

## ASX ANNOUNCEMENT

25 July 2024

### SERENITY CO<sub>2</sub> PROJECT UPDATE

- Serenity is a natural source of high-grade carbon dioxide at approx. 98-99% concentration.
- Well #1 (Sammons 315310C) has been drilled, tested and proven ahead of production.
- An initial low capex, small-scale production facility for Serenity has been selected.
- Initial facility processing 500 Mcf/d raw gas is expected to produce over 20 tons per day of beverage-grade CO<sub>2</sub> product gas.
- Targeting first CO<sub>2</sub> product gas output from Serenity in H1 2025.
- Commercial offtake discussions continue with planned contracting of full output.

Blue Star Helium Limited (ASX: BNL, OTCQB: BSNLF) (**Blue Star** or the **Company**) provides an update on its Serenity high-grade CO<sub>2</sub> project in Las Animas County, Colorado.

#### **Blue Star Managing Director and CEO, Trent Spry, said**

*“Serenity offers a very high-grade, natural source of CO<sub>2</sub> production for end-users in critical markets, many of whom have struggled to secure reliable supply across recent years.*

*“The high concentration raw gas we have at Serenity is well suited for producing premium, beverage-grade CO<sub>2</sub> product.*

*“Our technical and economic evaluations have demonstrated the clear opportunity presented by rapid commercialization of the Serenity project. As a result, Blue Star is now set to advance Serenity into production, in order to meet critical end-market demands for, long-term sources of natural CO<sub>2</sub> output.*

*“This initial development also creates an excellent foundation for market integration of the planned CO<sub>2</sub> co-product from targeted development of the Galactica-Pegasus helium project, which lies just 9 miles to the north-west of Serenity.*

*“Alongside development of the initial production facility at Serenity, we continue to work with various engineering groups and commercially interested parties to refine forecast volumes and costs for a potential second phase, expanded output development of the significant CO<sub>2</sub> volumes in the Serenity structure.*

#### **Serenity development concept**

Blue Star has undertaken a review of various development concepts for the Serenity CO<sub>2</sub> project.

The Company has selected an initial small-scale, low capex development targeting first production of beverage-grade CO<sub>2</sub> from H1 2025. The proposed facility is a chilled distillation system producing high-purity liquid CO<sub>2</sub>. The system concept supports processing of approximately 500 Mcf/d raw gas from an initial two-well development producing between 20 and 25 tons per day of beverage-grade CO<sub>2</sub>.

The Company is in discussions with several process facility suppliers and expects to be in a position to let contracts for the construction of the facility shortly. The facility is expected to cost in the order of US\$1.3m.

The Sammons 315310C well has been drilled, tested and proven, and is currently suspended for tie-in to the production facility (see BNL ASX announcement dated 6 June 2024, *Blue Star Adds CO<sub>2</sub> to its Gas Portfolio*).

Lab analysis of representative reservoir samples taken during natural flowing of Sammons 315310C contained a combined average composition from both the upper and lower Lyons reservoirs of 98.77% carbon dioxide, 1.15% nitrogen and 0.09% helium, with the lower Lyons reservoir consistently showing higher CO<sub>2</sub> levels up to 98.95%. Flow testing was conducted at various stages throughout the upper Lyons drilling with gas rates as high as 500 Mcf/d through a 1.25-inch orifice.

The Company has three additional approved drilling locations which require final drill Form 2 approvals in order for additional wells to be drilled. It is expected that a second well will be drilled and the existing Sammons well will be completed for production in anticipation of installation of the initial facility.

### Scale of broader CO<sub>2</sub> opportunity

The development of Blue Star's CO<sub>2</sub> resources represents a highly significant and scalable opportunity.

On successful development of the initial facility, the Company expects to be able to develop up to 18 further locations at Serenity as an expanded commercialisation of this asset. Further evaluation of this larger-scale development is in progress in consultation with key engineering consultants and end-market participants. Recent drilling shows expected total well costs of approximately US\$400k.

Blue Star is also continuing to refine its development case for Galactica-Pegasus, which envisages production of both helium and CO<sub>2</sub> product streams. Ongoing evaluation here is demonstrating the considerable opportunity presented by processing larger raw gas volumes through a CO<sub>2</sub> plant prior to feeding what is then helium-enriched feed gas into a helium processing plant.

Ultimately, Blue Star's goal is the production of high-grade helium from Galactica-Pegasus and the sustainable production of food/beverage-grade CO<sub>2</sub> from both Serenity and Galactica/Pegasus.

### US carbon dioxide market

US merchant CO<sub>2</sub> demand is approximately 10.4 million tons per year, with annual demand growth projected between 3.6% and 5.0% through 2030. The industry does not currently possess line-of-sight on sufficient new sources of reliable primary supply to support that projected demand growth.

