

## PRESS RELEASE

**DENISON REPORTS INSTALLATION OF COMMERCIAL SCALE WELLS  
AND PROVIDES OPERATIONAL UPDATE FROM ONGOING ISR FIELD TEST  
AT THE PHOENIX DEPOSIT**

**Toronto, ON – October 31, 2019. Denison Mines Corp.** (“Denison” or the “Company”) (DML: TSX, DNN: NYSE American) is pleased to report the successful installation of two Commercial Scale Wells (“CSWs”) within the Phoenix deposit (“Phoenix”), as part of the ongoing In-Situ Recovery (“ISR”) field test program at the Company’s 90% owned Wheeler River Uranium Project (“Wheeler River”), located in northern Saskatchewan, Canada. Additionally, the Company is pleased to report the successful deployment of the MaxPERF Drilling Tool and its plans for completion of long-duration hydrogeological test work during the remainder of the 2019 ISR Field Test program.

**Operational Highlights**

- **Installation of the first CSWs designed for ISR mining in the Athabasca Basin:** CSW1 (drill hole GWR-031, in Test Area 1) and CSW2 (drill hole GWR-032, in Test Area 2) represent the first large-diameter CSWs successfully installed, for the purpose of ISR mining, in the Athabasca Basin region. The completion of each CSW included the drilling of a large-diameter vertical borehole (~12 inches in diameter) approximately 400 metres from surface, to intersect the Phoenix ore body, and the installation of well materials designed to meet expected environmental and regulatory standards for eventual ISR mining. Locations of the Phoenix Test Areas and CSWs are shown in Figures 1, and Figures 2 and 3 respectively.
- **Successful lateral penetrations of the Phoenix ore body using the MaxPERF Drilling Tool:** Penetrators Canada Inc. (“Penetrators”), developers and operators of the MaxPERF Drilling Tool, successfully deployed the tool within CSW1 and completed 28 lateral drill holes (penetration tunnels) within a variety of ore types associated with the Phoenix deposit. MaxPERF deployment at CSW2 is planned to follow during the remainder of the 2019 ISR Field Test program.
- **Initial short-duration hydrogeological tests demonstrate effectiveness of MaxPERF at Phoenix:** Initial short-duration hydrogeological tests confirmed increased flow rates in Test Area 1 following the completion of the MaxPERF drilling in CSW1. These results demonstrate the effectiveness of the MaxPERF Drilling Tool in providing increased access to hydraulic connectivity associated with the existing permeability of the ore zone.
- **Long-duration hydrogeological tests planned to complete the 2019 ISR Field Test:** Based on the successful completion of CSW1 and CSW2, and following the successful deployment of the MaxPERF Drilling Tool, long-duration hydrogeological tests are planned to be completed during the remainder of the 2019 ISR Field Test. These tests are expected to be carried out in both CSW1 and CSW2 to allow for the simulation of fluid flow, within Test Area 1 and Test Area 2 of Phoenix, under conditions similar to an envisioned commercial production environment.

David Bronkhorst, Denison’s Vice President Operations, commented, *“We are very pleased to have completed the successful installation of the first two Commercial Scale Wells at Phoenix. As part of the Company’s risk managed approach to the 2019 ISR Field Test program, we continue to build on operational successes and advance towards the completion of all of our program objectives – including the testing of the MaxPERF Drilling Tool, which has already proven to be effective when deployed in a CSW. With the varied geology interpreted at Phoenix, the ability to use MaxPERF, to mechanically engineer increased access to the existing permeability of the ore formation, bodes well for potentially normalizing the geological variations in a production environment.”*

### **Commercial Scale Well (CSW) Installations**

CSW1 and CSW2 were successfully drilled to their designed depths and locations within the Phoenix deposit. A directional drilling methodology was employed in conjunction with Measurement-While-Drilling (“MWD”) surveying technology to accurately determine the well path to its desired target location.

Well materials, designed for commercial ISR production, were successfully installed as planned – providing a double-walled and fully-sealed piping system. Additionally, the outer casing of each CSW was successfully grouted in place with a single-stage cement application, providing a further seal between the CSW and outlying sandstone formation. The piping system installed for both CSWs is ISR mining solution ready and is expected to meet environmental and regulatory standards. A CSW is considered complete once the piping system has been installed and the outer casing grouted into position. Further details regarding the design of the CSWs are provided in Denison’s news release dated September 19, 2019.

