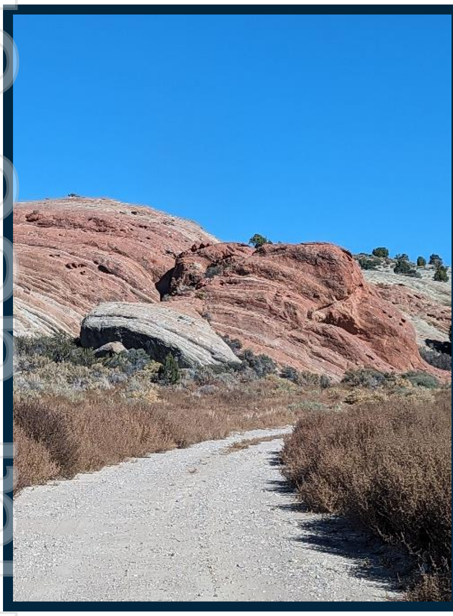
4 February 2025

GEOLOGICAL MAPPING AND FURTHER ROCK CHIP RESULTS ENHANCE RED MOUNTAIN LITHIUM PROJECT, USA

Interpretation of prospective rock types confirmed ahead of Exploration Target



Key Highlights

- **Detailed geological mapping completed by consulting expert Professor Phillip Gans of the University of California Santa Barbara.**
- **Mapping identifies two priority clay-rich and lithium-hosting rock units at Red Mountain.**
- **Additional rock-chip sampling within 'Unit J' identifies a broad zone of mineralisation grading up to 2,100ppm Li.**
- **Mapped as the most clay-rich rock type. 'Unit J' has only been tested by one drill hole, indicating excellent upside.**
- **Continuous 'Unit O' trending approximately north-south through project will underpin the upcoming Exploration Target.**

Astute Metals NL (ASX: ASE) ("ASE", "Astute" or "the Company") is pleased to advise that recently completed geological mapping and rock chip sampling at the 100%-owned Red Mountain Lithium Project in Nevada, USA has identified a new zone of lithium bearing clay-rich rocks (shown as the Dark green 'Unit J' in Figures 1-3) with lithium grades of up to 2,100ppm lithium.

Unit J is a claystone and siltstone dominated rock type located in the west of the Red Mountain Project area which was identified as part of detailed geological mapping undertaken by consultant geologist Professor Phillip Gans of the University of California Santa Barbara. Professor Gans identified Unit J as the most clay-rich rock unit at the Project and recommended a targeted sampling campaign to establish the presence of lithium mineralisation. Subsequently a total of 38 sub-crop and outcrop samples were taken over an area of 800 x 500m of Unit J (Figure 1), with excellent assay results returned from 13 samples grading 1,000ppm lithium or greater. The sampling revealed outstanding exploration potential in this previously unsampled part of the project.

The mapping also identified two priority rock units for future drill targeting – Unit O and the previously mentioned Unit J. Unit O (shown in pale green in Figures 1-3) is dominated by silt and sandstone with clay-rich horizons, is interpreted to be continuous over a 7.8km extent across the Project, and has been tested by 12 of the 13 holes drilled to date, each of which has intersected strong lithium mineralisation[7].

The continuous nature of Unit O will underpin a maiden Exploration Target for the Project and inform the drill targeting strategy for the first half of 2025, as the Company advances toward a Maiden Mineral Resource Estimate in the second half.

Astute Chairman, Tony Leibowitz, said:

"With the advice of expert independent consultants, we are continuing to systematically progress the Red Mountain Project. The identification of a new high-grade lithium-bearing unit increases the project's potential, while the enhanced geological understanding allows the calculation of an Exploration Target, as well as contributes to de-risking of the upcoming drilling campaign, paving the way for a maiden Mineral Resource Estimate in the second half of 2025"

