnaissance rock grab samples are selective in nature, and therefore reported mineralization and assay results may not be representative nor reflect economic viability. <sup>2</sup>Previously reported assay.

# Downpour Zone

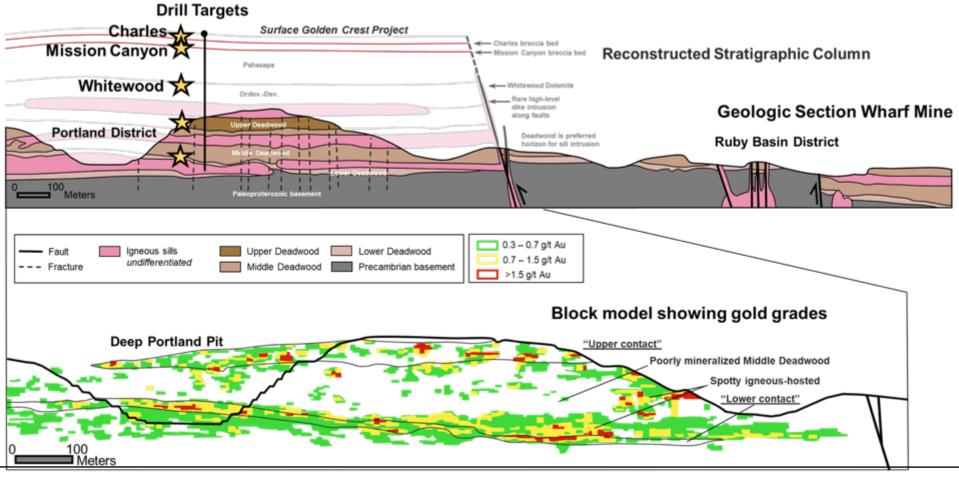




Excellent target at depth in Cambro-Ordovician for major Au: Wharf Mine analogy (8.2 Moz Au) just 8 km to NE



It is entirely reasonable to expect that hydrothermal fluids producing Deadwood-hosted mineralization would continue upwards into upper Paleozoic units like the Pahasapa to form large areas of hydrothermal alteration with gold mineralization



NYSE American: XPL | TSX: SLR | SolitarioZinc.com



### Every Drill Hole To Test Multiple 22 High-Grade Targets in Stacked Horizons

Precambrian Target: Searching for the next Homestake BIF deposit

- Homestake production and reserves through 2001: 46,443,000 oz Au in 231 Mt of ore + 20 Moz of known resources at time of mine closure
- Eleven production "ledges": average size of 21 Mt @ 6.3 g/t Au (4.2 Moz Au)
- Ledges can be very large up to 80.59 Mt @ 8.4 g/t (21.8 Moz Au)

#### Paleoplacer Target: Eroded from Precambrian gold deposits

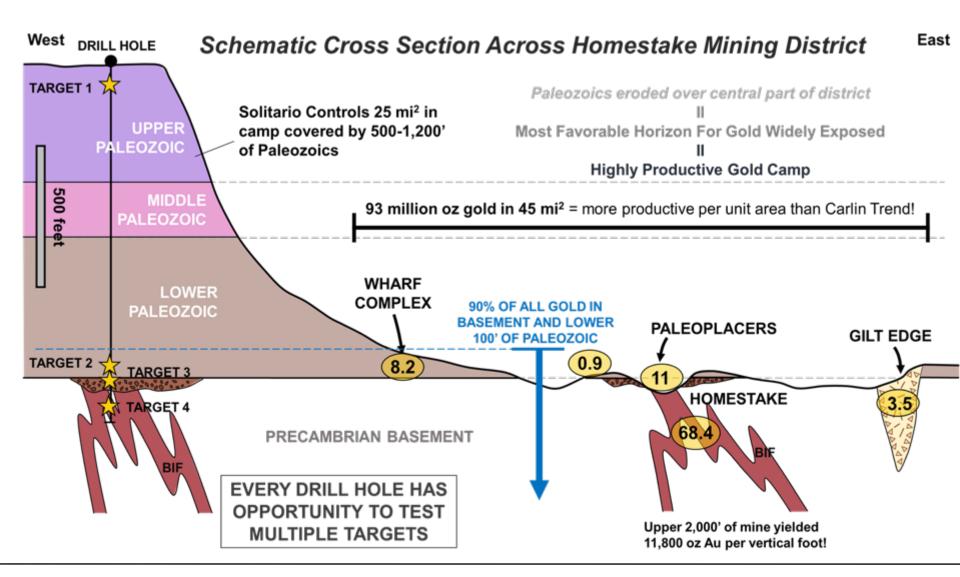
- Located in vicinity of large Precambrian deposits
- High-grade cores 0.50 to >1.0 oz/t Au with large volumes of 0.1-0.3 oz/t ore
- 10 Million high-grade ounces produced (underground) with a geologic inventory of >4 Moz Au

