



Solitario Establishes Major New Land Positions in Highly Prospective Gold Terrain in the United States

DENVER, CO – August 3, 2021 - Solitario Zinc Corp. (“Solitario”) (NYSE American: XPL; TSX: SLR) is pleased to announce that it has acquired approximately 11,600 acres of mineral rights in western South Dakota known as the Golden Crest Project. These mineral claims comprise strategic land holdings in a gold district that has historically produced from multiple mines ranging in production from several million to the more than 40 million ounces of gold at the Super Giant Homestake Mine. The project area is in a safe and mining friendly jurisdiction with highly developed infrastructure, an unbroken 145-year record of continuous gold mining, a skilled mining workforce and a history of high-grade, underground mineable gold deposits.

Chris Herald, President and CEO of Solitario, stated: “Golden Crest is the most significant gold exploration effort we have ever undertaken in our corporate history. The northern Black Hills is one of the most gold-endowed regions in the world and we firmly believe that it has the potential to host multiple new, world class gold deposits. We have been working on this project for nearly a year and have assembled a significant land position in this exciting gold belt.

Adding the Golden Crest gold project to our two high-grade zinc assets, Florida Canyon and Lik, creates a company with a compelling value proposition in zinc and an exciting green fields gold property situated in an exceptional gold belt that is underexplored.”

What We Know About Super Giant Gold Deposits

The historic Homestake Mine (42 million mined ounces and 20 million unmined ounces of gold) is one of the largest individual gold deposits in North America and has the distinction of falling into a rare class known as Super Giant gold deposits (deposits containing +58 million ounces). There are less than forty known gold deposits of this size worldwide. Super Giant deposits are characterized by a cluster of surrounding geologically similar deposits within an area of several hundred square kilometers that define profoundly mineralized regions. Globally, these deposit clusters nearly always contain satellite gold endowments in excess of 100 million ounces. Examples of Super Giants and their associated clusters include the Timmins-Abitibi Belt (Canada), Golden Mile-Eastern Goldfields (Australia), Obuasi-West Africa and Carlin/Gold Strike-Carlin Trend (Nevada).

Chris Herald further stated, “We do not believe that the Homestake Super Giant deposit exists in isolation, but is located within a group of gold deposits, the majority of which are yet to be discovered. The region has exceptional exploration potential representing one of the world’s best districts for undiscovered large gold deposits. We believe areas west of the Homestake Mine have a high potential for the discovery of significant new deposits through a well-funded and

systematic modern exploration strategy. Historic Homestake Mining Company exploration reports and new syntheses of Black Hills geology provide strong support for the gold potential in areas that Solitario has staked. This information, coupled with our own ongoing independent work, formed the basis for our Golden Crest land acquisition program.”

The World’s Most Underexplored Super Giant Gold Region in the World – Where Are the Undiscovered 100 Million Ounces of Gold?

Most of the known gold deposits in the Black Hills were found at the surface during the Black Hills Gold Rush from 1876-1896. Exploration efforts to locate totally new deposits have been slight and sporadic during the past 120 years. Despite the immense fertility of the district, no comprehensive and systematic exploration program has ever been performed, even by Homestake Mining Company. Remarkably, no truly new gold deposits have been discovered in the Black Hills since the turn of the 20th Century.

The Homestake Mine operated continuously for approximately 125 years (1876 – 2001) during which time the Homestake Mining Company had a virtual monopoly on ownership of mineral lands throughout much of the region. Homestake had ample future reserves for over a hundred years of mine operations, and so it never felt compelled to search for gold regionally. During this period, nearly all of Homestake’s exploration work was conducted within three to four miles of the original discovery, except for a period between 1988 to 1993.

Homestake’s very limited amount of regional exploration work in the 80’s and early 90’s included a widely spaced stream sediment geochemistry program over an area of seventy-five square miles. This effort identified five largely unexplored drainage areas in the western part of the district with anomalous gold and associated pathfinder elements. Four of these five anomalies had completely unexplained bedrock gold sources, well outside of known historically mined areas. Solitario now controls all four of the likely bedrock source regions of these sediment anomalies and is conducting exploration to further define gold distribution.

In addition, Homestake drilled three deep reconnaissance wildcat holes in the western portion of the northern Black Hills to test for the presence of favorable Precambrian rocks. Two of these holes intersected the important ore-hosting Homestake Iron Formation within areas that Solitario now controls.

Target Rich Property – Every Drill Hole Will Test Three Different Gold Target Zones

The Black Hills exhibits a remarkable spatial superposition of significant gold deposit types of different ages, all within a single compact mining district. Few other districts in the world possess this feature. Large Precambrian-aged orogenic gold deposits, such as Homestake, hosted in Precambrian basement, are overlain by ancient paleoplacers at the Precambrian-Cambrian unconformity that preserve gold eroded from the older deposits during Precambrian weathering and erosion. These in turn are overlain by Paleozoic sedimentary rock sequences 300-400 meters thick that contain several prominent stratigraphic hosts for Tertiary-aged replacement style gold mineralization in high-grade veins and disseminated bulk tonnage deposits. The

contemporaneous igneous rocks associated with the Tertiary mineralizing event that intrude the Paleozoic rocks and basement also host significant gold resources. Initial exploration work by Solitario suggest these gold targets lying above the Precambrian basement occur within Solitario’s Golden Crest Project property position and can easily be reached by drilling to depths ranging from 200-400 meters.