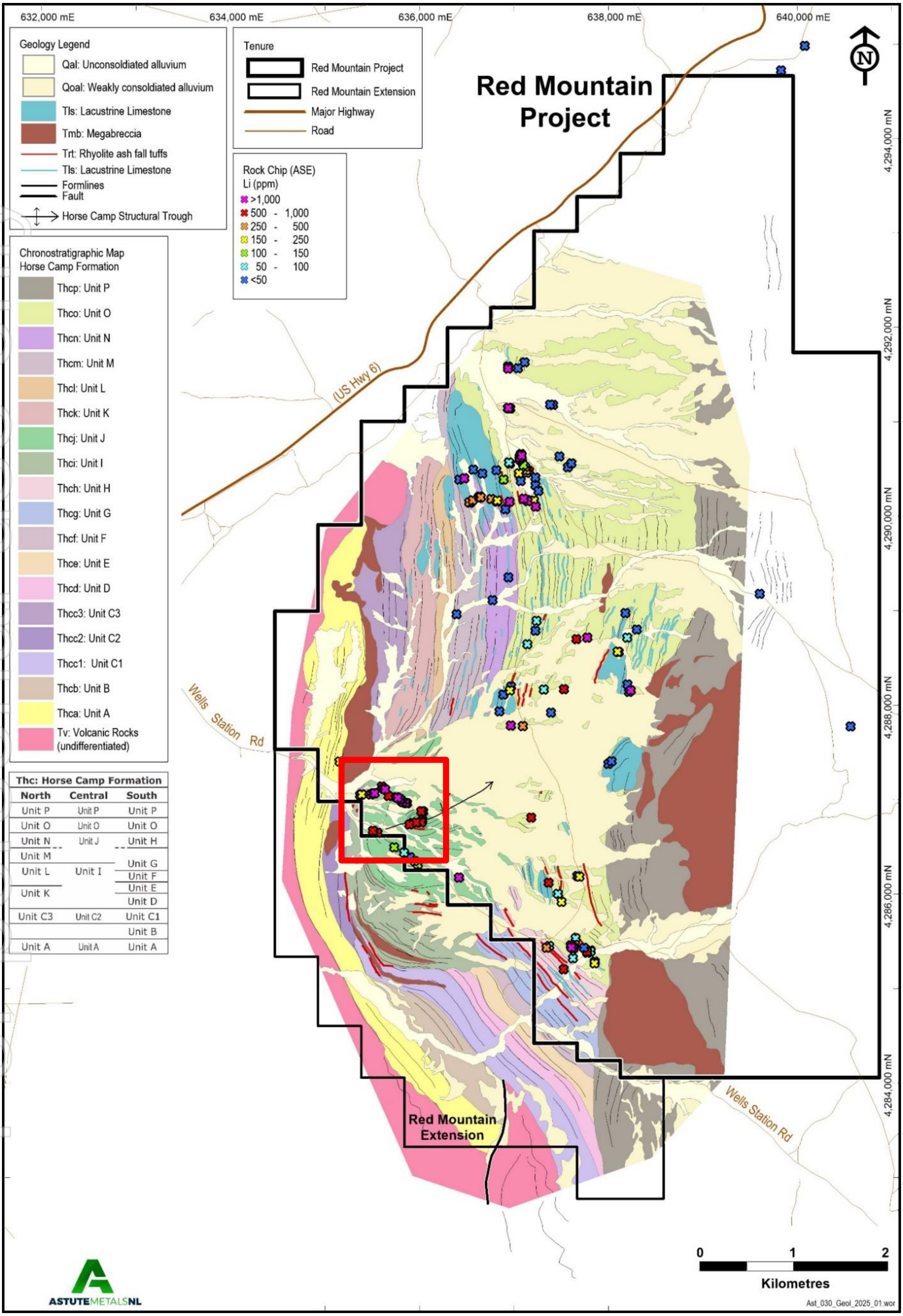


Figure 1. Mapped geology and rock chip lithium geochemistry with red box indicating new lithium zone in Unit J.

Background

Located in central-eastern Nevada (Figure 4), adjacent to the Grand Army of the Republic Highway (Route 6), which links the regional mining towns of Ely and Tonopah. the Red Mountain Project was staked by Astute in August 2023.

The Project area has broad mapped tertiary lacustrine (lake) sedimentary rocks known locally as the Horse Camp Formation[2]. Elsewhere in the state of Nevada, equivalent rocks host large lithium deposits (see Figure 4) such as Lithium Americas' (NYSE: LAC) 62.1Mt LCE Thacker Pass Project[2] and American Lithium (TSX.V: LI) 9.79Mt LCE TLC Lithium Project[3].

Astute has completed substantial surface sampling campaigns at Red Mountain, which indicate widespread lithium anomalism in soils and confirmed lithium mineralisation in bedrock with some exceptional grades of up to 4,150ppm Li[1,6] (Figures 1 and 3).

A total of 13 RC and diamond drill holes have been drilled at the project for a combined 1,944.72m. Both campaigns were highly successful with strong lithium mineralisation intersected in every hole drilled[7].

Scoping leachability testwork on mineralised material from Red Mountain indicates high leachability of lithium of up to 98%, varying with temperature, acid strength and leaching duration[8].

Mapping Results

Previous regional-scale geological mapping undertaken by the USGS had identified prospective tertiary lacustrine (lake) sedimentary rocks, known locally as the Horse Camp Formation, at Red Mountain.

The recent mapping project was designed to gain a high-resolution understanding of the rock types within the Horse Camp Formation, their orientation, and their potential to host lithium mineralisation. The updated geological interpretation for Red Mountain will allow for a JORC Exploration Target to be established, and will guide future drilling campaigns

Mapping of the Red Mountain Project was undertaken in the last quarter of 2024 by Professor Phillip Gans, of the University of California Santa Barbara. The mapping of the Project is an important step to increase geological knowledge of the project, and particularly as the Company plans to conduct further drilling and, ultimately, a Mineral Resource Estimate.

Mapping identified 18 distinct chronostratigraphic units within the Horse Camp Formation, as well as volcanics, limestone, megabreccia and alluvial (gravels etc) units. The geological maps shown in Figures 1, 2 and 3 are replications of Professor Gans' mapping, with overlays of Company exploration data. Professor Gans' descriptions of all rock units identified in the mapping are provided in Appendix 3. The Company has drawn five main conclusions from this work:

- Rock units with the greatest clay content and prospectivity for lithium are Unit J and Unit O. This is confirmed by strong soil and rock chip sample anomalism, and the fact that 12 holes drilled to date in Unit O and the one hole in Unit J all intersected lithium mineralisation.

- Unit O is interpreted to be continuous in a north-south trend over 7.8km of the Project and accordingly will constitute the focus of the next round of drilling.

- Units T, H, P and N are considered lower priority than Units J and O, however lithium anomalism in rock chips and soil samples from these units indicates that they remain prospective in part.

- The location and extents of priority rock types have been well-characterised, allowing the Company to progress with the calculation of an Exploration Target for Red Mountain.

- Over 700 strike and dip measurements were collected. This allows for an excellent understanding of the local orientation of rocks and ability for the Company to optimise drill-hole designs to target lithium-bearing horizons at depth.