#### Paleozoic-Hosted Replacement Target: Wharf analogy

- Host dolomites/quartzites rest directly on basement
- >4.5 Moz historic high-grade production @ 0.3 to 1.0 oz/t Au & 3-15 oz/t Ag
- Potential for further replacement deposits in upper Paleozoics at shallow depth

# **Exploration in Covered Terrain**





# Golden Crest Project Summary



- Spring 2021 Signed Mining Lease Agreement on 4,820 acres and initiated an aggressive claim staking program based on field verified altered (silicified) areas. Current land position 28,000 acres (113 sq. km.)
- If the Super Giant Homestake-Wharf gold complex is not an isolated Super Giant, then there is an enormous endowment of undiscovered gold.
- Golden Crest has been subjected to widespread hydrothermal gold mineralization affecting receptive carbonate rocks over a vertical dimension of at least 300 meters with a lateral footprint of 7 x 5 km (and growing).
- Wharf gold target is very explorable with a strong high-grade component.
- Prospective Homestake Formation exists below Golden Crest claim block.
- Moving rapidly to establishing multiple drill targets with a goal of submitting a Plan of Operation to drill within several months.

# Why Should You Care About Zinc?

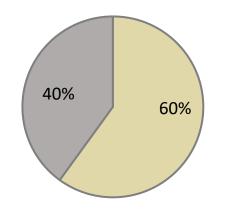


Stimulus Spending Has the Potential to Create \$4 to \$6 Trillion in Infrastructure Spending

- More Steel 
  Significant Increase in Demand for Zinc

#### Other Uses 40%

Utilized in die-casting, production of brass and bronze, and into oxides and chemicals



#### **Galvanization 60%**

Utilized for its corrosion resistance (galvanized steel, rebar, autos, structural steel).

#### **Green Energy - Batteries**

Zinc is increasingly being investigated for large-scale energy storage batteries for alternative energy systems, such as solar and wind. Potentially a massive new demand for zinc supply.

# World Class Partners

Partnering with well funded, leading zinc producers reduces costs, risk and capital requirements

Florida Canyon Zinc Project held jointly with Nexa Resources S.A., 4<sup>th</sup> largest zinc producer with three underground zinc mines and large zinc smelter in Peru.

Lik Zinc Project in partnership with Teck Resources, 3<sup>rd</sup> largest zinc producer with worlds largest zinc mine (Red Dog) situated just 14 miles from Solitario's Lik deposit.



