American Rare Earths Resource Estimate Increased by 64%

written by Raj Shah | February 7, 2024

Estimated In-Situ Resources Increased to 2.34 Billion Tonnes At 3,196 ppm TREO

February 7, 2024 (Source) – **Highlights:**

- **In-Situ Resources at Halleck Creek increased 64% to 2.34 billion tonnes (1.81 Mt, 27% Magnetic Rare Earth Oxides ("MREO") at 3,196 ppm Total Rare Earth Oxides ("TREO") using a 1,000ppm TREO cut-off.**
- **1.42 billion tonnes of measured and indicated resources (a 128% increase) were estimated at a grade of 3,295 ppm TREO using a 1,000ppm TREO cut-off.**
- **The progress made around mine planning and metallurgy supports a cut-off grade of 1,000 ppm based on a thorough economic and technical evaluation by independent mining consultant(s), compared to a cut-off grade of 1,500 ppm in prior reporting (See Figure 1 for comparison where grade increased irrespective of cutoff grade).**
- **2023 drilling expanded lateral and vertical resource extents, deposit remains open at depth and along strike.**

American Rare Earths (ASX: ARR | ADRs – OTCQX: AMRRY | Common Shares – OTCQB: ARRNF) **(ARR or the (Company)** is pleased to announce the completion of the detailed "Technical Report of Exploration and Updated Resource Estimates of the Halleck Creek Rare Earths Project" compiled by ARR, which includes updated Resource estimates under the 2012 JORC code. Results of the Sept/Oct 2023 exploration program and additional surface

sampling and geological mapping at Halleck Creek provided data to increase in-situ resource estimates to 2.34 billion tonnes at a grade of 3,196 ppm TREO. This is an increase of 64% in in-situ tonnes compared to the Sept/Oct 2023 maiden resource estimate for Halleck Creek. The full technical report is available on the Halleck Creek tab on our website or upon request.

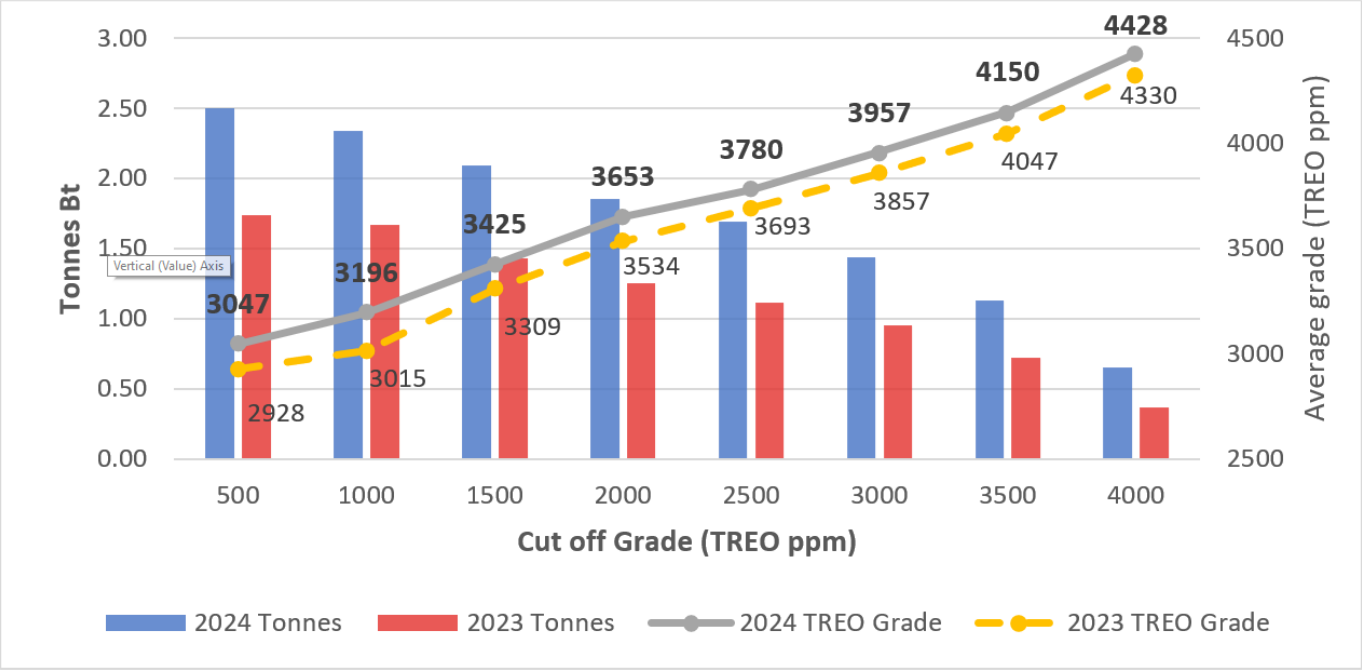

Figure 1 – Grade Tonnage Curve for TREO 2023 v 2024 Update

Adding ARR's outstanding drilling results from Sept/Oct 2023 to the geological model for Halleck Creek expanded laterally and vertically. The Sept/Oct 2023 drilling also provided data to geostatistically define measured resource extents at Overton Mountain and redefine indicated resource extents at Red Mountain with high degrees of geological confidence. Measured and Indicated resource estimates increased by 795 million tonnes (128%), inferred resource estimates increased by 117 million tonnes (15%).