Rock Chip Sampling Results

As part of the mapping exercise, it was identified that the clay-rich rock type Unit J had seen no rock chip sampling. A 38-sample campaign was then undertaken, whereby sub-crop and outcrop samples were collected over an area of 800 x 500m of Unit J (Figure 2). As part of the sampling campaign, two float samples were also collected and eight samples from the eastern part of the project.

The assay results for these samples were highly encouraging, with:

- A new zone of lithium mineralisation identified at surface in Unit J as a result of the sampling

- Some 13 of the 38 samples graded 1,000ppm Li or more, with a maximum sample grade of 2,100ppm Li, indicating excellent high-grade potential at this new area of interest

Next Steps

The Company is currently underway integrating the geological mapping data with existing drilling and surface sampling to establish a JORC compliant Exploration Target. Once complete, the technical team will plan and permit its next round of diamond drilling at the Project, set to commence at the earliest opportunity in the 2025 field season.

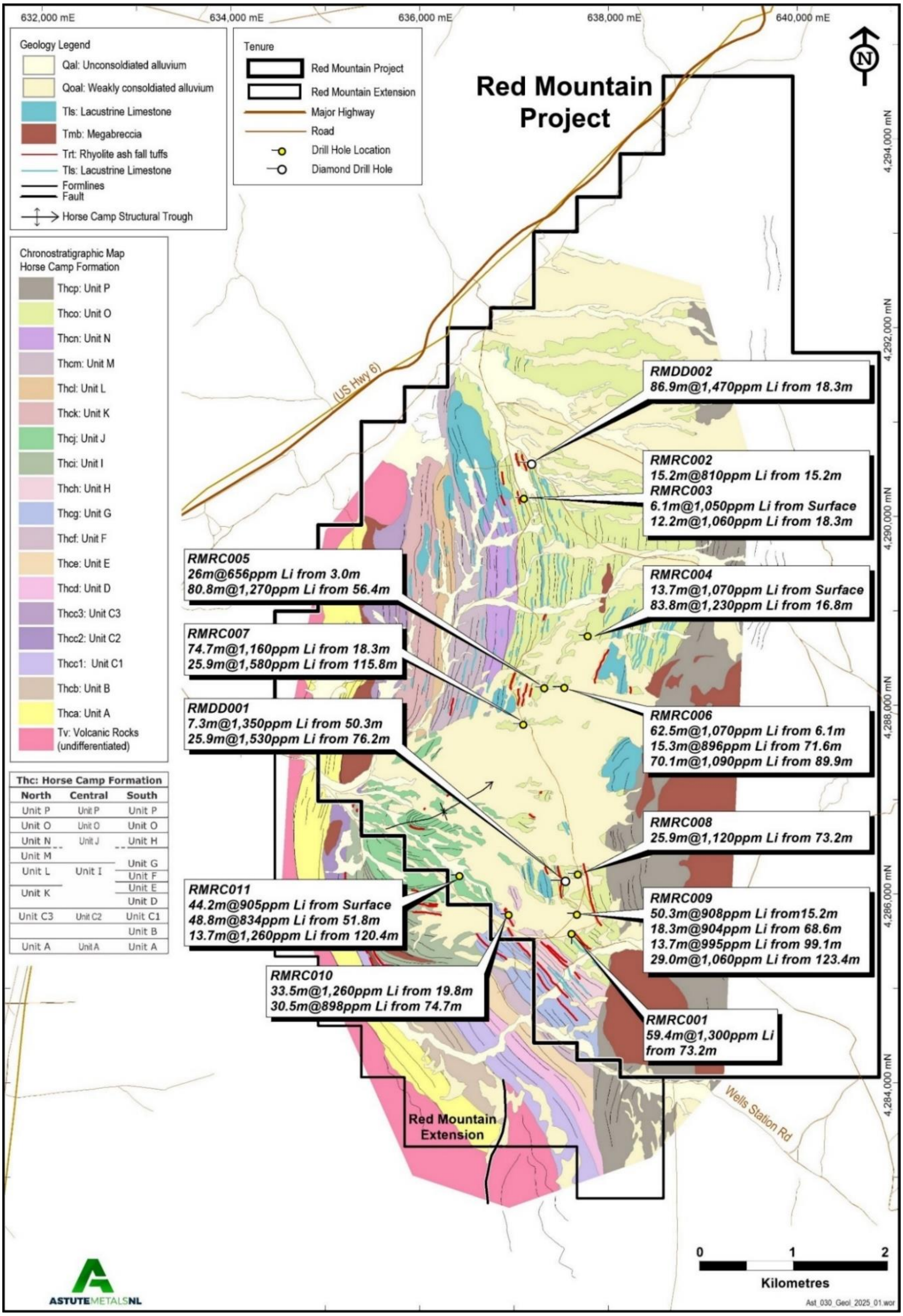


Figure 2. Mapped geology, drill collars and significant intersections.

