SEC S-K 1300 Technical Report Summary

RHYOLITE RIDGE LITHIUM-BORON PROJECT

Technical Report Summary prepared for ioneer Rhyolite Ridge LLC

Report current as at: September 30th, 2025

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Contents

List of Tables

List of Figures

1. EXECUTIVE SUMMARY

1.1. Introduction

This technical report summary (The Report) was prepared for ioneer Ltd. (ioneer) by AtkinsRéalis Minerals & Metals LLC (AtkinsRéalis), Independent Mining Consultants, Inc. (IMC), Westland, Mr. Yoshio Nagai, Leonard Rice Consulting Water Engineers, Inc. (LRE Water), NewFields, Geo-Logic Associates, Inc., Mr. Chad Yeftich, Piteau Associates regarding the Rhyolite Ridge Lithium-Boron Project (the Rhyolite Ridge Project or the Project) located in Nevada, USA.

ioneer is the 100% owner of the Project.

1.2. Property Description and Ownership

The Project is located in Esmeralda County in southwestern Nevada, USA, approximately 23 km (14 miles) northeast of Dyer, Nevada (the nearest town) and 1.5 km (65 miles) southwest of Tonopah, Nevada (the nearest city). By road, the Project site is approximately 410 km (255 miles) from Las Vegas and 346 km (215 miles) from Reno, Nevada's largest and third-largest cities, respectively.

The mineral tenement and land tenure for the Project comprise a total of 418 unpatented lode mining claims, covering 8,478 acres. Of these claims, all are listed as "active" in three claim groups, held by two wholly owned ioneer subsidiaries. The three claim groups include the South Lithium Basin (SLB), Solid Leasable Mineral (SLM), and Rhyolite Ridge groups (RR). All are held by ioneer Rhyolite Ridge, LLC.

All 418 unpatented lode mining claims are located on federal land and are administered by the United States Department of the Interior's Bureau of Land Management (BLM). The annual maintenance fees total US$179,400, payable to the BLM, and US$10,872 to Esmeralda County.

No private surface rights are required for the Project, as it is located on BLM land, including the access road which ioneer will have a right of way.

ioneer has secured sufficient lease options with landowners to cover all construction and operational water requirements. Groundwater surface rights will be transferred from existing rights holders to ioneer upon Project startup.

1.3. Geology and Mineralization

Rhyolite Ridge is a geologically unique, sediment-hosted lithium-boron deposit that occurs within the lacustrine sedimentary rocks of the South Basin, peripheral to the Silver Peak Caldera. It is one of only two major lithium-boron deposits globally and the only known deposit associated with the boron mineral searlesite.

The Project is situated in the Silver Peak Range, which is part of the larger physiographic Basin and Range Province of western Nevada. This region is characterized by horst and graben normal faulting, likely caused by large-scale deformation and lateral shear stress, as evidenced by disrupted topographic features. The Project area resides within the Walker Lane Fault System, a northwest-trending belt of right-lateral strike-slip faults adjacent to the larger San Andreas Fault System to the west.

The regional surface geology is characterized by relatively young Tertiary volcanic rocks, which are interpreted to be extruded from the Silver Peak Caldera. The northern edge of the caldera, located about 3.2 km (2 miles) to the south of the South Basin area, is approximately 6.6 km by 13 km (4 miles by 8 miles) in size. The Tertiary rocks are characterized by interlayered sedimentary and volcanic formations, unconformably overlying folded and faulted metasedimentary basement rocks ranging from Precambrian to Paleozoic (Ordovician).

The mineralization is hosted in lacustrine (lake) beds within the Cave Spring Formation, which overlie the 6-million-year-old Rhyolite Ridge tuff and Argentite Canyon volcanic rocks. The lacustrine section, measured up to 457 m (1,500 ft) thick, consists of three members divided by marker beds of "gritstone" containing airfall debris with abundant pumice lapilli. The middle member, approximately 61 m (200 ft) thick, is marl and contains anomalous lithium concentrations in its upper half. About 18 m (60 ft) of this section has high boron concentrations (up to 30,000 ppm) in searlesite, as well as lithium concentrations (1,500 to 2,500 ppm) in mixed illite-smectite layers. The marl consists of very fine-grained searlesite, smectite, illite, potassium feldspar, and carbonate. A 12 m (40 ft) section of smectite-rich marl, with lithium values of 2,000 to 2,500 ppm, caps the searlesite zone. The grade and thickness of this middle member are uniform and continuous over at least 3.2 km (2 miles) north to south.