### **Deployment of the MaxPERF Drilling Tool and Preliminary Hydrogeological Test Results**

Penetrators successfully deployed the MaxPERF Drilling Tool within CSW1 and completed a total of 28 lateral drill holes (penetration tunnels), with an approximate length of 72 inches (1.83 metres) and diameter of 0.7 inches (1.78 centimetres) each, within the ore zone from seven different elevations spaced 30 centimeters vertically apart. The penetration tunnels were completed in a variety of ore types associated with the Phoenix deposit, including a wide variety of uranium grades (massive to disseminated uraninite), clay contents, and rock competencies.

Initial short-term hydrogeological injection testing was carried out both before, and after, the application of MaxPERF drilling in CSW1, to evaluate the relative differences of injection pressure, flow rate, permeability, and borehole connectivity with adjacent monitoring wells. The preliminary hydrogeological test results from CSW1 indicate that the ore zone was able to accept increased flow rates following the application of the MaxPERF drilling. Importantly, this result suggests that the penetration tunnels have successfully provided increased access to hydraulic connectivity associated with the existing permeability of the ore zone.

### **Long-Duration Hydrogeological ISR Testing and Modelling**

The integration and evaluation of the hydrogeological data collected from the 2019 ISR Field Test is ongoing. Data collected, to date, includes the initial results from Test Area 1 and Test Area 2 (see Denison’s press releases dated August 27, 2019, and September 19, 2019), and the initial short-duration test results from CSW1 (described in this press release). Additional hydrogeological data is expected from initial short-duration tests in CSW2 (both pre- and post-MaxPERF drilling), and from long-duration tests carried out in both CSW1 and CSW2. The long-duration tests are expected to allow for the simulation of fluid flow under conditions similar to an envisioned commercial production environment.

These data sets, as outlined above, will be incorporated into the hydrogeological model being developed for Phoenix, which will facilitate detailed mine planning as part of a future Feasibility Study.

The hydrogeological testing and modelling is being undertaken by Petrotek Corporation (“Petrotek”) – specialists in the technical evaluation and field operation of subsurface fluid flow and injection projects, including significant ISR experience in various jurisdictions.

### **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  $U_3O_8$  (1,809,000 tonnes at an average grade of 3.3%  $U_3O_8$ ), plus combined Inferred Mineral Resources of 3.0 million pounds  $U_3O_8$  (82,000 tonnes at an average grade of 1.7%  $U_3O_8$ ). 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 (90% and operator) and JCU (Canada) Exploration Company Limited (10%).*

A PFS was completed for Wheeler River in late 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 U<sub>3</sub>O<sub>8</sub> 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 U<sub>3</sub>O<sub>8</sub>. 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](http://www.sedar.com) and on EDGAR at [www.sec.gov/edgar.shtml](http://www.sec.gov/edgar.shtml).

### **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 the Wheeler River project, Denison's Athabasca Basin exploration portfolio consists of numerous projects covering approximately 305,000 hectares. Denison's interests in the Athabasca Basin also include a 22.5% ownership interest in the McClean Lake joint venture ("MLJV"), which includes several uranium deposits and the McClean Lake uranium mill, which is currently processing ore from the Cigar Lake mine under a toll milling agreement, plus a 25.17% interest in the Midwest and Midwest A deposits, and a 66.51% interest in the J Zone and Huskie deposits on the Waterbury Lake property. Each of Midwest, Midwest A, J Zone and Huskie are located within 20 kilometres of the McClean Lake mill.

Denison is also engaged in mine decommissioning and environmental services through its Denison Environmental Services division and is the manager of Uranium Participation Corp., a publicly traded company which invests in uranium oxide and uranium hexafluoride.

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### **Qualified Persons**

The hydrogeological results and interpretations thereof contained in this release were prepared by Mr. Errol Lawrence, PG (Senior Hydrogeologist), and Mr. Aaron Payne, PG (Senior Hydrogeologist) at Petrotek, independent Qualified Persons in accordance with the requirements of NI 43-101.

The other technical information contained in this release has been reviewed and approved by Mr. Dale Verran, MSc, P.Geo, Pr.Sci.Nat., Denison's Vice President, Exploration, a Qualified Person 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: the field test program (including drilling) and evaluation interpretations, activities, plans and objectives; the current and continued use and availability of third party technologies, such as MaxPERF, as applicable; the results of the PFS and expectations with respect thereto; development and expansion plans and objectives, including plans for a feasibility study; and expectations regarding its joint venture ownership interests and the continuity of its agreements with its partners.