# nexa

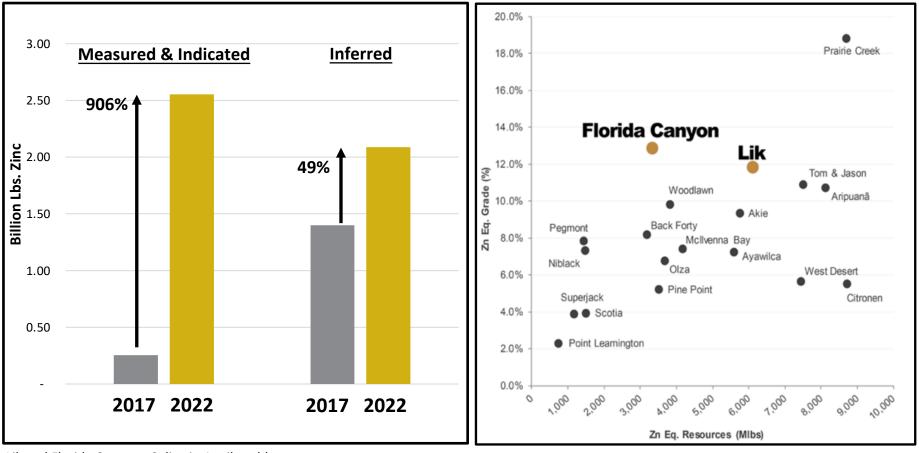
\$1.1B Market Cap

# Teck

\$18.2B Market Cap

# Exceptional Resource Growth Exceptional Grade





Lik and Florida Canyon - Solitario Attributable

# Florida Canyon Zinc Project, Peru

Joint ventured with Nexa Resources S.A.

Advanced exploration project with \$70 million in partner investments (526 drill holes; 134,416 meters)

Preliminary Economic Assessment demonstrates robust economics

Funded to Production

17,000-meter drilling program completed in 2019 was the most aggressive annual program to date

Significant resource increase announced February 16<sup>th</sup>, 2021





## Funded to Production



<u>All</u> future costs - drilling, PEA updates, pre-feasibility costs, community relations, environmental expenses, metallurgical studies, engineering & feasibility - will be funded by Nexa to earn its 70%-interest in the project.

Solitario will not pay back any of these costs.

After feasibility, Nexa will fund Solitario's 30% participating interest through a loan to Solitario.

Interest rate will be at Nexa's cost of funds – currently about 5%.

Solitario will fund loan repayment to Nexa through 50% of the net cash flow from its 30% participating interest.

Allows for significant cash flow to be achieved early.



Solitario achieves production without capital risk or equity dilution!



#### BONGARÁ: COMMUNITY SUSTAINABILITY COMMITMENT AND PROJECT INFRASTRUCTURE



Map showing the existent road (yellow) and the new track from Km 31 to Nuevo Cumba and La Florida (green)

Km 14+500

Km 12+40

#### trail and ditch maintenance: before and after according to progressive

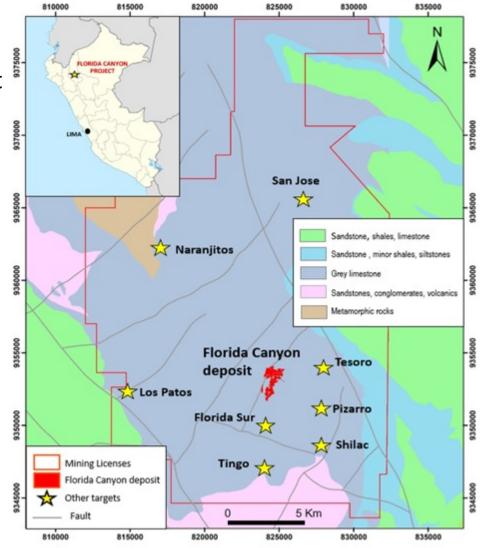


#### Game Changing Exploration Potential

Multiple exploratory targets have been identified immediately south, north, east and west of the Florida Canyon deposit with mineralized outcrops.

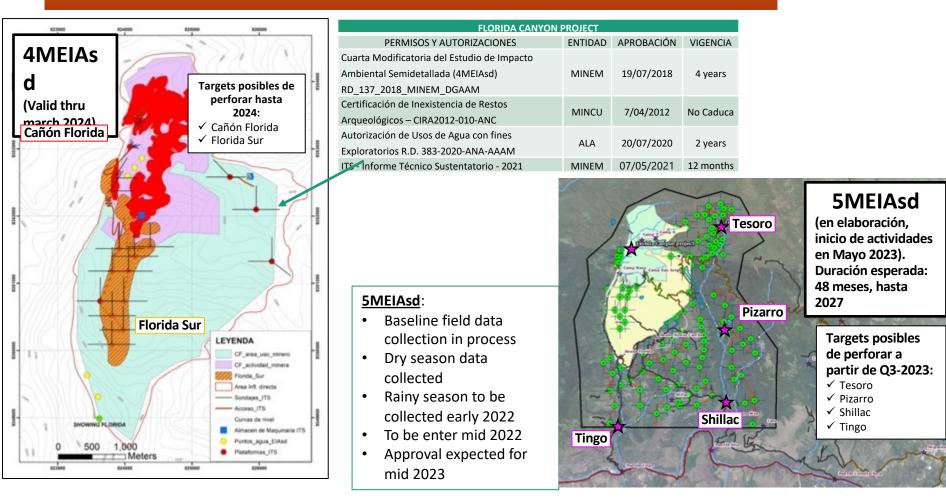
- Targets to the south appear to be extensions to the Florida Canyon mineralized corridor.
- Drill testing some of these satellite targets is planned as they have the potential to significantly increase the mineral resource at the Florida Canyon Project.