The boron (B) and lithium (Li) mineralization in the South Basin of Rhyolite Ridge occurs as both high-boron (HiB-Li; >5,000 ppm B) searlesite mineralization and low-boron (LoB-Li; <5,000 ppm B) mineralization. Differential mineralogical and permeability characteristics of various units within the Cave Spring Formation resulted in the preferential emplacement of HiB-Li and LoB-Li bearing minerals in the M5, B5, and L6 units. LoB-Li mineralization occurs primarily in the B5, S5, and L6 units and LoB-Li high clay mineralization in the M5 geologic unit.

1.4. History

Prior to ioneer's Project interest, several companies had worked on the Project area, including US Borax in the 1980s, American Lithium Mineral Inc. (ALM) between 2010 and 2012, and Global Geoscience between 2016 and 2017. Their involvement included exploration drilling targeting boron mineralization, surface trenching and exploration drilling (RC and core) focused on lithium mineralization.

ioneer acquired its Project interest in 2016, and up to the Report date, had completed a surface gravity geophysical survey, exploration drilling (RC and core), a topographic survey, a surface reflection seismic geophysical survey, surficial geological mapping, hydrogeological baseline studies, and geotechnical drilling and test pits.

1.5. Exploration

1.5.1. Exploration

The 2010 trench drill programs were not representative of the full thickness and grades of the geological units; therefore, the geological and grade data from these trenches were excluded from the preparation of the geological model or resultant mineral resource estimates.

Gravity geophysical maps from gravity surveys completed in 2017 were used by WSP Global, Inc. (WSP) during the modeling process as a high-level constraint on the overall basin extents but were not used to provide control or constraint on the geological units of the Cave Spring Formation in the model.

A topographic survey was completed in 2018 and was incorporated into the geological modeling.

Results of the 2019 surface seismic geophysical survey were not incorporated into the modeling process, as the data required conversion from two-way acoustic travel time to depth. The seismic survey data suggest that the method will be useful for defining some of the geological unit contacts within the basin fill sequence as well as for defining the presence and geometry of faulting.

Geological mapping completed by ioneer in 2019 was used in support of the drill holes to define outcrop and subcrops as well as bedding dip attitudes in the geological modeling.

1.5.2. Drilling

As of the Report date, a total of 166 drill holes 33,519 m (109,969 ft) have been completed, including 51 RC holes (10,842 m) and 115 core holes (22,339). Most holes (97) are vertical, with 69 inclined at angles between -45 and -70 degrees. Before 2018, RC drilling used a 12.7 cm (5-inch) hammer, switching to a tri-cone bit in areas with high groundwater. Core drilling before 2018 used HQ (6.35 cm [2.50 inch]) diameter, while after 2018, both HQ and larger PQ (8.5 cm [3.345-inch]) diameters were used. Post-2018, tri-cone drilling was used for unconsolidated material, followed by core drilling.

All 166 holes from 2022-2024 drilling programs were included in the database. Of the 166 validated holes, all were included in the geological model, with one RC hole excluded as a twin hole and three shallow exploration well holes. All samples were geologically and geotechnically logged to support mineral resource estimates, with acceptable core recovery rates varying by geological unit.

Upon completion, drill casings were removed, and collars were marked with concrete monuments and surveyed with GPS. Down-hole surveys used Reflex Mems Gyro or acoustic televiewer tools. Drill holes were spaced 91 - 168 m (300 to 550 ft) apart, with east-west cross-sections spaced 183 m (600 ft). The drill hole spacing and sample angles are considered adequate for accurate mineral resource estimation.

1.5.3. Quarry - Geotechnical

Geotechnical exploration was performed to support the design and construction of the quarry. Stability analyses to provide geotechnical quarry slope designs, completed by performing limit equilibrium stability evaluations and kinematic stability evaluations, including structurally controlled failures and toppling evaluations.

In addition to the standard geologic determination of the basin, it is important in geotechnical analyses to further define areas on the basis of strength characteristics. This would generate a stratigraphic understanding based upon geotechnical strength qualities rather than lithology. The basis for the geotechnical strength relationships was established with data collected up to 2019, and then expanded by detailed geotechnical field data collection, sample collection and laboratory testing carried out in 2022-2024.

At total of 110 direct shear tests, forty-four Unconfined Compression Strength (UCS), 93 Consolidated Undrained (CU) Triaxial tests and other defining tests were performed.