ARR is working with Stantec, an international engineering consulting provider, to develop a JORC scoping study at Halleck

Creek. Technical, mining and economic designs are being evaluated for the Halleck Creek project as part of the scoping study. Stantec has determined that an economic cut-off grade of 1,000 ppm TREO defines in-situ resource estimates within proposed mining and economic limits. In the opinion of the Competent Person the 1,000 ppm TREO cut-off grade meets the conditions for reporting of a Mineral Resource with reasonable prospects of eventual economic extraction. A 1,500 ppm cut-off grade was used in the 2023 resource determination, prior to advancing metallurgy.

American Rare Earths CEO, Donald Swartz, commented on the results:

“These results are illustrative of the enormous potential of the project when the resource increases 64% during a developmental drilling campaign, which increased measured/indicated resources 128%. Typically, you’ll see the resource decrease as infill drilling takes place – instead we’re seeing the opposite, with only 25% of the project being drilled to this point. The low-cost mine plan when combined with the breakthroughs around metallurgy have increased our confidence and excitement about this world class deposit. At 27% MREO, we look forward to releasing the results of the scoping study that is nearing completion.”

Magnet rare earth elements (Nd_2O_3, Pr_6O_{11}, Sm_2O_3, Dy_2O_3, and Tb_4O_7) comprise about 27% of the total resource with an average grade of 774ppm MREO with a contained metal estimate of 1.8 million tons.

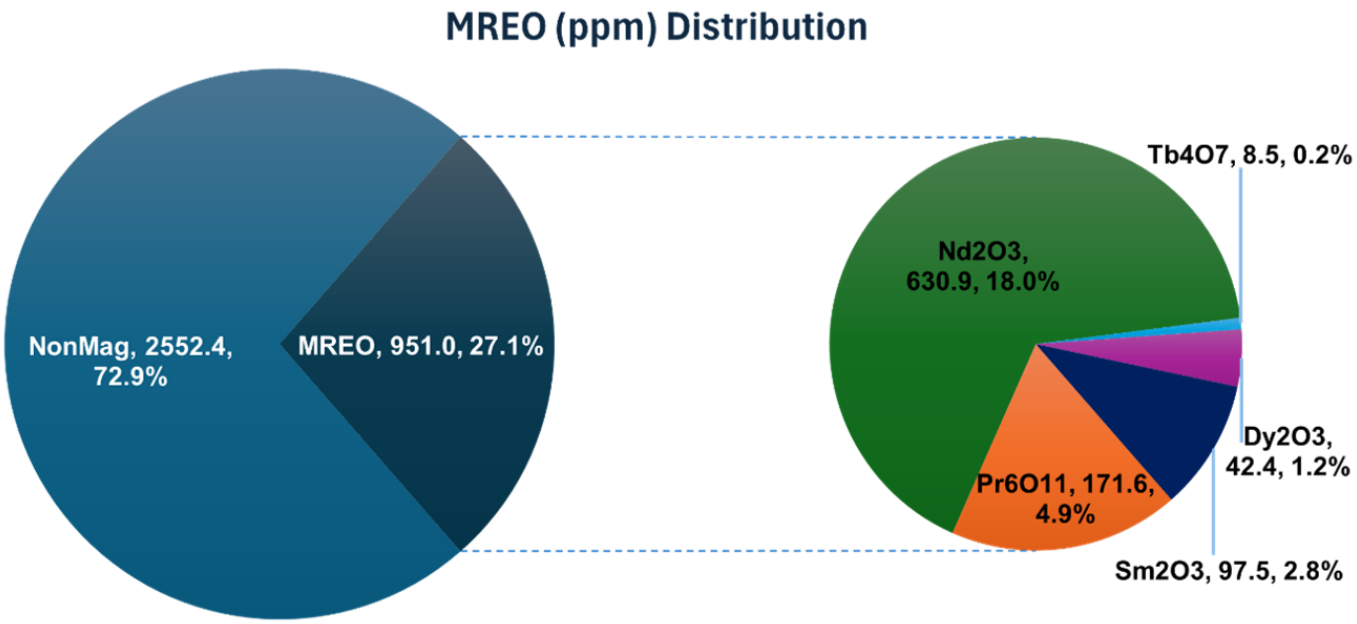

Figure 2 – MREO distribution in drilling data

Summary of Key Material Information used to Estimate the Mineral Resources

Tenement and Land Status

Wyoming Rare (USA) Inc. a wholly owned subsidiary of American Rare Earths, Inc. controls 367 unpatented lode mining claims totalling 6,320 acres (2,558 ha) across the Halleck Creek Project area. ARR controls an additional 4 Wyoming State Mineral Leases which total 1,844 acres (745 ha).