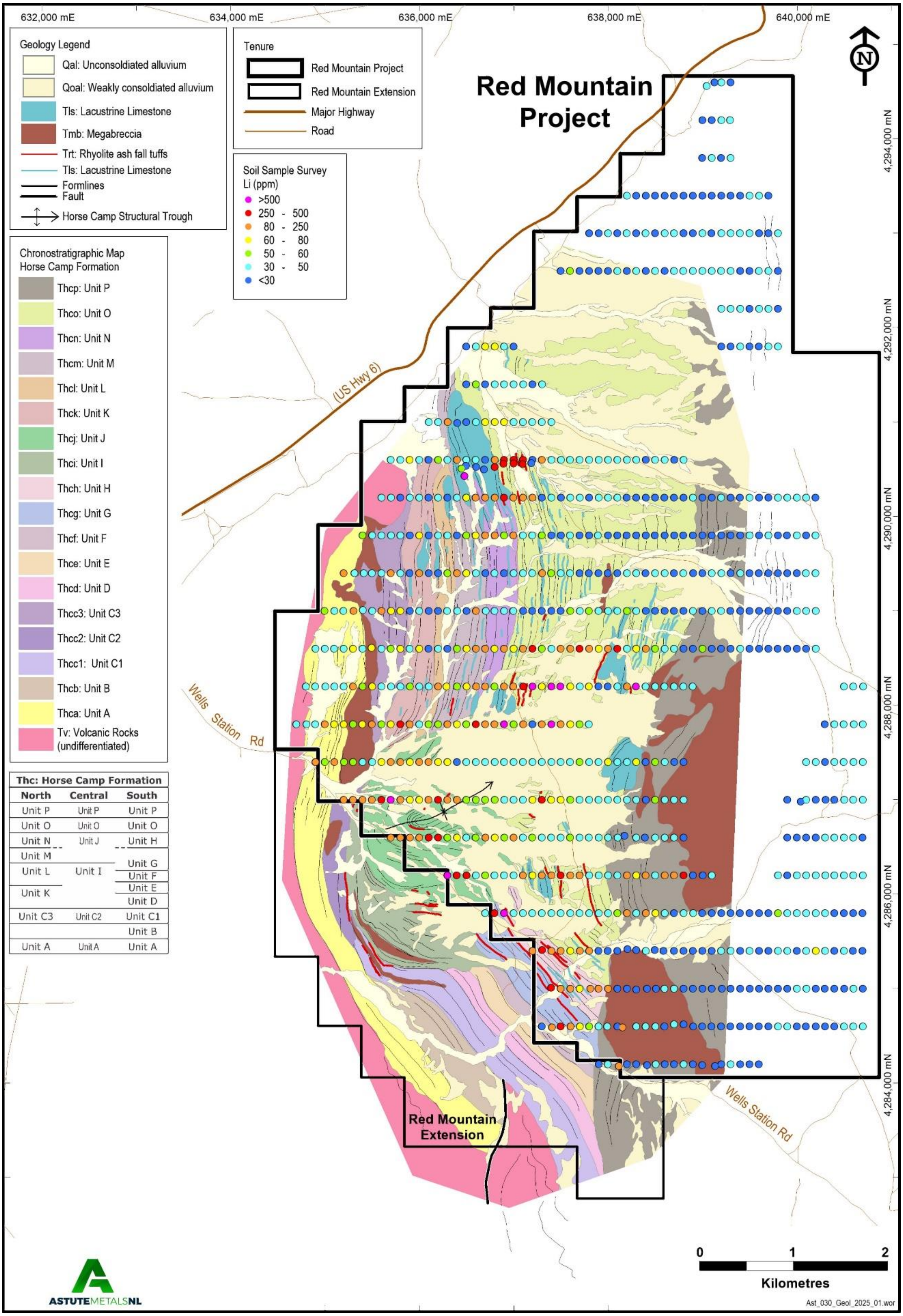


Figure 3. Mapped geology and soil sample lithium geochemistry.

About Professor Phillip Gans

Prof. Gans gained his Ph.D. from Stanford in 1987 in Tectonics, Structural Geology, and Volcanology. Employed since 1991 in the Department of Earth Science at the University of California, Santa Barbara.

Professor Gans teaches upper division courses in Structural Geology, Tectonics, Volcanology, Ore Deposits, and Field Geology/Field Methods. A long-term focus of his research has been the tectonic and magmatic evolution of east-central Nevada, including the Horse Camp Formation, the location of the Red Mountain Project block of claims. The Company looks forward to continuing its engagement with Prof. Gans and leveraging his site-specific expertise as it advances the Red Mountain Project.