1.5.4. Infrastructure - Geotechnical

Geotechnical exploration was performed to support the design and construction of the spent ore storage facility, overburden storage facilities and the process facility areas.

For the spent ore storage facility and process facility areas, a combined field investigation was completed. Six drill holes were drilled for geotechnical purposes to total depths ranging from 8.1 to 30.9 m (26.5 to 101.5 ft) below ground surface (bgs) in the proposed process facilities area while five holes were drilled to total depths of (12.3 and 30.6 m) 40.5 and 100.5 ft bgs in the proposed spent ore storage facility location. Soil samples were collected in the upper 3 m (10 ft) portion of the drill hole at 0.75 m (2.5 ft) intervals and at a 1.5 m (5 ft) interval below this depth.

For the overburden storage facilities, four sonic drills holes were completed that extended to depths from 4.6 to 30.5 m (15 to 100 ft) bgs, Drill activities included completion of Standard Penetration Resting and collection of sample for subsequent laboratory characterization.

Twenty-four test pits were excavated in the Project area. Eleven test pits were excavated to depths of 2.7 to 5.8 m (9 to 19 ft) bgs in the proposed process facilities area and along the proposed process facility access road. A total of 13 test pits were excavated to depths of 2.1 to 5.6 m (7 to 18.5 ft) bgs in the planned spent ore storage facility location and along the proposed access road to the spent ore storage facility. Bulk samples were collected in the test pits where changes in stratigraphy were observed.

The results were used to characterize soil, rock, and near surface groundwater conditions, identify subsurface hazards that may influence site development, and identify potential borrow pit sources of construction materials.

1.6. Sampling

Several different sampling techniques have been used on the Project since 2010.

A chip sample was collected every 1.52 m (5 ft) from a 12.7 cm (5-inch) diameter drill hole and split using a rig-mounted rotary splitter. Samples, with a mean weight of 4.8 kg (10.5 lb) were submitted to ALS Minerals laboratory in Reno, NV (ALS Reno), where they were processed for assay. RC samples represent 50% of the total intervals sampled to date.

Core samples were collected from HQ and PQ size drill core, on a mean interval of 1.52 m (5 ft), and cut using a water-cooled diamond blade core saw (2018 onward), or a manual core splitter (pre-2018). Samples, with a mean weight of 1.8 kg (4 lb), were submitted to ALS where they were processed for assay.

ALS Reno and the ALS facility in Vancouver, BC, Canada (ALS Vancouver) were used for the preparation and analysis of the samples, respectively. ALS Reno and ALS Vancouver are independent of ioneer.

All ALS' geochemical hub laboratories, including ALS Reno and ALS Vancouver, are accredited to ISO/IEC 17025:2017 for specific analytical procedures.

ALS Vancouver performed the following tests on the RC and core samples:

- Sample preparation (PREP-31y): crusher/rotary splitter combination; crush to 70% less than 2 mm, rotary split off 250 g, pulverize split to better than 85% passing 75 µm;
- Multi-element analysis (ME-MS41): evaluation by aqua regia with inductively coupled plasma mass spectrometry (ICP-MS) finish for 51 elements, including lithium and boron;
- Boron (B-ICP82a): high-grade boron samples (>10,000 ppm boron), were further analyzed by NaOH fusion/ICP high-grade analysis;
- Inorganic carbon (C-GAS05): 95% of the 2018-2019 samples were analyzed for inorganic carbon by HClO4 digestion and CO2 coulometer;
- Fluorine (F-ELE81a): 30% of the 2018-2019 and selected samples since 2022 were analyzed for fluorine by KOH fusion and ion selective electrode.

Prior to 2018, samples were securely stored on site and then collected from site by ALS Reno staff and transported to the laboratory by truck. For the 2018–2019 drill holes, core was transported daily by ioneer and/or NewFields personnel from the drill site to the ioneer secure core shed (core storage) facility in Tonopah. In 2022–2024, core was transported daily by ioneer or WSP personnel from the drill site to the ioneer core facility.

1.7. Data Verification

All available ioneer and ALM exploration drilling data, including survey information, downhole geological units, sample intervals and analytical results, were compiled by ioneer and provided to IMC in the form of a Microsoft Access database file and Excel files.

The QP has validated the data, including collar survey, down hole geological data and observations, sampling, analytical, and other test data underlying the information or opinions in this Report. It is the QP's opinion that the review of the data and assaying checks validates the data available for use in mineral resource and mineral reserve estimation.

