Stillwater Critical Minerals Collaborates with Lawrence Berkeley National Laboratory with Funding from the US Department of Energy for Geologic Hydrogen Production at Stillwater West

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VANCOUVER, August 15, 2024 - Stillwater Critical Minerals Corp. (TSXV:PGE)(OTCQB:PGEZF)(FSE:J0G) (the "Company" or "Stillwater") is collaborating with Lawrence Berkeley National Laboratory ("Berkeley Lab"), with funding from the U.S. Department of Energy ("DOE") via the Advanced Research Projects Agency program ("ARPA-E"), to study the potential for geologic hydrogen production at its flagship Stillwater West Ni-PGE-Cu-Co + Au project in Montana.

Funding in the amount of U.S. $2 million has been secured by Berkeley Lab to advance the "Cyclic Injection for Commercial Seismic-Safe Geologic H2 Production (CyclicGeoH2)" project, led by Berkeley Lab Research Scientist Dr. Mengsu Hu in collaboration with the University of California at Berkeley and the University of Texas at Austin. The team is developing technologies for geologic hydrogen production that address the challenge of extracting hydrogen both safely and economically at commercial scale. The technology involves the use of adaptive controls of fracture creation followed by serpentinization reactions to generate and subsequently extract hydrogen to a wellhead. Using rock samples from the Stillwater Igneous Complex, the team is applying an integrated approach for developing and testing novel technology that includes laboratory tests, field characterization and multiscale numerical modeling. The research effort in the project will benefit from studies conducted by other projects supported by ARPA-E that are focusing on the enhancement of the rate of geologic hydrogen generation.

Geologic hydrogen refers to hydrogen gas that occurs naturally within the Earth's crust, which is generated through natural processes such as the reaction of water with certain types of iron-rich rocks, and other processes. The most favorable settings for geologic hydrogen accumulation are within ultramafic rocks which are rich in the mineral olivine that readily reacts in the serpentinization process, producing geologic hydrogen. These environments provide the necessary conditions for continuous hydrogen production over geological timescales or through accelerated stimulation of these reactions, making them ideal for potential exploration and extraction of hydrogen as a clean energy source.

Hydrogen is increasingly recognized as a clean energy source due to its ability to produce energy with minimal environmental impact. When used in fuel cells, hydrogen combines with oxygen to generate electricity, with water vapor as the only byproduct, making it a zero-emission energy source. This contrasts sharply with fossil fuels, which release significant amounts of carbon dioxide and other pollutants when burned. Moreover, hydrogen can be stored and transported efficiently, making it a versatile energy carrier that can be used in a wide range of applications, from powering vehicles to providing backup power for grid systems. As the world seeks to reduce its carbon footprint, hydrogen holds significant promise as a key component of the transition to a cleaner, more sustainable energy future.

Michael Rowley, Stillwater Critical Minerals President and CEO, stated, "We are excited for our Stillwater West project to be selected for this cutting-edge work in the burgeoning field of geologic hydrogen generation. We look forward to continued work with Dr. Hu's team given our shared vision of securing domestic supply of the critical minerals so urgently needed by the US while also potentially generating clean energy in the form of hydrogen based on the rare geology of the Stillwater Igneous Complex. With the largest nickel resource in an active US mining district and a wealth of other minerals listed as critical by the US government, Stillwater Critical Minerals is exceptionally well-positioned to play a significant role in achieving these goals as we continue to advance Stillwater West as a large-scale, low-carbon source of at least nine minerals listed as critical. It is our belief that mining can do more than supply minerals by conventional means, and that relationships such as this are the path toward more sustainable practices."

Dr. Mengsu Hu, Berkeley Lab Lead Principal Investigator, said "It is an exciting opportunity to study geologic hydrogen that is funded by the US government for the first time. Our technology has potential for a wide range of geologic settings where it may be possible to produce geologic hydrogen at scale."

Dr. Carl Steefel, Co-Principal Investigator at Berkeley Lab, stated "The layered ultramafic rocks of the Stillwater Complex may be ideal for generation of geologic hydrogen through stimulation. If core-scale tests using stimulation produce favorable results, we are optimistic about proceeding to larger scale pilot tests in the Stillwater Complex where the full range of our technology can be brought to bear. We are also interested to see if naturally occurring hydrogen can be detected in the Stillwater Complex."

About Dr. Mengsu Hu

Dr. Mengsu Hu is a Research Scientist at the Lawrence Berkeley National Laboratory (LBNL). Dr. Hu's research focuses on multiscale numerical modeling and machine learning for analyzing coupled thermal-hydro-mechanical-chemical (THMC) processes from fundamental Earth science to subsurface energy geoscience applications (e.g., nuclear waste disposal, geothermal energy and geologic hydrogen production and storage). Dr. Hu is currently serving on the Board of Directors of American Rock Mechanics Association (ARMA), and Editorial Board for Rock Mechanics and Rock Engineering, PNAS Nexus, International Journal of Rock Mechanics and Mining Sciences, and Geomechanics and Geophysics for Geo-Energy and Geo-Resources. Dr. Mengsu Hu was selected as an ARMA future leader in 2020, a recipient of 2021 LBL Director's Award for Exceptional Early Scientific Career Achievement at LBNL, and a participant of 2022 U.S. Frontiers of Engineering symposium.