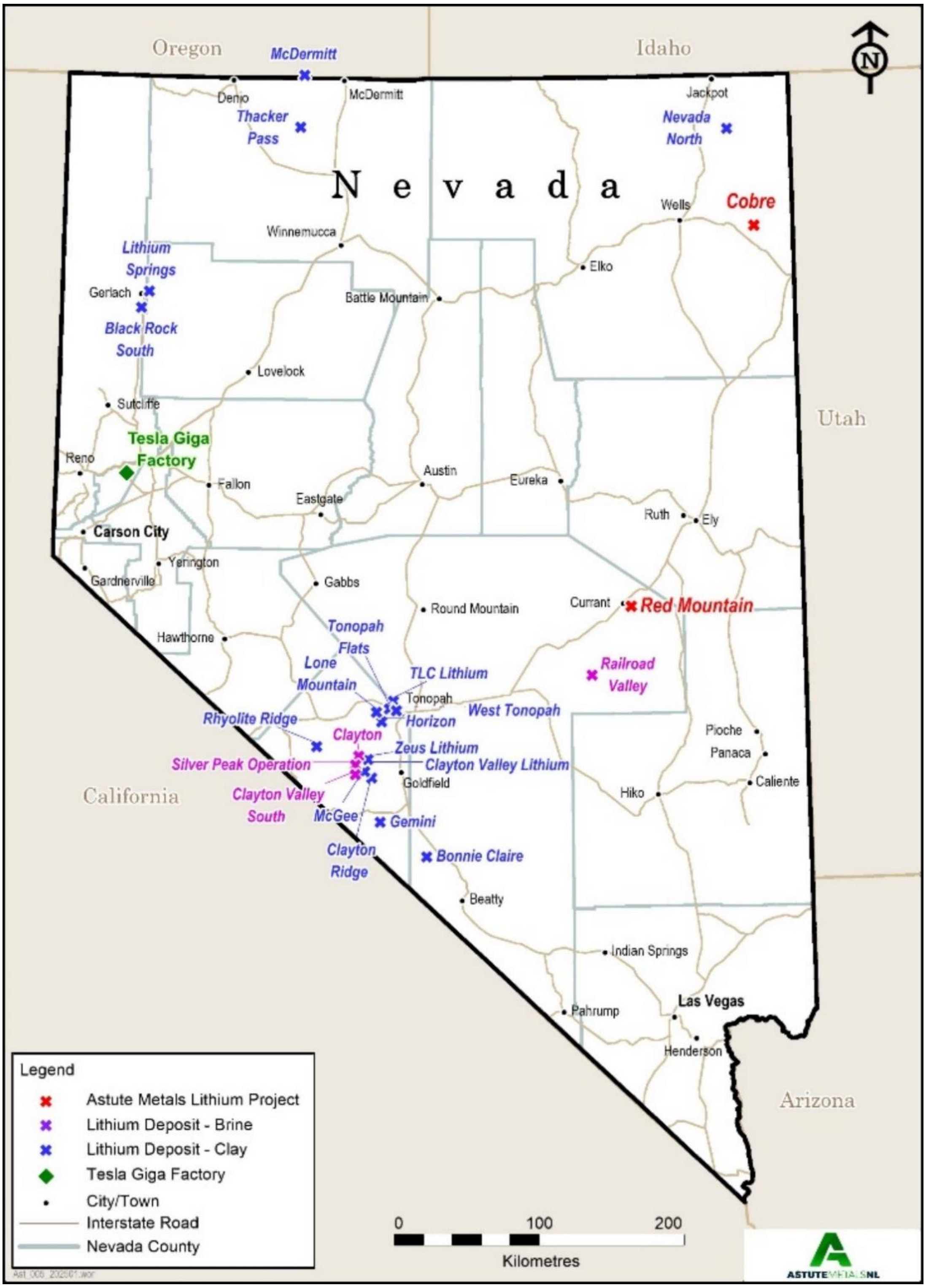


Figure 4. Location of Astute Lithium Projects, and Nevada lithium deposits.

1 ASX: ASE 27 November 2023 'Outstanding Rock-Chip Assays at Red Mountain Project'
2 NYSE: LAC 31 December 2024 Updated NI 43-101 Technical Report for the Thacker Pass Project
3 TSX.V: LI 17 March 2023 'Tonopah Lithium Claims project NI 43-101 technical report – Preliminary Economic Assessment'
4 Source: Benchmark Mineral Intelligence – Lithium Carbonate China Index 12/06/2024
5 ASX: ASE 16 December 2024 'Major new zones of Lithium Mineralisation at Red Mountain Project'
6 ASX: ASE 8 July 2024 'High-grade rock chip assays extend prospective lithium horizon at Red Mountain Project, USA'
7 ASX: ASE 20 January 2025 'Extension of Lithium Discovery at Red Mountain Project'
8 ASX: ASE 9 December 2024 'Positive initial metallurgical results from Red Mountain'

Authorisation

This announcement has been authorised for release by the Board of Astute.

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More Information

Matt Healy
Executive Director & CEO
mhealy@astutemetals.com
+61 (0) 431 683 952

Nicholas Read
Media & Investor Relations
nicholas@readcorporate.com.au
+61 (0) 419 929 046

Competent Persons

The information in this report that relates to Sampling Techniques and Data (Section 1) is based on information compiled by Mr. Matthew Healy, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM Member number 303597). Mr. Healy is a full-time employee of Astute Metals NL and is eligible to participate in a Loan Funded Share incentive plan of the Company. Mr. Healy has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Healy consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Reporting of Exploration Results (Section 2) is based on information compiled by Mr. Richard Newport, principal partner of Richard Newport & Associates – Consultant Geoscientists. Mr. Newport is a member of the Australian Institute of Geoscientists and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person under the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Newport consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

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Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	Nature and quality of sampling (e.g. cut channels, random chips, or specific specialisedindustry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheldXRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling. Include reference to measures taken to ensuresample representivity and the appropriate calibration of any measurement tools or systems used. Aspects of the determination of mineralisation thatare Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, suchas where there is coarse gold that has inherentsampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.	Rock chip samples were taken from outcropping or shallowly subcropping rocks using a geopick. Rock chip samples were taken by Astute staff and/or contractors/consultants Claystone hosted lithium deposits are thought to form as a result of the weathering of lithium-bearing volcanic glass within tertiary-aged tuffaceous lacustrine sediments of the mapped Ts3 unit. Inputs of lithium from geothermal sources have also been proposed.
Drilling techniques	Drill type (e.g. core, reverse circulation, open-holehammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core isoriented and if so, by what method, etc.).	Not applicable.
Drill sample recovery	Method of recording and assessing core andchip sample recoveries and results assessed. Measures taken to maximise sample recoveryand ensure representative nature of the samples. Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gainof fine/coarse material.	Not applicable.
Logging	Whether core and chip samples have been geologically and geotechnically logged to alevel of detail to support appropriate MineralResource estimation, mining studies and metallurgical studies. Whether logging is qualitative or quantitative innature. Core (or costean, channel, etc.) photography. The total length and percentage of the relevantintersections logged.	Rock chip samples were logged for lithology (see appendix 2) Detailed mapping rock type descriptions provided in Appendix 3