1.8. Metallurgical Testwork

ioneer conducted metallurgical testwork on the LoB-Li mineralization from 2016–2023, which built upon testwork completed in 2010–2011 by ALM.

Independent laboratories and testing facilities used for the Project include SGS, Hazen, Hutton Institute, Jenike and Johansen, Kemetco, Bureau Veritas, ALS, KCA, Veolia, FLSmidth, Acuren, Prater, Woodgrove and RMS.

Testwork was performed on two mineralization types within the Cave Spring Formation:

- HiB-Li (stream 1): occurs primarily within the B5 mineralized unit with additional occurrences in the M5, S5 and L6 units;
- LoB-Li (stream 2 & 3): occurs primarily within the L6 mineralized unit with additional occurrences in the B5, M5 and S5 units.

Metallurgical tests included:

- Air classification and beneficiation;
- Bench-scale flowsheet simulation, evaporation and crystallization optimization, flotation optimization, impurity removal, and lithium circuit optimization;
- Sizer crushing tests;
- Mineralogy and geochemical characterization;
- Impurity removal filtration, bottle roll, bench and pilot-scale leaching (column, vat, agitated, pressure, roast water);
- Semi-integrated pilot plant;
- Pilot-scale evaporation and crystallization optimization and crystal/liquor centrifuge separation;
- Neutralization kinetic testwork;
- Leach and impurity removal area corrosion studies.

The samples used for the comminution and leach testwork programs were representative of the South Basin deposit mineralization. Mineralization characterization testing for sizing/crushing was completed on a range of B5 material, which was found to be not particularly hard or abrasive. The samples used in leach testing were representative of the range of process plant feed expected during the first 18 years of the proposed operation, with intentional variation introduced during testwork to determine the impacts.

The main design performance criteria from the unit operations were determined from testwork and through reasonable industrial experience. These performance criteria formed the basis of the integrated heat and mass balance that accounted for the internal recycle streams designed to increase overall recovery and reduce reagent consumption. Boron losses in the process were estimated at 21.7%, leading to an overall projected boron recovery of 78.3%. Lithium losses in the process were estimated at 14.8%, leading to an overall projected lithium recovery of 85.2%. These metallurgical recovery forecasts were used in estimation and cashflow modeling.

The main factors affecting recovery include the boron and lithium ore head grade and the operating leach system pH. Other factors include presence of gangue materials, formation of co-precipitates, clay content, cake washing efficiency, and evaporation and crystallization of sulfate salts.

1.9. Mineral Resource Estimate

1.9.1. Estimation Methodology

The QP assumed that the mineralized zones are continuous between drill holes based on review of the drill hole data and previous reports. The seam continuity has been offset by faulting, but the grade continuity can be seen across the fault offsets in cross sections. It was assumed that grades vary between drill holes based on a distance-weighted interpolator. This assumption of the geology was used directly in guiding and controlling the mineral resource estimation. The geological model was updated to incorporate additional ioneer geological mapping, geophysical data, and new drill hole information along the eastern side of the basin. This update provided additional geological constraint on the basin stratigraphy's geometry east of the limits of drill hole data in support of geotechnical modeling and analysis in progress on the Project.

Exploratory data analysis (EDA) on the geological model database was completed prior to developing the resource block model. The EDA involved statistical and geostatistical analysis of the verified data to allow for evaluation of the statistical and spatial variability of the model data. Descriptive statistics, histograms, box plots, probability plots, and cross plots were used to evaluate the geological and grade data as part of both the data validation and modeling process.

The density values used to convert volumes to tonnages were assigned on a by-geological unit basis using mean values calculated from 145 density samples collected from drill core during the 2018–2019 and Phase 1 - Phase 2 drilling programs. The density analysis was performed using the water displacement method for density determination, with values reported on a dry basis.

Gamma (γ) from modified covariance variograms (variograms) were generated to evaluate the spatial continuity of key grade parameters for the G5, B5, M5, S5, G6, L6 and Lsi units. Variogram analysis focused on evaluating the spatial continuity of lithium and boron within the four mineralized units and to guide the search distances for grade estimation.

