

PRESS RELEASE

**DENISON ANNOUNCES DECISION TO ADVANCE WHEELER RIVER
TO FEASIBILITY STUDY STAGE AND SELECTION OF
WOOD PLC AS INDEPENDENT LEAD AUTHOR**

Toronto, ON –Sept 22, 2021. Denison Mines Corp. (“Denison” or the “Company”) (TSX: DML, NYSE American: DNN) is pleased to announce that the Wheeler River Joint Venture (“WRJV”) has approved the initiation of an independent Feasibility Study (“FS” or the “Study”) for the In-Situ Recovery (“ISR”) mining operation proposed for the Phoenix uranium deposit (“Phoenix” or the “Project”). The Company is also pleased to announce the selection of leading global consulting and engineering firm Wood PLC (“Wood”) to lead and author the FS in accordance with Canadian Securities National Instrument 43-101 (“NI 43-101”).

David Cates, Denison’s President & CEO, commented, *“The ISR de-risking activities we’ve completed since the publication of the Pre-Feasibility Study (‘PFS’) for Wheeler River in 2018 have been designed to support the completion of a future Feasibility Study, and the results to date have further confirmed the technical viability of the Project – leading to the decision to advance the Project and initiate the formal Feasibility Study process.*

During this de-risking phase, we have been able to verify ore-body permeability and the leachability of high-grade uranium in conditions representative of an ISR mining setting. We’ve also engineered an improved containment design using a more conventional ground freezing approach. Based on the results of field programs and metallurgical lab testing completed over the last three years, we are confident that the Project is ready to advance into a full Feasibility Study. Taken together with the selection of globally recognized engineering firm Wood, the decision to launch the formal Feasibility Study process for Phoenix represents another important step towards achieving our objective of bringing low-cost ISR mining to the high-grade uranium deposits of the Athabasca Basin.”

Feasibility Study

The completion of the FS is a critical step in the progression of the Project and is intended to advance de-risking efforts to the point where the Company and the WRJV will be able to make a definitive development decision. Key objectives of the Study are expected to include:

- **Environmental Stewardship:** Extensive planning and technical work undertaken as part of the ongoing Environmental Assessment (“EA”), including applicable feedback from consultation efforts with various interested parties, is expected to be incorporated into the FS project designs to support our aspiration of achieving a superior standard of environmental stewardship that meets and exceeds the anticipated environmental expectations of regulators and aligns with the interests of local Indigenous communities;
- **Updated Estimate of Mineral Resources:** Mineral resources for Phoenix were last estimated in 2018. Since then, additional drilling has been completed in and around the Phoenix deposit as part of various ISR field tests, including drill hole GWR-045 (22.0% eU₃O₈ over 8.6 metres, see news release dated July 29, 2021), and exploration drilling. The updated mineral resource estimate will form the basis for mine planning in the FS;
- **Mine Design Optimization:** FS mine design is expected to reflect the decision to adopt a freeze wall configuration for containment of the ISR well field (see news release dated December 1, 2020), as well as the results from multiple field test programs and extensive hydrogeological modelling exercises, which have provided various opportunities to optimize other elements of the Project – including well pattern designs, permeability enhancement strategies, and both construction and production schedules;

- **Processing Plant Optimization:** FS process plant design is expected to reflect the decision to increase the ISR mining uranium head-grade to 15 g/L (see news release dated August 4, 2021), as well as the results from extensive metallurgical laboratory studies designed to optimize the mineral processing aspects of the Project; and
- **Class 3 Capital Cost Estimate:** The FS is also intended to provide the level of engineering design necessary to support a Class 3 capital cost estimate (AACE international standard with an accuracy of -15% /+25%), which is expected to provide a basis to confirm the economic potential of the Project highlighted in the PFS completed in 2018 (see news release dated September 24, 2018).