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotarysplit, etc. and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparationtechnique. Quality control procedures adopted for all sub-sampling stages to maximise representivityof samples. Measures taken to ensure that the sampling isrepresentative of the in-situ material collected,including for instance results for field duplicate/second-half sampling.	Full samples were submitted to ALS Laboratories in Ely and Reno for preparation and analysis.
Quality of assay data and laboratory tests	Whether sample sizes are appropriate to thegrain size of the material being sampled. The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial ortotal. For geophysical tools, spectrometers, handheldXRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precisionhave been established.	Samples analysed by method ME-MS41 which is an ICP-MS method employing an aqua-regia digest. Aqua-regia is not considered a 'total' digest for many elements however is considered fit for purpose for lithium and has been used extensively by other parties exploring for lithium claystone deposits in the USA. Assay quality was monitored using pulp blanks, as well as certified reference materials (CRMs) at a range of lithium grades. Pulp blank results indicated no material contamination of samples from sample preparation or during the analytical process. CRM results were within 3 standard deviations of certified values. No material systematic bias nor other accuracy related issues were identified.
Verification of sampling and assaying	The verification of significant intersections by either independent or alternative company personnel. The use of twinned holes. Documentation of primary data, data entryprocedures, data verification, data storage (physical and electronic) protocols. Discuss any adjustment to assay data.	Sample intervals to be assigned a unique sample identification number prior to sample despatch Lithium-mineralised claystone Certified Reference Materials (standards)and pulp blanks were inserted into the sample stream at regular intervals (at least 1:25 ratio) to monitor lab accuracy and potential contamination during analytical processes
Location of data points	Accuracy and quality of surveys used to locatedrill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. Specification of the grid system used. Quality and adequacy of topographic control.	Sample locations were pre-determined by overlaying a grid and using hand-held GPS to navigate to points. Locations are reported in NAD83 UTM Zone 11. Expected site location accuracy is +/- 10m

Criteria	JORC Code explanation	Commentary
Data spacing and distribution	Data spacing for reporting of Exploration Results. Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the MineralResource and Ore Reserve estimation procedure(s) and classifications applied. Whether sample compositing has been applied.	Not applicable.
Orientation of data in relation to geological structure	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	Claystone beds are regionally shallow-dipping at various dips though commonly 30-45° to the east
Sample security	The measures taken to ensure sample security.	Samples stored at secured yard and shed located in township of Currant until delivered by staff or contractors to the ALS lab at Elko, NV
Audits or reviews	The results of any audits or reviews of samplingtechniques and data.	Not applicable

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Section 2 - Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	Red Mountain Claims (CRN001-556) held in 100% Astute subsidiary Needles Holdings Inc. Claims located on Federal (BLM) Land Drilling conducted on claims certified by the Bureau of Land Management (BLM)
Exploration done by other parties	Acknowledgment and appraisal of exploration byother parties.	No known previous lithium exploration conducted at Red Mountain Exploration conducted elsewhere in Nevada by other explorers referenced in announcement body text
Geology	Deposit type, geological setting and style of mineralisation.	The principal target deposit style is claystone hosted lithium mineralisation. Claystone hosted lithium deposits are thought to form as a result of the weathering of lithium-bearing volcanic glass within tertiary-aged tuffaceous lacustrine sediments of the mapped Ts3 unit. Lacustrine environments formed as a result of extensional tectonic regime that produced 'basin and range' topography observed across the stateof Nevada. Inputs of lithium from geothermal sources have also been proposed.
Drill hole Information	A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: ◦ easting and northing of the drill hole collar ◦ elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar ◦ dip and azimuth of the hole ◦ down hole length and interception depth ◦ hole length. If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	Drill hole information available in previous ASX releases referenced to in the body announcement
Data aggregation methods	In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated. Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shownin detail. The assumptions used for any reporting of metal equivalent values should be clearly stated.	Not applicable Drill Intersections where quoted are length-weighted.

Criteria	JORC Code explanation	Commentary
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the reporting of Exploration Results. If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width notknown').	Not applicable.
Diagrams	Appropriate maps and sections (with scales) andtabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	Included in ASX announcement
Balanced reporting	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	This release describes all relevant information
Other substantive exploration data	Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysicalsurvey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	This release describes all relevant information Professor Phillip Gans has consented to the inclusion of his geological mapping and rock unit descriptions in this ASX announcement
Further work	The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions orlarge-scale step-out drilling). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	Rock chip results and detailed mapping adds to a growing body of exploration data that demonstrates further drilling at the Red Mountain project is highly warranted.