Thus, every exploration hole has the opportunity to test for multiple deposit types as it cuts through Paleozoic or igneous rocks searching for concealed Precambrian gold. These stacked targets significantly de-risk the exploration for the larger, but more challenging to find, Precambrian deposits. Several of these additional deposit types can be world class targets in their own right: the sediment-hosted Wharf Mine of Coeur Mining has a total gold resource base of 7.4 million ounces (mined and current resources) and the igneous-hosted Gilt Edge Mine of Agnico Eagle Ltd hosts a growing resource in excess of 3 million ounces of gold.

Land Position and Lease Terms

The Golden Crest project consists of 580 claims covering 11,600 acres. Of this, approximately two-thirds of the claims are subject to a lease signed in late-May 2021, with a private LLC. According to the terms of the lease, Solitario owns a 100% interest in these claims subject to certain scheduled annual payments, work commitments, a potential success bonus, and a 2% Net Smelter Return Royalty. Solitario has the option, but not the obligation, to reduce the Net Smelter Return royalty to 1.0% by paying the owner \$1,000,000. Solitario paid the underlying owner \$65,000 upon signing. In addition, Solitario has agreed, at its option, to pay the underlying owner the following annual payments and perform the following minimum work commitments to keep the lease in good standing:

Time Period	Payment	Time Period	Work Commitment
Year One Anniversary	\$60,000	Year One	\$200,000
Year Two Anniversary	\$70,000	Year Two	\$400,000
Year Three Anniversary	\$80,000	Year Three	\$600,000
Year Four Anniversary	\$90,000	Year Four	\$800,000
Years Five-Ten Anniversaries	\$100,000	Year Five & Thereafter	\$1,000,000
Years Eleven & Thereafter	\$150,000		

About Solitario

Solitario is an emerging zinc and gold exploration and development company traded on the NYSE American (“XPL”) and on the Toronto Stock Exchange (“SLR”). In addition to its newly acquired Golden Crest properties, Solitario holds 50% joint venture interest (Teck Resources 50%) in the high-grade, open-pit table Lik zinc deposit in Alaska and a 39% joint venture interest (Nexa Resources holds the remaining 61% interest) on the high-grade Florida Canyon zinc project in Peru. Solitario’s Management and Directors hold approximately 9.3% (excluding options) of the Company’s 58.4 million shares outstanding. Solitario’s cash balance and marketable securities stand at approximately US\$6.9 million. Additional information about Solitario is available online at www.solitariozinc.com.

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Cautionary Statement Regarding Forward Looking Information

This press release contains forward-looking statements within the meaning of the U.S. Securities Act of 1933 and the U.S. Securities Exchange Act of 1934, and as defined in the United States Private Securities Litigation Reform Act of 1995 (and the equivalent under Canadian securities laws), that are intended to be covered by the safe harbor created by such sections. Forward-looking statements are statements that are not historical fact. They are based on the beliefs, estimates and opinions of the Company's management on the date the statements are made and address activities, events or developments that Solitario expects or anticipates will or may occur in the future, and are based on current expectations and assumptions. Forward-looking statements involve a number of risks and uncertainties. Consequently, there can be no assurances 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. Such forward-looking statements include, without limitation, statements regarding the Company's expectation of the projected timing and outcome of engineering studies; expectations regarding the receipt of all necessary permits and approvals to implement a mining plan, if any, at Lik or Florida Canyon; the potential for confirming, upgrading and expanding zinc, lead and silver mineralized material; future operating and capital cost estimates may indicate that the stated resources may not be economic; estimates of zinc, lead and silver grades of resources provided are predicted and actual mining grade could be substantially lower; estimates of recovery rates for could be lower than estimated for establishing the cutoff grade; and other statements that are not historical facts could vary significantly from assumptions made in the PEA. Although Solitario management believes that its expectations are based on reasonable assumptions, it can give no assurance that these expectations will prove correct. Important factors that could cause actual results to differ materially from those in the forward-looking statements include, among others, risks relating to risks that Solitario's and its joint venture partners' exploration and property advancement efforts will not be successful; risks relating to fluctuations in the price of zinc, lead and silver; the inherently hazardous nature of mining-related activities; uncertainties concerning reserve and resource estimates; availability of outside contractors, and other activities; uncertainties relating to obtaining approvals and permits from governmental regulatory authorities; the possibility that environmental laws and regulations will change over time and become even more restrictive; and availability and timing of capital for financing the Company's exploration and development activities, including uncertainty of being able to raise capital on favorable terms or at all; as well as those factors discussed in Solitario's filings with the U.S. Securities and Exchange Commission (the "SEC") including Solitario's latest Annual Report on Form 10-K and its other SEC filings (and Canadian filings) including, without limitation, its latest Quarterly Report on Form 10-Q. The Company does not intend to publicly update any forward-looking statements, whether as a result of new information, future events, or otherwise, except as may be required under applicable securities laws.