Estimated mineral resources were classified as follows:

- Measured:
  - G5, M5, B5, L6 and Lsi: 121.9 m (400 ft) spacing between points of observation, with sample interpolation from a minimum of four drill holes;
  - S5 and G6: 106.7 m (350 ft) spacing between points of observation, with sample interpolation from a minimum of four drill holes.
- Indicated:
  - M5 and B5: 243.8 meters (800-foot) spacing between points of observation, with sample interpolation from a minimum of two drill holes;
  - G5, L6 and Lsi: 213.4 m (700 ft) spacing between points of observation, with sample interpolation from a minimum of two drill holes.
  - S5 and G6: 167.6 m (550 ft) spacing between points of observation, with sample interpolation from a minimum of two drill holes.

- Inferred: the full estimation distance (M5 and B5 – 533 m or 1,750 ft, S5 and G6 - 750 ft, G5, L6 and Lsi 305 m or 1,000 ft) between points of observation, with sample interpolation from a minimum of one drill hole (two composites).

The mineral resource estimate assumes that the lithium-boron mineralization within the mineral resource quarry shell, has reasonable prospects for economic extraction based on the following key considerations:

- The geological continuity of the mineralized zones and grade parameters demonstrated via the current geological and grade model for the South Basin of Rhyolite Ridge;
- The potential for selective extraction of the HiB-Li (Stream 1) mineralized intervals encountered in the B5, M5, S5, and L6 units using current conventional open pit mining methods;
- The potential for selective extraction of the LoB-Li (Stream 2) mineralized intervals encountered in the B5, S5, and L6 units using current conventional open pit mining methods;
- The potential for selective extraction of the LoB-Li high clay (Stream 3) mineralized intervals encountered in the M5 using current conventional open pit mining methods. The potential to produce boric acid and lithium carbonate products using current processing and recovery methods;
- The assumption that boric acid and lithium carbonate produced by the Project will be marketable and economic considering transportation costs and processing charges and that there will be continued demand for boric acid and lithium carbonate;
- The assumption that the location of the Project in the southwest of the continental United States would be viewed favorably when marketing boric acid and lithium carbonate products to potential domestic end users;
- The assumption that the production costs are reasonable estimates.

The mineral resource estimate presented in this Report assumes the use of three processing streams: one which can process ore with boron content >5,000 ppm and two which can process ore with boron content <5,000 ppm within the mineral resource pit shell and has a reasonable prospect for eventual economic extraction using current conventional open pit mining methods. The inputs to the calculation of the net value include the product prices, boron and lithium recoveries and the process costs which are split between a fixed cost per short ton and the cost of acid per short ton. The product prices are based on third party lower range (conservative) estimates of the long-term prices and for the mineral resource are:

- Boric acid: US$1,172.78 per metric ton or US$1,063.94 per short ton;
- Lithium carbonate: US$19,351.38 per metric ton or US$17,555.46 per short ton.

A net value was calculated for each block in the four seams which meet the cutoff grades for the three process streams and is shown in Table 1-1. The net value was used to define the resource shell within which the mineral resource was tabulated, less the mineral reserve. The net value does not include mining costs. In general terms, the net value is:

- Gross value of a block minus the process costs for blocks above the cutoff grades;
- Gross value = sum of the recovered values of boric acid plus lithium carbonate;
- Process costs = sum of the cost of acid plus the process fixed costs (by seam and stream).

Table 1-1 - Mean and Range of the Net Values by Seam and Process Stream for 2-Day Vat Leach Cycle

Seam	Stream 1				Stream 2 or 3			
	# blocks	Net Value, US$ per short ton			# blocks	Net Value, US$ per short ton		
		Mean	Minimum	Maximum		Mean	Minimum	Maximum
M5	10,703	167.85	44.64	224.26	71,785	95.12	11.16	179.98
B5	93,523	169.81	33.34	282.78	14,278	128.12	11.28	225.57
S5	10,392	100.81	25.69	272.07	77,797	50.67	11.13	245.87
L6	68,610	101.76	11.44	261.06	205.851	54.76	11.13	182.56

1.9.2. Mineral Resource Statement

From the mineral resource dated October 2023, until the date of the mineral resource dated August 2025, the QP is aware of the following material changes that have affected the resource model and mineral resource estimate (shown in Table 1-2):