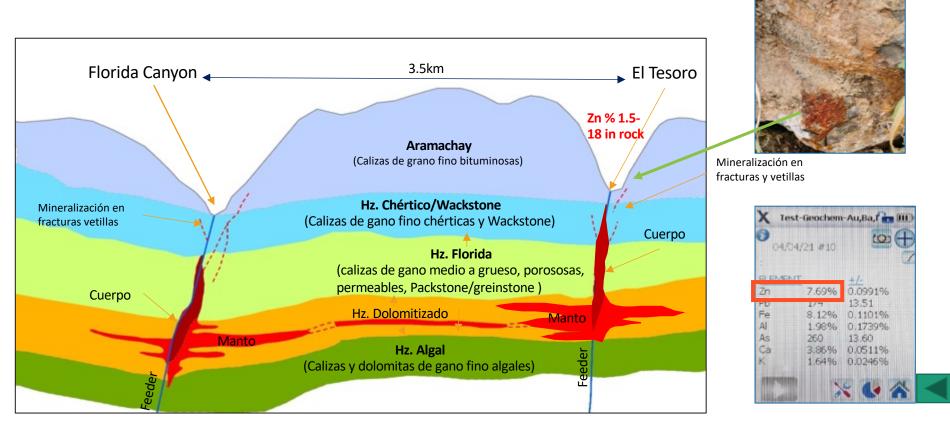
#### **BONGARÁ DRILL SITE PERMITING**





#### **BONGARÁ EXPLORATION**

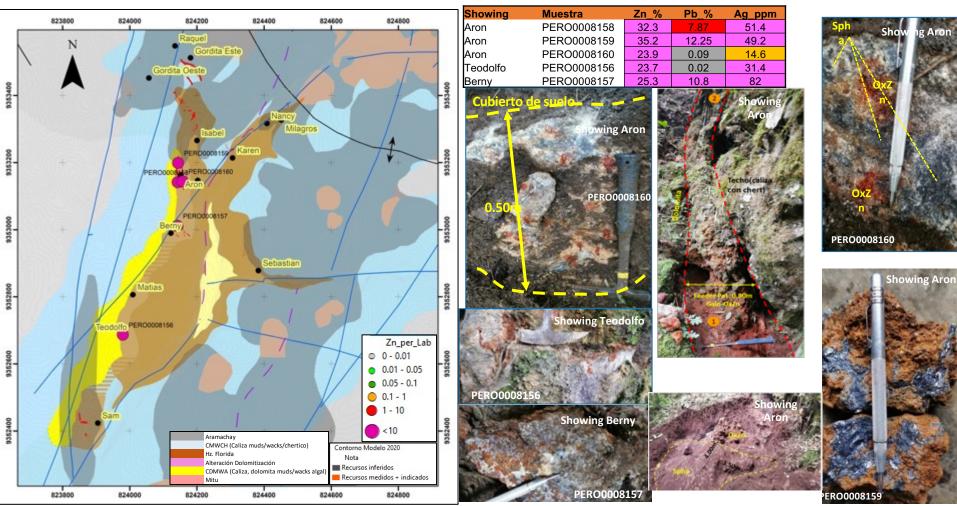
#### POTENTIAL OF TESORO TARGET





#### Showings área Cañón Florida







nexa

#### **PIZARRO SHOWING GRADE OF 2021 SURFACE SAMPLES** 827250 827300 827350 827400 827450 827500 PERO0008171 PERO0008170 PERO0008169 PERO0008172 PERO0008166 PERO0008164 PERO0008168 PERO0008169 PERO0008170 PERO0008171 PERO0008167 PERO0008163 PERO0008165 LEYENDA PERO0008162 BG\_RO\_SAMPLE\_20112021 Zn\_per\_Lab PIZARRO Ag\_ppm Pb\_per Zn\_per Sample 0.00 - 0.50 0.50 - 1.00 PERO0008168 0.98 1.00 - 5.00 PERO0008169 5.00 - 10.00 40.6 10.00 - 35.24 PERO0008170 4.52 Caliza Negra Bit PERO0008171 19.9 PERO0008172 14.65 827550

#### PERO0008168

PERO0008172

827400

827500

827250

827300

827350

31.01

0.30

20.00

8.16

3.91

0.06

6.83

0.09

6.57

0.04

# 2022 Bongara Work Program



- Completion of access road to the project and local communities to fulfill community sustainability commitments
- Significant metallurgical testing program to achieve prefeasibility level
- Surface exploration to better define drill targets and to discovery new surface showings
- Complete phase 5 permit that allows for massive new drilling effort covering five new target areas (approximately 80 drill sites)



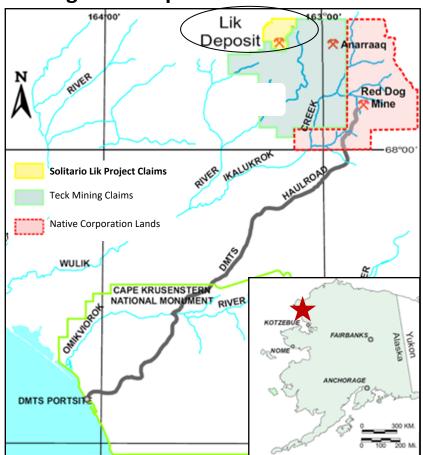
# Lik Zinc Project, Alaska



- Mining claims covering 6,075 acres located ~14 miles from Teck's Red Dog Mine, in mining friendly jurisdiction
- 50/50 joint venture with Teck; Solitario is the operator
- Large tonnage, high-grade, open-pittable resources, with significant underground expansion potential
- Clean metallurgy