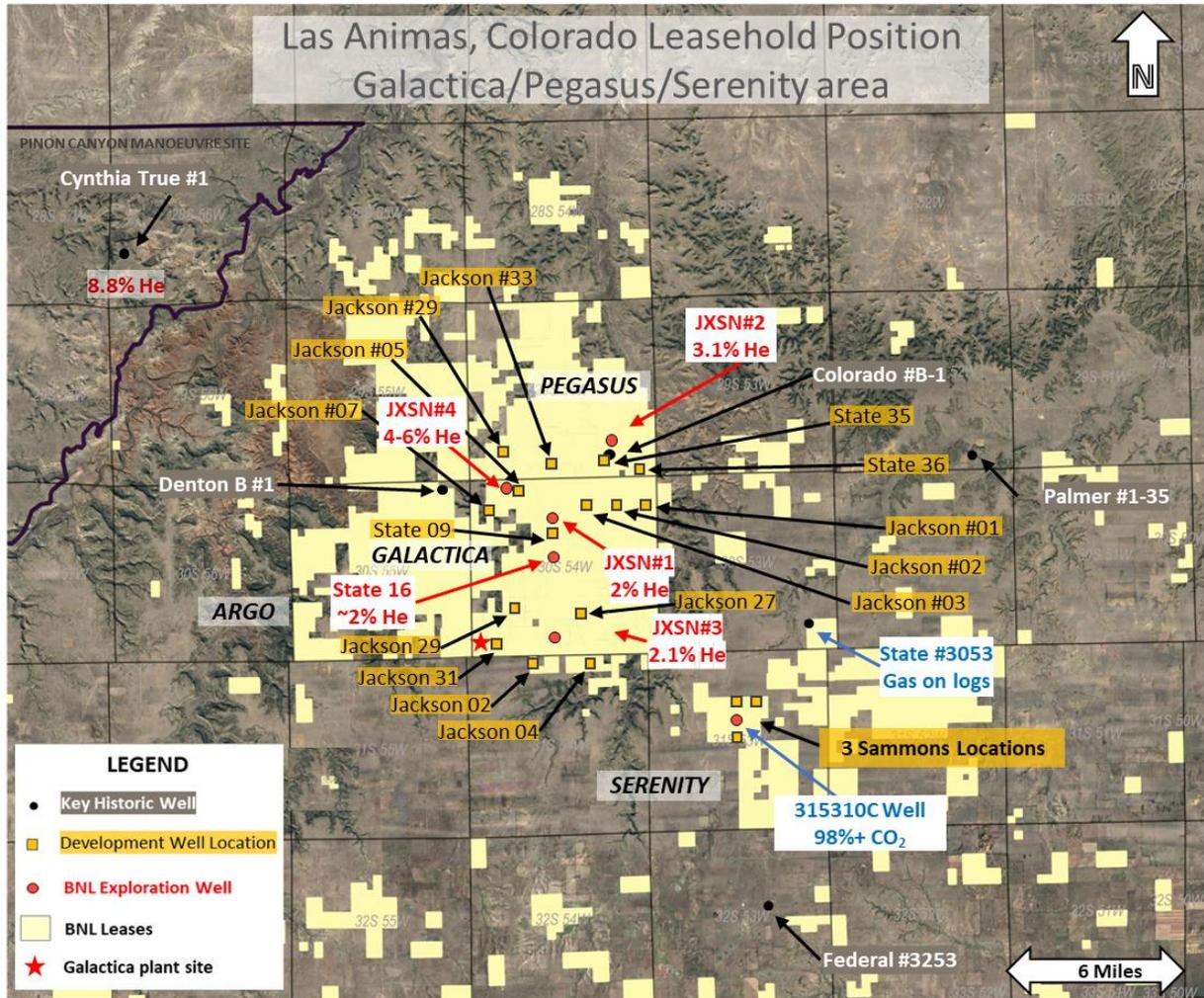
CO<sub>2</sub> is a critical path component in many key industrial sectors. In the US, food and beverage production account for 70% of high-purity CO<sub>2</sub> consumption. The remaining 30% is used in processes for welding, EV battery production, agriculture and oil field services.

Reliable supply of CO<sub>2</sub> is key to municipal waste-water treatment, displacing the high cost and hazards of sulfuric acid in processing. Notably, significant progress also continues to be made in processes that convert CO<sub>2</sub> into a carbon-neutral jet fuel.

US domestic CO<sub>2</sub> supply has been dominated by the large US industrial gas companies led by Linde PLC and Air Liquide/Airgas, along with CO<sub>2</sub> distribution specialists such as Poet and Reliant.

Targeted CO<sub>2</sub> production is expected to be contracted for fixed-price offtake with large beverage corporations, dry ice manufacturers, regional distributors, and others.

The Company understands that the current market price for merchant CO<sub>2</sub> ranges from US\$200-600 per ton (depending on final product quality, reliability and tenure of supply, regional destination, and other factors).



*This ASX Announcement has been authorised for release by the Board of Blue Star Helium Limited.*

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## **About Blue Star Helium**

Blue Star Helium Ltd (ASX:BNL, OTCQB:BSNLF) is an independent helium exploration company, headquartered in Australia, with operations and exploration in North America. Blue Star's strategy is to find and develop new supplies of low cost, high grade helium in North America. For further information please visit the Company's website at [www.bluestarhelium.com](http://www.bluestarhelium.com)

## **About Helium**

Helium is a unique industrial gas that exhibits characteristics both of a bulk, commodity gas and of a high value specialty gas and is considered a "high tech" strategic element. Due to its unique chemical and physical qualities, helium is a vital element in the manufacture of MRIs and semiconductors and is critical for fibre optic cable manufacturing, hard disc manufacture and cooling, space exploration, rocketry, lifting and high-level science. There is no way of manufacturing helium artificially and most of the world's reserves have been derived as a by-product of the extraction of natural hydrocarbon gas.