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. 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 12, 2019 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 Measured, Indicated and Inferred Mineral Resources and Probable Mineral Reserves:** This news release may use the terms 'measured', 'indicated' and 'inferred' mineral resources. United States investors are advised that while such terms have been prepared in accordance with the definition standards on mineral reserves of the Canadian Institute of Mining, Metallurgy and Petroleum referred to in Canadian National Instrument 43-101 Mineral Disclosure Standards ("NI 43-101") and are recognized and required by Canadian regulations, the United States Securities and Exchange Commission ("SEC") does not recognize them. 'Inferred mineral resources' have a great amount of uncertainty as to their existence, and as to their economic and legal feasibility. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher category. Under Canadian rules, estimates of inferred mineral resources may not form the basis of feasibility or other economic studies. **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.** The estimates of mineral reserves in this news release have been prepared in accordance with NI 43-101. The definition of probable mineral reserves used in NI 43-101 differs from the definition used by the SEC in the SEC's Industry Guide 7. Under the requirements of the SEC, mineralization may not be classified as a "reserve" unless the determination has been made, pursuant to a "final" feasibility study that the mineralization could be economically and legally produced or extracted at the time the reserve determination is made. Denison has not prepared a feasibility study for the purposes of NI 43-101 or the requirements of the SEC. Accordingly, Denison's probable mineral reserves disclosure may not be comparable to information from U.S. companies subject to the reporting and disclosure requirements of the SEC.