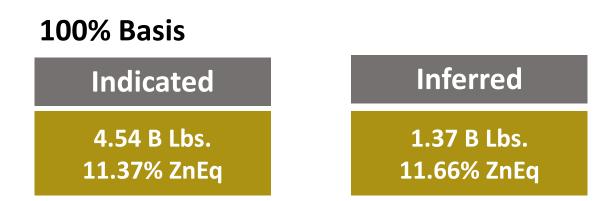


Lik Regional Map

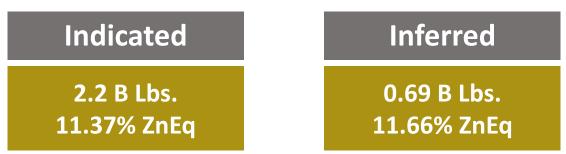








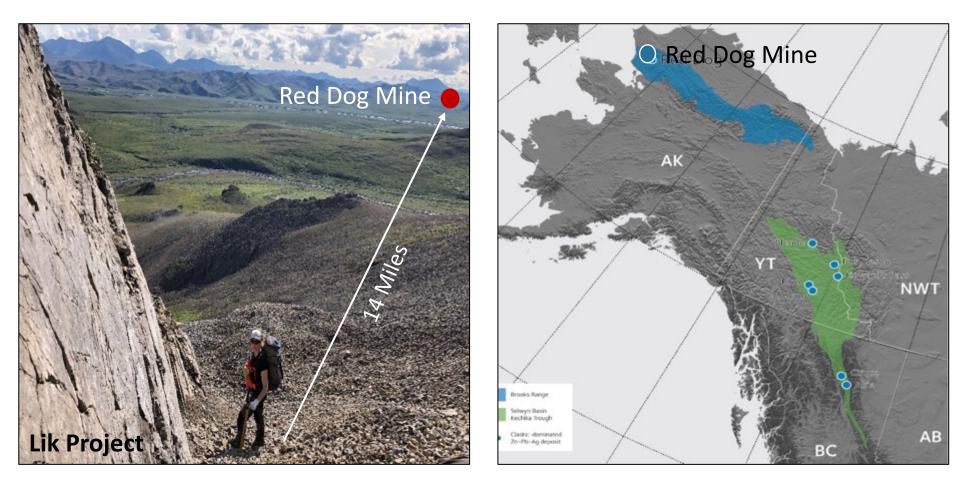
#### Solitario's 50% Share



Price assumptions for Zinc-Equivalent grade: Zinc \$1.20/lb; Lead \$1.00/lb; Silver \$16.50/oz.

### Lik Project, Alaska (proximity to Red Dog)

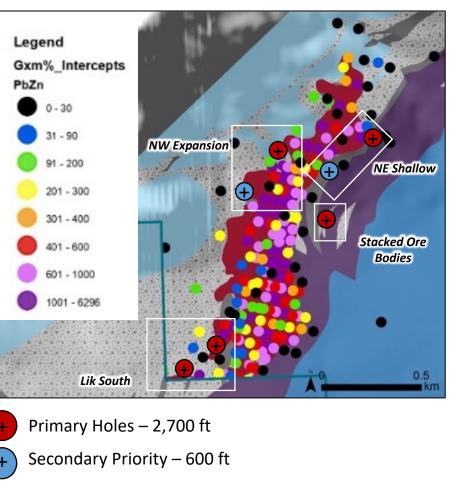




# Potential 2022 Exploration Program\*

- 2,000+ feet core drilling program to test new exploration targets, extension of open pit resource and stacked ore bodies.
  - ✓ Stacked ore bodies could provide huge upside potential
- Surface geochemical and geophysical sampling, induced polarization

\*May be impacted by COVID-19/Rig availability





# Lik Joint Venture Considerations

- Teck Resources is the third largest zinc producer in the world and operates the largest and most profitable zinc mine in the world - Red Dog. Red Dog is a core asset of Teck. Red Dog is a relatively easy 14-mile ore haul from Lik.
- Red Dog production is subject to costly (35% NPI) and increasing (to 50% in 2032) to NANA Native Corporation. Lik is not subject to a NANA Royalty.
- Joint Venture relationship is excellent.
- During the past three years, Teck has become increasingly more engaged and enthusiastic concerning Lik. Teck wants to become majority owner and manager of the JV.



# Lik Upside Considerations

- Lik open pit resource has potential to grow by several million tons.