Wood PLC

Wood is a global leader in consulting and engineering across energy and the built environment, helping to unlock solutions to some of the world's most critical challenges. Wood provides consulting, project and operational solutions in more than 60 countries and employs around 40,000 people. Importantly, Wood's Saskatchewan-based team has significant experience in ISR mining projects as well as large-scale uranium, potash and solution mining projects. For more information about Wood, please visit www.woodplc.com.

About Wheeler River

Wheeler River is the largest undeveloped uranium project in the infrastructure rich eastern portion of the Athabasca Basin region, in northern Saskatchewan – including combined Indicated Mineral Resources of 132.1 million pounds U₃O₈ (1,809,000 tonnes at an average grade of 3.3% U₃O₈), plus combined Inferred Mineral Resources of 3.0 million pounds U₃O₈ (82,000 tonnes at an average grade of 1.7% U₃O₈). The project is host to the high-grade Phoenix and Gryphon uranium deposits, discovered by Denison in 2008 and 2014, respectively, and is a joint venture between Denison (operator) and JCU (Canada) Exploration Company Limited. Denison has an effective 95% ownership interest in Wheeler River (90% directly, and 5% indirectly through a 50% ownership in JCU).

A PFS was completed for Wheeler River in 2018, considering the potential economic merit of developing the Phoenix deposit as an ISR operation and the Gryphon deposit as a conventional underground mining operation. Taken together, the project is estimated to have mine production of 109.4 million pounds U₃O₈ over a 14-year mine life, with a base case pre-tax NPV of \$1.31 billion (8% discount rate), Internal Rate of Return ("IRR") of 38.7%, and initial pre-production capital expenditures of \$322.5 million. The Phoenix ISR operation is estimated to have a stand-alone base case pre-tax NPV of \$930.4 million (8% discount rate), IRR of 43.3%, initial pre-production capital expenditures of \$322.5 million, and industry leading average operating costs of US\$3.33/lb U₃O₈. The PFS is prepared on a project (100% ownership) and pre-tax basis, as each of the partners to the Wheeler River Joint Venture are subject to different tax and other obligations.

Further details regarding the PFS, including additional scientific and technical information, as well as after-tax results attributable to Denison's ownership interest, are described in greater detail in the NI 43-101 Technical Report titled "Pre-feasibility Study for the Wheeler River Uranium Project, Saskatchewan, Canada" dated October 30, 2018 with an effective date of September 24, 2018. A copy of this report is available on Denison's website and under its profile on SEDAR at www.sedar.com and on EDGAR at www.sec.gov/edgar.shtml.

Denison suspended certain activities at Wheeler River during 2020, including the EA process, which is on the critical path to achieving the project development schedule outlined in the PFS. While the EA process has resumed, the Company is not currently able to estimate the impact to the project development schedule outlined in the PFS, and users are cautioned against relying on the estimates provided therein regarding the start of pre-production activities in 2021 and first production in 2024.

About Denison

Denison is a uranium exploration and development company with interests focused in the Athabasca Basin region of northern Saskatchewan, Canada. In addition to its effective 95% interest in the Wheeler River project, Denison's interests in the Athabasca Basin include a 22.5% ownership interest in the McClean Lake joint venture, which includes several uranium deposits and the McClean Lake uranium mill that is contracted to process the ore from the Cigar Lake mine under a toll milling agreement, plus a 25.17%

interest in the Midwest Main and Midwest A deposits, and a 66.90% interest in the Tthe Heldeth Túé ("THT," formerly J Zone) and Huskie deposits on the Waterbury Lake property. The Midwest Main, Midwest A, THT and Huskie deposits are each located within 20 kilometres of the McClean Lake mill.

Through its 50% ownership of JCU, Denison holds additional interests in various uranium project joint ventures in Canada, including the Millennium project (JCU 30.099%), the Kiggavik project (JCU 33.8123%) and Christie Lake (JCU 34.4508%).

Denison is also engaged in mine decommissioning and environmental services through its Closed Mines group (formerly Denison Environmental Services), which manages Denison's Elliot Lake reclamation projects and provides post-closure mine care and maintenance services to a variety of industry and government clients.