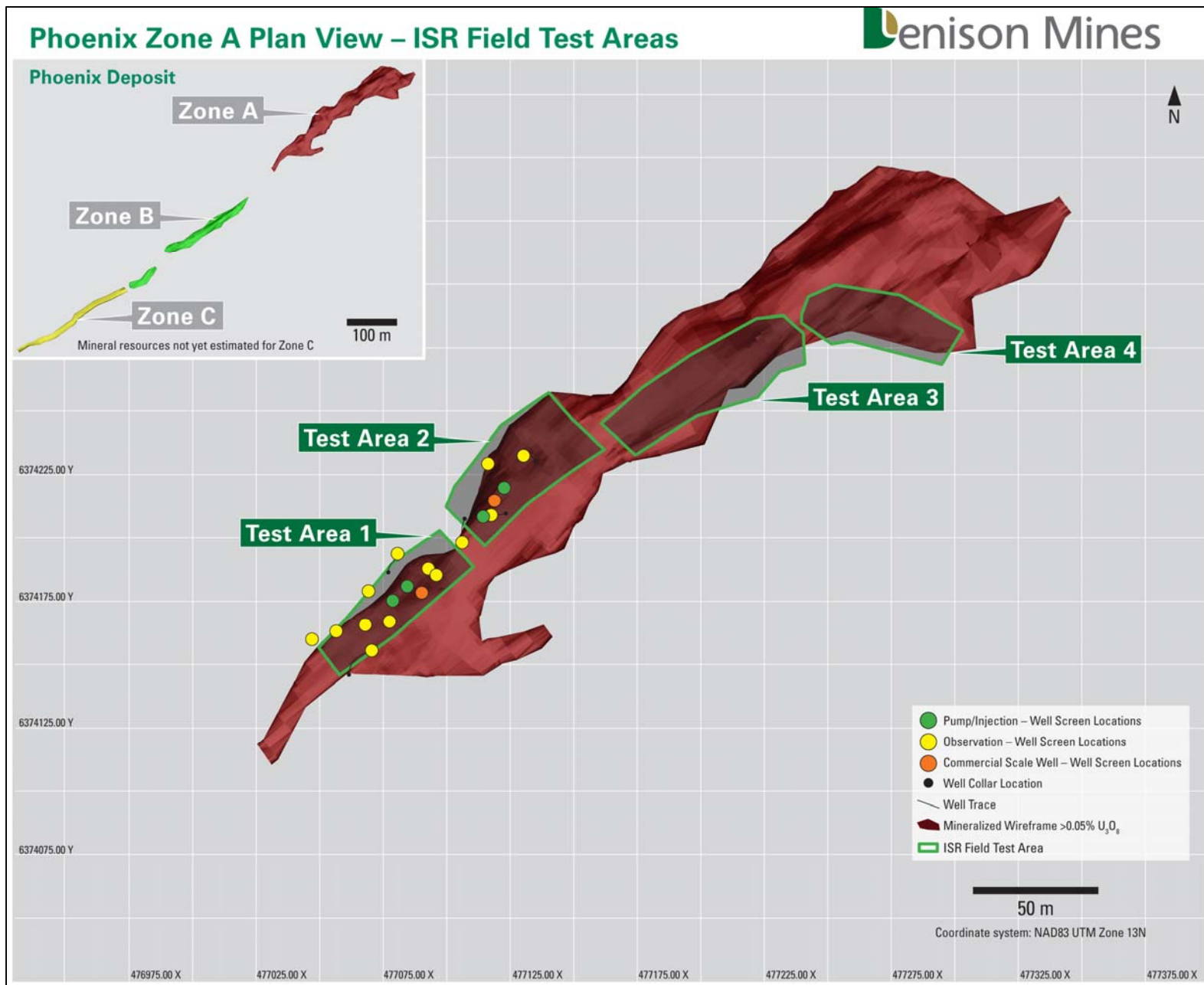


Figure 1. Phoenix Zone A plan view showing Test Areas delineated for ISR field testing.

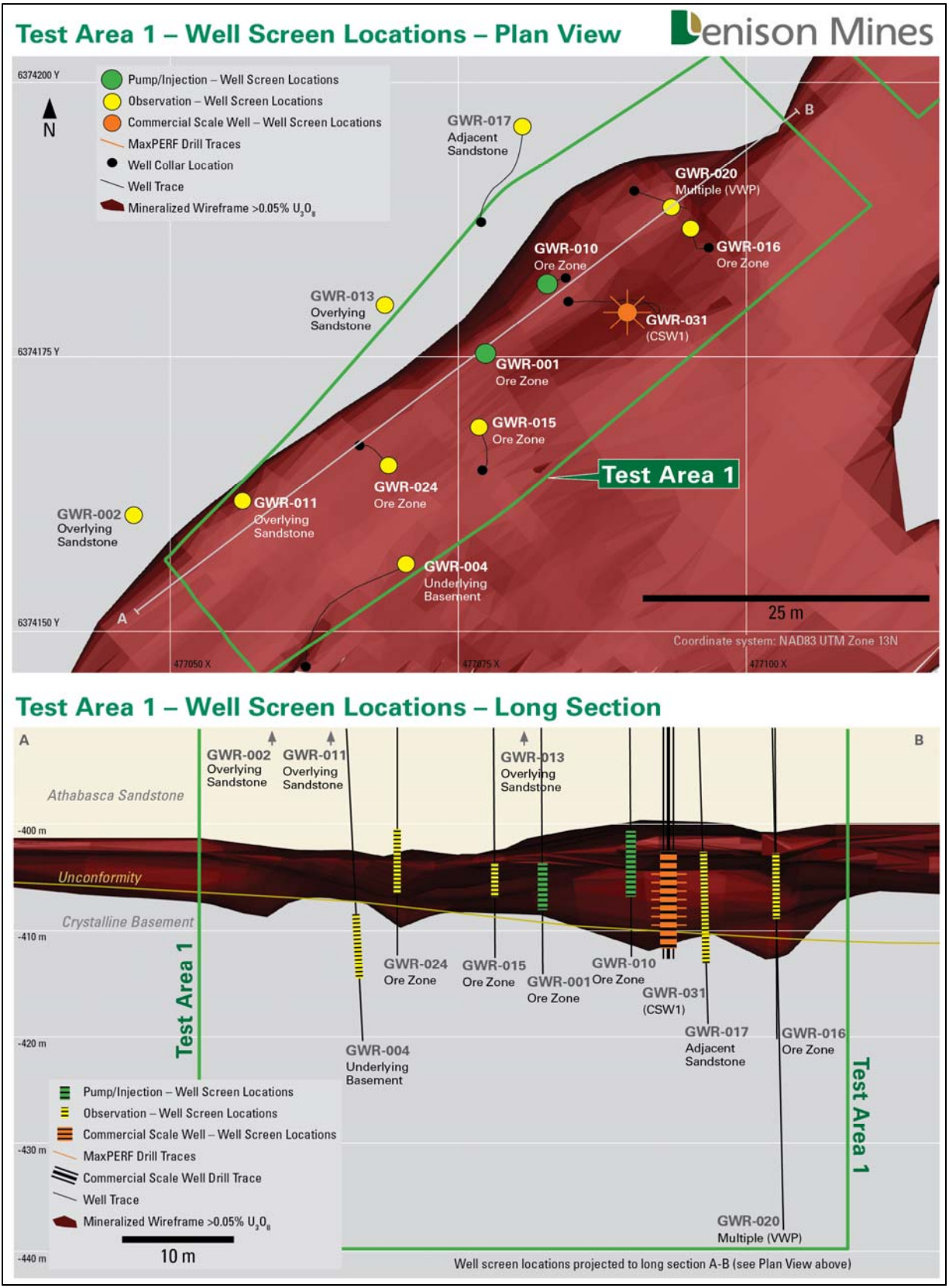


Figure 2. Plan map and long section showing Pump/Injection wells, Observation wells and CSW1 completed for ISR field testing in Test Area 1.