- Potential for significant additional mineralization through deeper Lik mineralization exploited by underground mining methods, stacked mineralized horizons below Lik, and the north prospect area.
- Project economics will be significantly enhanced by utilizing Red Dog infrastructure; much lower capital costs, modestly higher operating costs.



# Value and Upside

SIGNIFICANTLY UNDERVALUED HIGH-GRADE ZINC ASSETS



#### EXCEPTIONAL POTENTIAL FOR MAJOR GOLD DEPOSITS AT GOLDEN CREST











Lik Zinc Project, Alaska

Florida Canyon Zinc Project, Peru

#### Christopher Herald, President and CEO 4251 Kipling St., Suite 390 Wheat Ridge, Colorado 80033 303-534-1030 cherald@aol.com

Investor Relations Valerie Kimball Director, Investor Relations 720-933-1150 800-229-6827 vkimball@solitariocorp.com

#### Transfer Agent Computershare Investor Services 800-564-6253

#### Management



#### Christopher Herald, President, CEO & Director



Mr. Herald has served as Chief Executive Officer since June 1999, President since 1993, and a director of Solitario since 1992. Prior to its acquisition by Kinross Gold Corp., Mr. Herald also served in various capacities for Crown Resources from 1987-2006, including, Chief Executive Officer, President and director. Prior to joining Crown, Mr. Herald was a Senior Geologist with Echo Bay Mines and Anaconda Minerals. Mr. Herald serves as non-executive Chairman of Viva Gold Corp. Mr. Herald received a M.S. in Geology from the Colorado School of Mines and a B.S. in Geology from the University of Notre Dame.