Total mineral control held by ARR in the Halleck Creek district is 8,165 acres (3,304 ha).

Project Geology

Halleck Creek resides in Red Mountain Pluton (RMP) of the 1.43 Ga Laramie anorthosite complex (LAC) is exposed in the Laramie Mountains, a Laramide aged uplift, in southeastern Wyoming.

Primary rare earth bearing rock types within the RMP consist of clinopyroxene quartz monzonite (CQM), and biotite-hornblende quartz syenite (BHS). Allanite is the primary rare earth element

(REE) host mineral at the Halleck Creek project. Allanite is a sorosilicate within the epidote group which contains a significant number of REEs in its primary mineral structure. Allanite usually occurs in association with clinopyroxene, hornblende, olivine and zircon agglomerated as “mafic clots” within CQM.

Drilling

Since April 2022 through October 2023 ARR has drilled 53 RC and 17 Core holes for a total 70 holes and 9,031 meters. All holes have been included in geological resource models.

Resource Classification

The Resource is classified as either measured, indicated, or inferred. Subject to the application of “modifying factors” the measured plus indicated component of the resource may allow for a formal evaluation of its economics with the potential to be converted to a Probable Ore Reserve. Therefore, a high degree of conservatism has been adopted as the underlying premise of the resource classification and, in particular, the indicated component.

The classification at Halleck Creek is based on the following key attribute:

Geological continuity between drillholes

- Mineralization is controlled by batholith-scale fractionation. Hence, both empirical observations and statistical analysis confirm a very high degree of continuity with the respective rock masses at Overton Mountain and Red Mountain.
- This is supported by variography.

Drill spacing and drill density

- The drill pattern is mostly irregular with drill spacing of approximately 200m.
- At Overton Mountain an area has been infilled on a systematic grid spacing of approximately 90m. The Competent Person considers this spacing to be adequate to support a measured classification.

Resource Reconciliation

Between 2024 and 2023, total estimated resources increased by approximately 0.91 billion tonnes (64%). The estimated TREO grade decreased by 133 ppm TREO (-3%). Measured + Indicated resource increased by 0.79 billion tonnes (128%). Inferred resources increased by 0.18 billion tonnes (15%).

Differences in the resource estimates occurred due to:

- Change in cut-off grade from 1,500ppm to 1,000ppm TREO
- Increase in resource dimensions because of Sept/Oct 2023 Exploration
    - Drilling to 302 meters demonstrated that the resource continues at depth and remains open
    - Drill hole spacing of new and existing data increased confidence levels and allowed the resource area to expand
    - Drill hole spacing allowed measured resources to be defined and indicated resources to be redefined
    - Drilling assays increased the grade of the resource

Mining and Metallurgy

Traditional open pit surface mining would be employed at Halleck Creek. The mineralised rock material occurs at surface and continues at depth as shown in block models.

ARR previously released results of preliminary metallurgical test work demonstrating that up to 93% of gangue material can be separated from mineralised rare earth minerals using dense media separation (DMS) and wet high intensity magnetic separation (WHIMS).