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Sample ID	East	North	Li (ppm)	Rock type
602296	635394	4287086	236	Green fine-grained Tuff - Surface scree
602297	635374	4287075	97.5	Light green fine-grained Claystone indurated fragments - Surface scree
602298	635490	4287083	1380	Claystone
602299	635516	4287095	1320	Claystone
602300	635518	4287095	1505	Claystone
602301	635532	4287096	2100	Claystone
602302	635640	4287137	1060	Claystone
602303	635635	4287139	582	Claystone
602304	635624	4287144	1000	Claystone
602305	635611	4287158	863	Claystone
602306	635606	4287167	892	Claystone
602307	635675	4287066	972	Claystone
602308	635874	4286989	1000	Claystone
602309	635855	4286995	1135	Claystone
602310	635824	4287002	1000	Claystone
602311	635816	4287009	920	Claystone
602312	635810	4287026	1015	Claystone
602313	635806	4287029	284	Shale / Claystone
602314	635797	4287035	1015	Claystone
602315	635776	4287048	1295	Claystone
602316	635769	4287052	1280	Claystone
602317	635759	4287053	947	Claystone
602318	636045	4286901	545	Claystone / Shale
602319	636038	4286904	511	Claystone
602320	636029	4286905	186.5	Shale / Claystone
602321	636024	4286904	834	Claystone
602322	636037	4286812	32.8	Claystone /Shale
602323	636028	4286794	586	Claystone
602324	636024	4286788	637	Claystone
602325	635969	4286789	828	Claystone
602326	635930	4286782	664	Claystone
602327	635898	4286765	598	Claystone
602328	635986	4286343	136.5	Shale / Claystone
602329	635952	4286377	64.3	Shale
602330	635904	4286418	49.2	Shale
602331	635842	4286467	83.5	Shale
602332	635738	4286523	140.5	Shale
602333	635562	4286675	655	Claystone

APPENDIX 2 – Red Mountain Rock Chip Sample Assay Table

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Sample ID	East	North	Li (ppm)	Rock type
602334	635522	4286694	233	Claystone / Shale
602335	635512	4286697	632	Claystone
602286	638114	4288590	96.9	Rock
602287	638104	4288595	206	Sandstone
602288	638206	4288744	90.2	Clayey siltstone
602289	638186	4289005	36.9	Clayey siltstone
602290	638307	4288828	13.5	Clayey siltstone
602291	638207	4288246	5.4	Sandstone
602292	638222	4288168	38.7	Clayey siltstone
602293	638243	4288183	1890	Clayey siltstone

Unit	Age	Description
Quaternary Alluvium	Quaternary	Unconsolidated sediments in the modern drainage channels
Older Quaternary Alluvium	Quaternary	Weakly consolidated, 1 to 5 m thick well-stratified gravel and sand intervals that underlie broad pediment surfaces above the modern alluvial drainages. Composed mainly of Paleozoic carbonate clasts derived from the ridges to the east
Rhyolite ash fall tuffs	Lithologic units at various horizions (Miocene)	Water laid tuffs (tephras), poorly exposed thin (0.5 to 4 m) continuous white to cream colored zeolitized ash beds, originally composed primarily of rhyolitic glass bubble-wall shards with sparce (0.1 to 5%) tiny (<100µ) crystals of bio, plag, ± san, qtz, hbl, sph. Now are heavily altyered, replaced by authegenic K-feldspar, various zeolites, and smectite. Lower portions are massive with a porcelain texture, upper parts are laminated and clearly reworked. Best preserved in lagoonal, outer delta and deep lacustrine environments of Units G, H, I, J, M,N and O. Have yielded U-Pb zircon ages ranging from 16.2 to 15.1 Ma. Delineated as thin red stripes on map
Lacustrine Limestone	Lithologic units at various horizions (Miocene)	Large irregular bodies or reef-like buildups up to several hundred meters thick of light tan to grey lacustrine limestone. Ranges from thinly laminated micrite to massive coarse-grained recrystallized, locally includes sandy or silty or ashy intervals. Larger masses delineated separately and are common within the upper part of the basin fill (Thc Unit O). Thin (0.5 to 4.0 m-thick) fairly-continuous resistant ledges of lacustrine limestone occur within Unit H in the southern fan delta complex and though out Units K to N in the northern fan complex, as well as in Unit O and are indicated by solid blue lines on the map. These thin intervals commonly have abundant diagenetic chert.
Megabreccia	Lithologic units at various horizions (Miocene)	Large masses of monolithologic and polymict breccia composed of clast - supported angular blocks up to 10s of meters, interpreted to represent ancient debris avalanche or Sturzstrom deposits. Within Thc unit C, the Tmb lenses are composed entirely of rhyolite breccias derived from the older Tv. A particularly noteworthy lens consisting of chaotic blocks of conglomerate lies within Thc unit I at the toe of the southern fan delta is interpreted as an olistostrome. Within Unit P the Tmb masses consist predominantly of older Paleozoic units, including large masses of Notch Peak Formation, OS Dolomite, Eureka quartzite. Red Mountain is a highly altered composite mass of rhyolite megabreccia derived from the Windous Butte and Stone Cabin formations
Horse Camp Formation Unit P	Miocene	Uppermost unit of the Horse Camp Fm., equivalent to Member 4, rests in angular unconformity on underlying units A through O, includes very poorly exposed intervals of conglomerate and sandstone intercalated with large masses and lenses of megabreccia derived mainly from various Paleozoic carbonate formations. The megabreccias and slide blocks locally exceed 1 km in length and are up to hundreds of meters thick, and some are surprisingly intact with well-preserved consistent bedding. Red Mountain represents one such megabreccia composed of Eocene rhyolite.
Horse Camp Formation Unit O	Miocene	Thick heterogeneous unit high within the Horse Camp Fm. Extends the length of the basin, deposited on Unit H in the south, Unit J in the center, and Unit N in the north and appears to record the late infilling of the basin following its early rapid subsidence history. Includes intervals of claystone, siltstone/shale, sandstone, and pebble conglomerate 5 to 30 m thick and occasional thin ledges of cherty lacustrine limestone and poorly exposed white tuffs as well as large lacustrine limestone reefs. Generally recessive and poorly exposed due to extensive cover by older alluvium. Ash beds have yielded ages of 15.4 to 15.1 Ma