About Dr. Carl Steefel

Carl Steefel is a Senior Scientist at Berkeley Laboratory in the Energy Geosciences Division, Earth and Environmental Sciences Area. He also serves as head of the Geochemistry Department. He has seven years of experience in mineral exploration and over 40 years of experience in developing models for multicomponent reactive transport in porous media and applying them to topics related to water-rock interaction, chemical and enhanced weathering, and reactive contaminant transport. He is the principal developer of the CrunchFlow software, which won an R&D 100 Award in 2017. He was named an AGU Fellow in 2019 and received the Berkeley Lab Director's Award for Exceptional Scientific Achievement in 2020.

About Dr. Michael Manga

Dr. Michael Manga, co-Principal Investigator on the project, is a professor and department chair of Earth and Planetary Science, at the University of California, Berkeley. He studies the geological processes that shape Earth's surface. He is a member of the National Academy of Sciences, and his scholarship has been recognized with the Macarthur fellowship and the Macelwane medal from the American Geophysical Union and Donath medal from the Geological Society of America.

Upcoming Events

Stillwater Critical Minerals President and CEO, Michael Rowley, will be presenting at the following events:

1. Emerging Growth Conference: Live Webinar Presentation, August 22 at 1:40 PT. To register click here.
2. Precious Metals Summit, Beaver Creek, Colorado, September 10-13. For information and registration, click here.
3. Commodities Global Expo 2024, Fort Lauderdale, Florida, October 20-22. For more information and registration, click here.
4. Precious Metals Summit, Zurich, Switzerland, November 11-12, 2024. For information and registration, click here.

About Stillwater Critical Minerals

Stillwater Critical Minerals (TSXV:PGE)(OTCQB:PGEZF)(FSE:J0G) is a mineral exploration company focused on its flagship Stillwater West Ni-PGE-Cu-Co + Au project in the iconic and famously productive Stillwater mining district in Montana, USA. With the addition of two renowned Bushveld and Platreef geologists to the team and strategic investments by Glencore plc, the Company is well positioned to advance the next phase of large-scale critical mineral supply from this world-class American district, building on past production of nickel, copper, and chromium, and the on-going production of platinum group, nickel, and other metals by neighboring Sibanye-Stillwater. An expanded NI 43-101 mineral resource estimate, released January 2023, positions Stillwater West with the largest nickel resource in an active US mining district as part of a compelling suite of nine minerals now listed as critical in the USA. To date, five Platreef-style nickel and copper sulphide deposits host a total of 1.6 billion pounds of nickel, copper and cobalt, and 3.8 million ounces of palladium, platinum, rhodium, and gold at Stillwater West. All of these deposits remain open for expansion along trend and at depth.

Stillwater also holds the high-grade Black Lake-Drayton Gold project adjacent to Nexgold Mining's development-stage Goliath Gold Complex in northwest Ontario, currently under an earn-in agreement with Heritage Mining, and the Kluane PGE-Ni-Cu-Co critical minerals project on trend with Nickel Creek Platinum's Wellgreen deposit in Canada's Yukon Territory.

FOR FURTHER INFORMATION, PLEASE CONTACT:

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Quality Control and Quality Assurance

Mr. Mike Ostenson, P.Geo., is the qualified person for the purposes of National Instrument 43-101, and he has reviewed and approved the technical disclosure contained in this news release.

Forward-Looking Statements

This news release includes certain statements that may be deemed "forward-looking statements". All statements in this release, other than statements of historical facts including, without limitation, statements regarding potential mineralization, historic production, estimation of mineral resources, the realization of mineral resource estimates, interpretation of prior exploration and potential exploration results, the timing and success of exploration activities generally, the timing and results of future resource estimates, permitting time lines, metal prices and currency exchange rates, availability of capital, government regulation of exploration operations, environmental risks, reclamation, title, and future plans and objectives of the company are forward-looking statements that involve various risks and uncertainties. Although Stillwater Critical Minerals believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are not guarantees of future performance and actual results or developments may differ materially from those in the forward-looking statements. Forward-looking statements are based on a number of material factors and assumptions. Factors that could cause actual results to differ materially from those in forward-looking statements include failure to obtain necessary approvals, unsuccessful exploration results, changes in project parameters as plans continue to be refined, results of future resource estimates, future metal prices, availability of capital and financing on acceptable terms, general economic, market or business conditions, risks associated with regulatory changes, defects in title, availability of personnel, materials and equipment on a timely basis, accidents or equipment breakdowns, uninsured risks, delays in receiving government approvals, unanticipated environmental impacts on operations and costs to remedy same, and other exploration or other risks detailed herein and from time to time in the filings made by the companies with securities regulators. Readers are cautioned that mineral resources that are not mineral reserves do not have demonstrated economic viability. Mineral exploration and development of mines is an inherently risky business. Accordingly, the actual events may differ materially from those projected in the forward-looking statements. For more information on Stillwater Critical Minerals and the risks and challenges of their businesses, investors should review their annual filings that are available at www.sedar.com.

Neither the TSX Venture Exchange nor its Regulation Services Provider (as that term is defined in the policies of the TSX Venture Exchange) accepts responsibility for the adequacy or accuracy of this release.

SOURCE: Stillwater Critical Minerals Corp.

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