- Drill Hole Database: added 54 holes (5 RC, 49 core), total additional meters – 9,183 m (30,129 ft) and 1,547 additional assay samples
- Density: Use of 2010 density dataset was not used in the August 2025 resource as the values could not be validated leading to a lower density value and overall tonnage than calculated in October 2023 resource
- Resource Block Model: new geologic framework and grade estimation: tabulation changed from a 1.52m (5 ft) model to 9.14 m (30 ft) reblock model from a 1.52 m (5 ft) model
- Recovery: changed from one recovery (Boron at 83.5%, Lithium at 81.1%) to recovery by seam and process stream
- Process Costs: changed from one total process cost to combination of fixed cost (by seam and stream) plus a cost of acid based on the acid consumption calculated for each block in the resource model
- Resource Tabulation: changed from tabulating seams above 5,000 ppm Boron or above 1090 ppm Lithium to tabulating M5, B5, S5, L6 for process streams 1, 2, 3

Table 1-2 – Mineral Resource Estimate - South Basin Rhyolite Ridge (August 2025)

Stream	Group	Classification	Tonnage kt	Li ppm	B ppm	Li_2CO_3 wt. %	H_3BO_3 wt. %	Contained Li_2CO_3 kt	Contained H_3BO_3 kt
Stream 1 (>= 5,000 ppm B)	Upper Zone B5 Unit	Measured	10,414	1,921	15,063	1.02	8.61	106	897
		Indicated	7,214	1,749	13,240	0.93	7.57	67	546
		Total (M&I)	17,628	1,850	14,317	0.98	8.19	174	1,443
		Inferred	10,628	1,712	10,563	0.91	6.04	97	642
		Total (MII)	28,255	1,798	12,905	0.96	7.38	270	2,085
	Upper Zone M5 Unit	Measured	1,073	2,186	7,397	1.16	4.23	12	45
		Indicated	814	2,100	7,535	1.12	4.31	9	35
		Total (M&I)	1,887	2,149	7,456	1.14	4.26	22	80
		Inferred	763	2,197	6,515	1.17	3.73	9	28
		Total (MII)	2,650	2,163	7,185	1.15	4.11	31	109
	Upper Zone S5 Unit	Measured	1,456	1,561	7,467	0.83	4.27	12	62
		Indicated	1,393	1,571	7,132	0.84	4.08	12	57
		Total (M&I)	2,849	1,566	7,303	0.83	4.18	24	119
		Inferred	1,572	1,400	6,469	0.75	3.70	12	58
		Total (MII)	4,421	1,507	7,006	0.80	4.01	35	177
	Upper Zone Total	Measured	12,943	1,902	13,573	1.01	7.76	131	1,004
		Indicated	9,420	1,753	11,844	0.93	6.77	88	638
		Total (M&I)	22,363	1,839	12,845	0.98	7.34	219	1,642
		Inferred	12,963	1,703	9,828	0.91	5.62	117	728
		Total (MII)	35,326	1,789	11,738	0.95	6.71	336	2,371
	Lower Zone L6 Unit	Measured	12,014	1,355	9,838	0.72	5.63	87	676
		Indicated	26,139	1,319	10,365	0.70	5.93	183	1,549
		Total (M&I)	38,153	1,330	10,199	0.71	5.83	270	2,225
		Inferred	13,914	1,415	12,287	0.75	7.03	105	978
		Total (MII)	52,067	1,353	10,757	0.72	6.15	375	3,203
	Total Stream 1 (all zones)	Measured	24,957	1,639	11,775	0.87	6.73	218	1,680
		Indicated	35,559	1,434	10,757	0.76	6.15	271	2,187
		Total (M&I)	60,516	1,518	11,177	0.81	6.39	489	3,867
		Inferred	26,877	1,554	11,101	0.83	6.35	222	1,706
		Total (MII)	87,393	1,529	11,153	0.81	6.38	711	5,573