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Qualified Persons

The technical information contained in this release has been reviewed and approved by Mr. David Bronkhorst, P.Eng, Denison's Vice President, Operations and Mr. Andrew Yackulic, P. Geo., Denison's Director, Exploration, who are Qualified Persons in accordance with the requirements of NI 43-101.

Cautionary Statement Regarding Forward-Looking Statements

Certain information contained in this news release constitutes 'forward-looking information', within the meaning of the applicable United States and Canadian legislation, concerning the business, operations and financial performance and condition of Denison.

Generally, these forward-looking statements can be identified by the use of forward-looking terminology such as 'plans', 'expects', 'budget', 'scheduled', 'estimates', 'forecasts', 'intends', 'anticipates', or 'believes', or the negatives and/or variations of such words and phrases, or state that certain actions, events or results 'may', 'could', 'would', 'might' or 'will be taken', 'occur', 'be achieved' or 'has the potential to'.

In particular, this news release contains forward-looking information pertaining to the following: initiation of the FS; the selection and appointment of Wood to author the FS; the planned scope, elements, and objectives of the FS, including the plans for an updated mineral resource estimate, mine design optimization processing plant optimization and Class 3 capital cost estimate; other evaluation activities, objectives and expectations, including the ongoing EA and related processes; the results of the PFS and expectations with respect thereto, including the designs disclosed to-date and the ability to maintain or build upon such designs;; other development and expansion plans and objectives; and expectations regarding its joint venture ownership interests and the continuity of its agreements with its partners and third parties.

Forward looking statements are based on the opinions and estimates of management as of the date such statements are made, and they are subject to known and unknown risks, uncertainties and other factors that may cause the actual results, level of activity, performance or achievements of Denison to be materially different from those expressed or implied by such forward-looking statements. For example, the modelling and assumptions upon which the work plans are based may not be maintained after further testing or be representative of actual conditions within the Phoenix deposit. In addition, Denison may decide or otherwise be required to discontinue its field test activities or other testing, evaluation and development work at Wheeler River if it is unable to maintain or otherwise secure the necessary resources (such as testing facilities, capital funding, regulatory approvals, etc.) or operations are otherwise affected by COVID-19 and its potentially far-reaching impacts. Denison believes that the expectations reflected in this forward-looking information are reasonable but no assurance can be given that these expectations will prove to be accurate and results may differ materially from those anticipated in this forward-looking information. For a discussion in respect of risks and other factors that could influence forward-looking events, please refer to the factors discussed in Denison's Annual Information Form dated March 26, 2021 or subsequent quarterly financial reports under the heading 'Risk Factors'. These factors are not, and should not be construed as being exhaustive.

Accordingly, readers should not place undue reliance on forward-looking statements. The forward-looking information contained in this news release is expressly qualified by this cautionary statement. Any forward-looking information and the assumptions made with respect thereto speaks only as of the date of this news release. Denison does not undertake any obligation to publicly update or revise any forward-looking information after the date of this news release to conform such information to actual results or to changes in Denison's expectations except as otherwise required by applicable legislation.

Cautionary Note to United States Investors Concerning Estimates of Mineral Resources and Mineral Reserves: *This press release may use terms such as “measured”, “indicated” and/or “inferred” mineral resources and “proven” or “probable” mineral reserves, which are terms defined with reference to the guidelines set out in the Canadian Institute of Mining, Metallurgy and Petroleum (“CIM”) CIM Definition Standards on Mineral Resources and Mineral Reserves (“CIM Standards”). The Company’s descriptions of its projects using CIM Standards may not be comparable to similar information made public by U.S. companies subject to the reporting and disclosure requirements under the United States federal securities laws and the rules and regulations thereunder. . United States investors are cautioned not to assume that all or any part of measured or indicated mineral resources will ever be converted into mineral reserves. United States investors are also cautioned not to assume that all or any part of an inferred mineral resource exists, or is economically or legally mineable.*