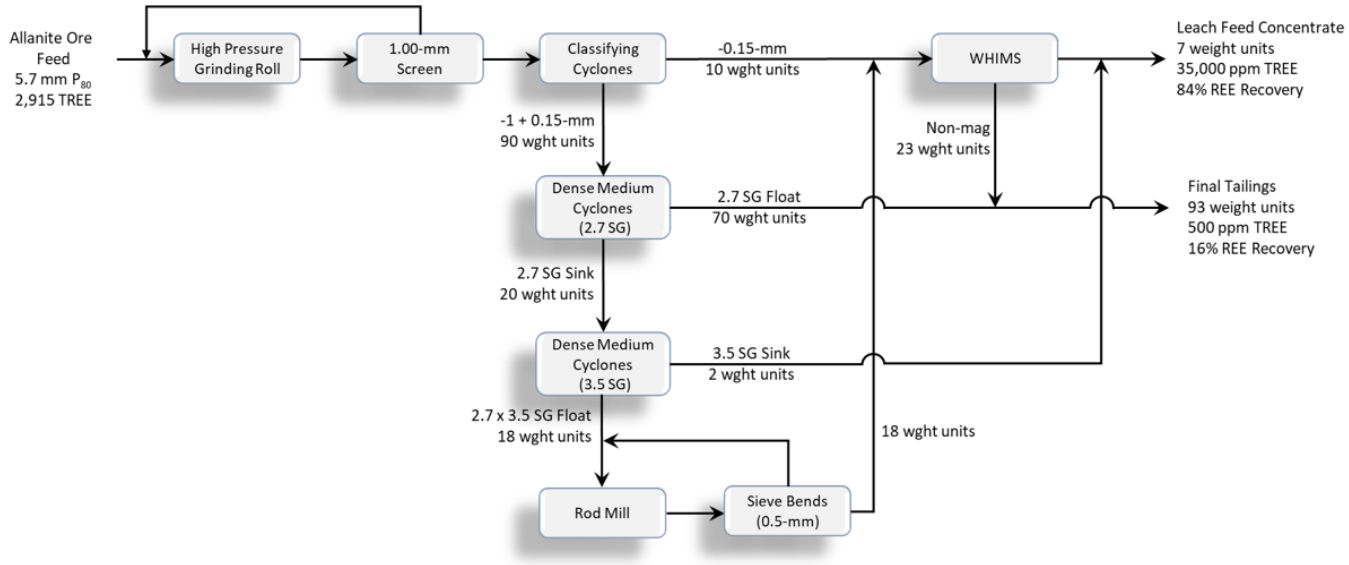

Figure 3 – Preliminary Beneficiation Flowsheet

ARR is undertaking preliminary work on leaching and refining of REE from WHIMS feed concentrate. Initial testing indicates that recoveries between 80% and 100% of light REE can be achieved through direct acid leaching at lower temperatures. The results from this testing will be announced as soon as completed.

Permitting Assessments

ARR is developing needs assessments for potential development of mines at Halleck Creek. in phases. The first phase consists of acquiring a license to explore on state mineral leases from WDEQ to collect rocks for bulk material testing and pilot scale metallurgical test work. The second phase is to prepare and implement a detailed baseline environmental plan and mining permit to mine on state mineral leases.

ARR is developing partnerships with various Wyoming based businesses and entities to advance development of a mine on state lands. The Company believes such partnerships provide the shortest path to mine permits, maximizing value Wyoming state resources, being good environmental stewards of the project.

Future Work for 2024

- JORC Scoping Study being prepared by Stantec
- Test mine approval for bulk sample permits (aka license to explore)
- Additional detailed metallurgical test work for beneficiation, leaching and refining of rare earth oxides
- Options for Pilot Plant being studied

To see the full JORC Table you can find that here.

Competent Persons Statement: The information in this document is based on information compiled by personnel under the direction of Mr. Dwight Kinnes who is Chief Technical Officer of American Rare Earths. This work was reviewed and approved for release by Mr. Kinnes (Society of Mining Engineers #4063295RM) who is employed by American Rare Earths and has sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 JORC Code. Mr Kinnes consents to the inclusion in the report of the matters based upon the information in the form and context in which it appears.

About American Rare Earths Limited:
American Rare Earths (ASX: ARR | ADRs – OTCQX: AMRRY | Common Shares – OTCQB: ARRNF) owns the Halleck Creek, WY and La Paz, AZ rare earth deposits. The company's flagship project at Halleck Creek, WY, has the potential to become the largest and most

sustainable rare earth projects in North America. American Rare Earths is developing environmentally friendly and cost-effective extraction and processing methods to meet the rapidly increasing demand for resources essential to the clean energy transition and US national security. The Company continues to evaluate other exploration opportunities and is collaborating with US Government-supported R&D to develop efficient processing and separation techniques of rare earth elements.

Head Office
American Rare Earths Ltd
1658 Cole Blvd, Suite G30
Lakewood, CO, 80401
info@americanrareearths.com.au
americanrareearths.com.au

For additional information:

Susan Assadi
Media Relations US
sassadi@americanree.com
347 977 7125

Beverly Jedynak
Investor Relations US
Beverly.jedynak@viriathus.com
312 943 1123

Figures accompanying this announcement are available at:

https://www.globenewswire.com/NewsRoom/AttachmentNg/7adc2e51-9884-4c49-91e6-1fd81bd04139

https://www.globenewswire.com/NewsRoom/AttachmentNg/582810ac-439c-43b4-9b68-f5fecbd77934

https://www.globenewswire.com/NewsRoom/AttachmentNg/22315392-22a

8-4a56-bffd-63d9e55dad5b