#### Walter H. Hunt, Chief Operating Officer



Prior to his appointment as COO in June of 2008, Mr. Hunt was Vice President - Operations and President - South American Operations of Solitario since June 1999. He also served as Vice President - Peru Operations from 1994 until 1999. Mr. Hunt was Vice President Operations of Crown Resources from 1994 to 2006. Mr. Hunt has over 30 years of exploration, development and operational experience with Anaconda Minerals, Noranda and Echo Bay Mines where he served as Superintendent, Technical Services and Chief Geologist at Echo Bay's Kettle River Operations. Mr. Hunt received his M.S. degree in Geology from the Colorado School of Mines and a B.S. degree from Furman University.

#### James R. Maronick, Chief Financial Officer



Mr. Maronick has served as Chief Financial Officer and Secretary/Treasurer of Solitario since 1999. He also served as Chief Financial Officer of Crown Resources from 1999 to 2006. Prior to that, Mr. Maronick served as Vice President - Finance and Secretary/Treasurer of Consolidated Nevada Gold Fields Corporation from November 1994 to September 1997. Mr. Maronick graduated with honors from the University of Notre Dame in 1977 with a BA in accounting and received his Masters degree in Finance with highest honors from the University of Denver in 1986.

### **Board of Directors**



- **Brian Labadie**, *Chairman of the Board* Mr. Labadie has been a director of Solitario since June 2006 and Chairman since March of 2009. Mr. Labadie has in over forty years-experience in the mining industry including formal training and experience as a mining engineer including developing and operating mines, both as a mine manager and as a senior executive at Miramar Mining Corporation and Echo Bay Mines. Currently, he is an independent mining industry consultant. He was a former director of Crown Resources Corporation and Battle Mountain Gold Corporation. Mr. Labadie holds a Bachelor of Science degree in geological engineering from the University of Toronto.
- **Gil Atzmon**, *Director* Gil was the founder, Chairman, Chief Executive Officer and a Director of Zazu Metals before its acquisition by Solitario in June 2017. Mr. Atzmon has over 20 years' experience in the mineral resources sector including positions as a mining executive, investment banker, mining fund manager and geologist. Previously, Mr. Atzmon acted as VP, Corporate Development of Ivanhoe Mines Ltd., a global energy and mining specialist for BNP Paribas and Portfolio Manager for US Global Investors, Inc. Mr. Atzmon holds a Bachelor's degree in Geology and Geography from Columbia University and a Master Degree in Energy and Mineral Resources from the University of Texas.
- **Joshua Crumb**, *Director* Mr. Crumb is a founder, Director and Chief Financial Officer of Goldmoney Inc., a financial service and technology company, serving in this role since 2014. Mr. Crumb was previously an Executive Director at Goldman Sachs and also held positions within the Lundin group of companies. Mr. Crumb served as a founder and Director of Loma Vista Capital, and an independent Director of Silver Bull Resources Inc., Astur Gold Corp and Zazu Metals. Mr. Crumb holds a Master's of Science degree in Mineral Economics, a Graduate Certificate in International Political Economy, and a BS degree in Engineering from the Colorado School of Mines.
- **Jim Hesketh**, *Director* Mr. Hesketh has over 35 years' experience in the mining industry and is presently serving as President, CEO and Director of Viva Gold Corp. Previously, Mr. Hesketh served as President, CEO and Director of Atna Resource, Ltd, and its' predecessor Canyon Resources Corporation. He was also a principal mining engineer and VP of NM Rothschild & Sons. Mr. Hesketh holds a BS in Mining engineering and an MS in Mineral economics, both from the Colorado School of Mines.
- Christopher Herald, Director See management slide
- John Labate, Director Mr. Labate is a seasoned executive with over thirty years of financial management and accounting experience. Currently he serves as CFO of Gold Resource Corporation. He has previously served as CFO of Golden Star Resources, Ltd., Constellation Cooper Corporation, Crown Resources Corporation and Applied Optical Technologies. Mr. Labate received a bachelor's degree in Accounting from San Diego State University.