Stream	Group	Classification	Tonnage kt	Li ppm	B ppm	Li_2CO_3 wt. %	H_3BO_3 wt. %	Contained Li_2CO_3 kt	Contained H_3BO_3 kt
Stream 2 (>= 11.13/tonne net value, < 5,000 ppm B. Low Clay)	Upper Zone B5 Unit	Measured	438	2,321	2,925	1.24	1.67	5	7
		Indicated	362	2,092	3,674	1.11	2.10	4	8
		Total (M&I)	800	2,217	3,264	1.18	1.87	9	15
		Inferred	3,690	1,695	1,776	0.90	1.02	33	37
		Total (MII)	4,491	1,788	2,041	0.95	1.17	43	52
	Upper Zone S5 Unit	Measured	9,400	996	1,226	0.53	0.70	50	66
		Indicated	7,981	1,012	1,524	0.54	0.87	43	70
		Total (M&I)	17,382	1,003	1,363	0.53	0.78	93	135
		Inferred	15,491	889	1,014	0.47	0.58	73	90
		Total (MII)	32,873	949	1,198	0.51	0.69	166	225
	Upper Zone Total	Measured	9,839	1,055	1,302	0.56	0.74	55	73
		Indicated	8,343	1,059	1,617	0.56	0.92	47	77
		Total (M&I)	18,182	1,057	1,447	0.56	0.83	102	150
		Inferred	19,187	1,044	1,160	0.56	0.66	107	127
		Total (MII)	37,369	1,050	1,300	0.56	0.74	209	278
	Lower Zone L6 Unit	Measured	19,043	1,155	1,979	0.61	1.13	117	215
		Indicated	51,191	1,158	1,624	0.62	0.93	316	475
		Total (M&I)	70,234	1,157	1,720	0.62	0.98	433	691
		Inferred	47,474	1,244	790	0.66	0.45	314	214
		Total (MII)	117,708	1,192	1,345	0.63	0.77	747	905
	Total Stream 2 (all zones)	Measured	28,881	1,121	1,748	0.60	1.00	172	289
		Indicated	59,535	1,144	1,623	0.61	0.93	363	553
		Total (M&I)	88,416	1,137	1,664	0.60	0.95	535	841
		Inferred	66,662	1,186	897	0.63	0.51	421	342
		Total (MII)	155,078	1,158	1,334	0.62	0.76	956	1,183
Stream 3(>= 11.13/tonne net value, < 5,000 ppm B, High	Total Stream 3 (M5 zone)	Measured	13,602	2,202	1,487	1.17	0.85	159	116
		Indicated	11,437	2,100	1,205	1.12	0.69	128	79
		Total (M&I)	25,039	2,155	1,358	1.15	0.78	287	194
		Inferred	11,608	1,654	601	0.88	0.34	102	40
		Total (MII)	36,647	1,997	1,118	1.06	0.64	389	234
All Streams	**M&I Resource**	**Measured**	**67,440**	**1,530**	**5,406**	**0.81**	**3.09**	**549**	**2,085**
		Indicated	**106,531**	**1,344**	**4,627**	**0.72**	**2.65**	**762**	**2,818**
		Total (M&I)	**173,971**	**1,416**	**4,929**	**0.75**	**2.82**	**1,311**	**4,903**
	Inferred Resource	**Inferred**	**105,147**	**1,332**	**3,472**	**0.71**	**1.99**	**745**	**2,088**
		Total (MII)	**279,117**	**1,384**	**4,380**	**0.74**	**2.50**	**2,056**	**6,991**

Notes:

1. kt = thousand tonnes; Li= lithium; B= boron; ppm= parts per million; Li_2CO_3 = lithium carbonate; H_3BO_3 = boric acid

2. Totals may differ due to rounding mineral resources reported on a dry in-situ basis. Lithium is converted to Equivalent Contained Tons of lithium carbonate using a stochiometric conversion factor of 5.322, and boron is converted to Equivalent Contained Tons of boric acid using a stochiometric conversion factor of 5.718. Equivalent stochiometric conversion factors are derived from the molecular weights of the individual elements which make up lithium carbonate and boric acid. Lithium carbonate and boric acid are reported in short tons.
3. The statement of estimates of mineral resources has been compiled by the QP, a full-time employee of Independent Mining Consultants, Inc. and is independent of ioneer and its affiliates. The QP 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'.
4. All mineral resource figures reported in the table above represent estimates at August 2025. Mineral resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. The totals contained in the above table have been rounded to reflect the relative uncertainty of the estimate.
5. Mineral resources are reported in accordance with the US SEC Regulation S-K Subpart 1300. The mineral resources in this Report were estimated using the regulation S-K 229.1304 of the United States Securities and Exchange Commission ("SEC"). Mineral resources are also reported in accordance with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves.
6. The Mineral Resource estimate is the result of determining the mineralized material that has a reasonable prospect of economic extraction. In making this determination, constraints were applied to the geological model based upon a pit optimization analysis that defined a conceptual pit shell limit. The conceptual pit shell was based upon a net value per tonne calculation including a 5,000ppm boron cut-off grade for high boron – high lithium (HiB-Li) mineralization (Stream 1) and a $11.13/tonne net value cut-off grade for low boron (LoB-Li) mineralization below 5,000ppm boron broke into two material types, low clay and high clay material respectfully (Stream 2 and Stream 3). The pit shell was constrained by a conceptual Mineral Resource optimized pit shell for the purpose of establishing reasonable prospects of eventual economic extraction based on potential mining, metallurgical and processing grade parameters identified by mining, metallurgical and processing studies performed to date on the Project. Key inputs in developing the Mineral Resource pit shell included a 5,000 ppm boron cut-off grade for HiB-Li mineralization, $11.13/tonne net value cut-off grade for LoB-Li low clay mineralization and LoB-Li high clay mineralization; mining cost of US$1.69 /tonne; G&A cost of US$11.13 /process tonne; plant feed processing and grade control costs which range between US$18.87/tonne and US$98.63/tonne of plant feed (based on the acid consumption per stream and the mineral resource average grades); boron and lithium recovery (respectively) for Stream 1: M5 80.2% and 85.7%, B5 78.3% and 85.2%, S5 77.0% and 82.5%, L6 75.8% and 79.4%; Stream 2 and 3: M5 65% and 78%, B5 78.3% and 85.2%, S5 46.8% and 84.8%, L6 32.9% and 78.7%, respectively; boric acid sales price of US$1,172.78/tonne; lithium carbonate sales price of US$19,351.38/tonne.
7. The mineral resource is reported exclusive of the mineral reserves.