Unit	Age	Description
Horse Camp Formation Unit N	Miocene	Sixth unit up in northern fan-delta complex. Heterogeneous unit but similar to Units L and M - cobble conglomerate and pebbly sandstone in central area, grading southward to subacqueous gravel turbidites and plane laminated sandstone and shale, and grading abruptly northward to a very thick lacustrine limestone reef complex and associated lagoonal shale and sandstone. Intercalated ash beds have yielded ages of 15.75 to 15.6 Ma
Horse Camp Formation Unit M	Miocene	Fifth unit up in northern fan-delta complex. Heterogeneous unit but similar to Unit L - cobble conglomerate and pebbly sandstone, grading southward to subacqueous gravel turbidites and plane laminated sandstone, and grading northward to mixed shale, sandstone, and lacustrine limestone
Horse Camp Formation Unit L	Miocene	Fourth unit up in northern fan-delta complex. Heterogeneous unit but consists mainly of cobble conglomerate and pebbly sandstone, grading southward to subacqueous gravel turbidites and plane laminated sandstone, and grading northward to mixed shale, sandstone, and lacustrine limestone
Horse Camp Formation Unit K	Miocene	Third unit up in northern fan-delta complex. Heterogeneous unit that includes boulder and cobble conglomerates, well laminated sandstone, shale, and minor lacustrine limestone
Horse Camp Formation Unit J	Miocene	Very poorly exposed shale facies of the deeper lacustrine environment in the central part of the basin. Consists mainly of claystone and siltstone with subordinate intervals of fine-grained well sorted sandstone. Bedrock exposures are restricted to the walls and bottoms of younger gullies cut down through an extensive Quaternary alluvial pediment that blankets much of this unit. Form lines of bedding define an ENE-plunging syncline. Temporally equivalent to Units G and H to the south and Units M and N to the north. Ash beds have yielded ages of 15.4 to 15.2 Ma
Horse Camp Formation Unit I	Miocene	Poorly exposed fore slope deposits associated with the southern fan delta. Shale, thin sandstone turbidites, and olistostrome deposits that accumulated on the north-facing fore slope and at the toe of the prograding delta fan along the southern margin of the basin. Temporally equivalent to Units D, E, F, and lower part of G to the south and possibly Units K and L to the north. Ash beds have yielded ages of 15.7 to 15.5 Ma
Horse Camp Formation Unit H	Miocene	Highest unit in southern fan-delta complex, grades northward from subaerial alluvial fan boulder and cobble conglomerates and debris flows to subaqueous rhythmic graded gravel turbidites, massive to laminated sandstone, lacustrine limestone, and tuffs. Appears to record change in depositional history, with more variable lithofacies and reduced sediment input as evidenced by intercalated nearshore lacustrine limestone, increased silt content. Several tuffs dated at 15.6 to 15.5 Ma.
Horse Camp Formation Unit G	Miocene	Seventh unit up in southern fan-delta complex, grades northward from subaerial alluvial fan boulder and cobble conglomerates and debris flows to subaqueous rhythmic graded gravel turbidites and massive to laminated sandstone. Includes tuffs dated at ~15.65 Ma.
Horse Camp Formation Unit F	Miocene	Sixth unit up in southern fan-delta complex, grades northward from subaerial alluvial fan boulder and cobble conglomerates and debris flows to subaqueous rhythmic graded gravel turbidites and massive to laminated sandstone.
Horse Camp Formation Unit E	Miocene	Fifth unit up in southern fan-delta complex, grades northward from subaerial alluvial fan boulder and cobble conglomerates and debris flows to subaqueous rhythmic graded gravel turbidites and massive sandstone
Horse Camp Formation Unit D	Miocene	Fourth unit up in southern fan-delta complex, grades northward from subaerial alluvial fan boulder and cobble conglomerates and debris flows to subaqueous rhythmic graded gravel turbidites and massive sandstone

APPENDIX 3 – Detailed Map Rock Unit Descriptions

ASTUTEMETALSNL

Unit	Age	Description
Horse Camp Formation Unit C	Miocene	Extends the length of the map area, divided into Thc1, 2, and 3 for the southern, central, and northern segments respectively. Overlies Unit B in south, rests directly on Unit A to the north. Consists largely of pebble and cobble conglomerate in C1 and C3, but central segment also includes intervals of sandstone and shale. Abundant large rhyolite megabreccia lenses suggest coeval rapid slip on basin-bounding fault. Rhyolitic tuffs at the toe of the southern fan delta yield age of 16.1 Ma
Horse Camp Formation Unit B	Miocene	Restricted to southern fan complex, overlies Unit A, but pinches out to the north and is restricted to the hanging wall of an early East-directed normal fault that predates deposition of Unit C. Consists mainly of conglomerate and sandstone and records the earliest sedimentation associated with the inception of rapid Miocene extensional faulting
Horse Camp Formation Unit A	Miocene	Basal unit of the Horse Camp Fm., equivalent to Member 1, rests unconformably on underlying Eocene to Early Miocene rhyolitic volcanic rocks and extends the length of the map area with little changes in character or composition. Consists mainly of fluvial pebble and cobble conglomerate, minor pebbly sandstone, sandstone, and shale. Detritus appears to be almost entirely derived from the older rhyolites.
Tertiary (Eocene to Miocene) Volcanic Rocks (undifferentiated)	Eocene/ Oligocene	Includes the Railroad Valley Rhyolite, Stone Cabin Tuff, Windous Butte Fm., Needles Range Formation, Sheep Pass Tuff, and intercalated volcaniclastic sediments)