# Test Area 2 – Well Screen Locations – Plan View

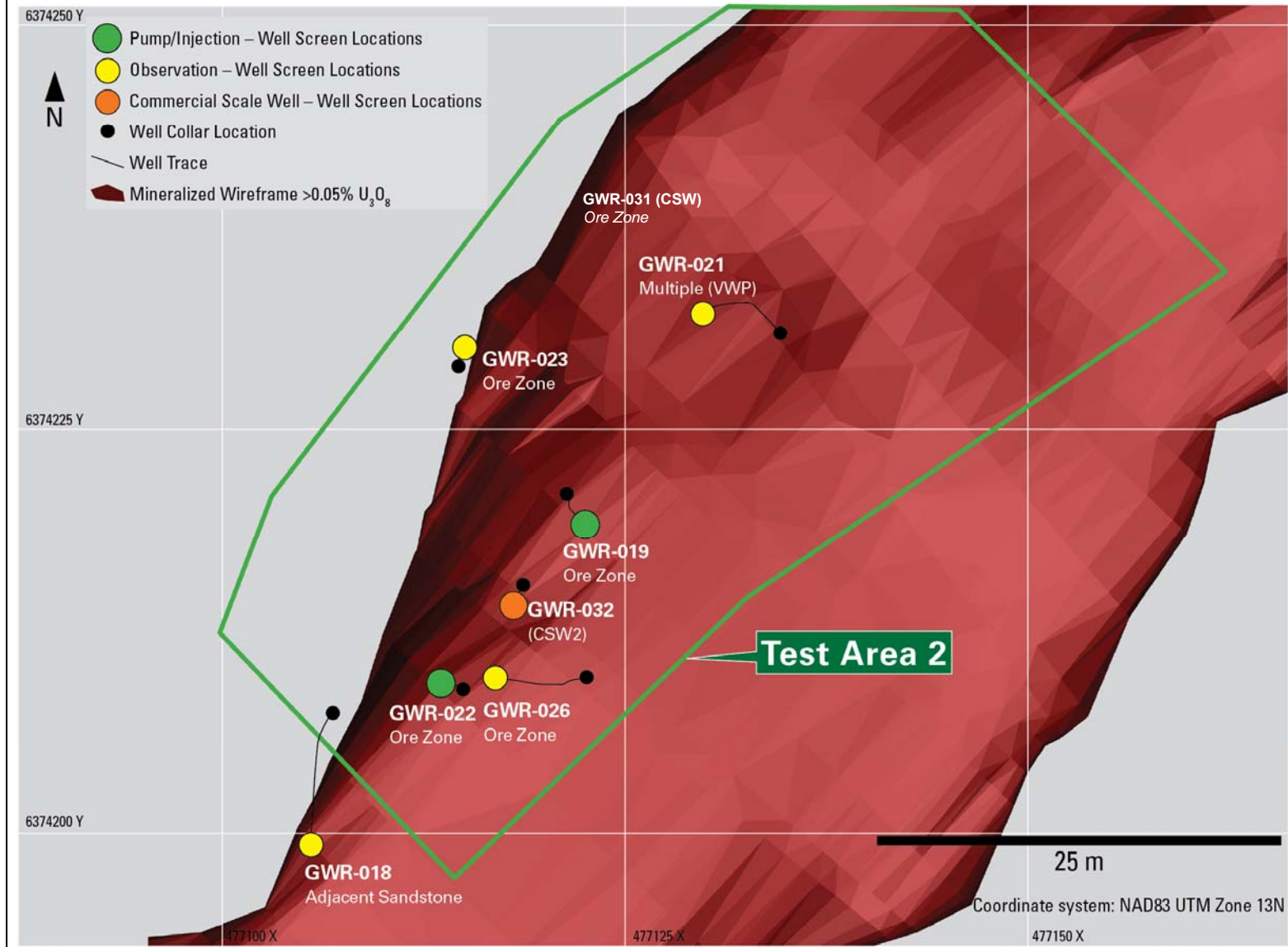


Figure 3. Plan map showing Pump/Injection wells, Observation wells and CSW2 completed for ISR field testing in Test Area 2.