Areas of uncertainty for the mineral resource estimate include:

- Potential significant changes in the assumptions regarding forecast product prices, process recoveries, or production costs;
- Potential changes in geometry and/or continuity of the geological units due to displacement from localized faulting and folding;
- Potential changes in grade based on additional drilling that would influence the tonnages that would be excluded with the cut-off grade;
- Potential for changes to the environmental requirements related to permit applications.

1.10. Mineral Reserve Estimate

The mineral reserve was developed from the 9.14 m (30 ft) mine planning block model and is the total of all proven and probable category ore that is planned for processing. The mineral reserve was estimated by tabulating the contained tonnage of measured and indicated mineral resources (proven and probable mineral reserves) within the designed final pit geometry at the planned cut-off grade.

Modifying factors were considered when converting mineral resources to mineral reserves, including dilution, mining and process recovery factors, beneficiation assumptions, property limits, permit status, changes to the Mine Plan of Operations, commodity price, cut-off grades, pit optimization assumptions, and the ultimate pit design.

The mineral reserve estimate shown in Table 1-3 is based on the life-of-mine production plan and realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social, and governmental modifying factors.

Table 1-3 – Mineral Reserves as of August 2025

Area	Group	Classification	Short Tons	Lithium Grade	Boron Grade	Contained Equivalent Grade		Contained Equivalent Tons		Recovered Equivalent Tons	
				Li	B	Li_2CO_3	H_3BO_3	Li_2CO_3	H_3BO_3	Li_2CO_3	H_3BO_3
			(kt)	(ppm)	(ppm)	(wt.%)	(wt.%)	(kt)	(kt)	(kt)	(kt)
Stream 1 (>= 5,000 ppm B)	Upper Zone	Proven	3,489	2,401	7,652	1.28	4.38	45	153	38	122
	M5 Unit	Probable	3,410	2,262	7,430	1.20	4.25	41	145	35	116
		Sub-total B5 Unit	**6,899**	**2,332**	**7,542**	**1.24**	**4.31**	**86**	**298**	**73**	**239**
	Upper Zone	Proven	27,991	1,880	15,364	1.00	8.79	280	2,459	239	1,925
	B5 Unit	Probable	31,456	1,742	14,169	0.93	8.10	292	2,549	248	1,995
		Sub-total M5 Unit	**59,447**	**1,807**	**14,732**	**0.96**	**8.42**	**572**	**5,008**	**487**	**3,921**
	Upper Zone	Proven	2,237	1,326	7,754	0.71	4.43	16	99	13	76
	S5 Unit	Probable	3,355	1,166	7,533	0.62	4.31	21	145	17	111
		Sub-total S5 Unit	**5,592**	**1,230**	**7,621**	**0.65**	**4.36**	**37**	**244**	**30**	**187**
	Upper Zone	Proven	33,717	1,897	14,061	1.01	8.04	340	2,711	290	2,124
	(B5, M5 & S5)	Probable	38,221	1,738	12,985	0.92	7.42	353	2,838	301	2,223
	Sub-Total	**Sub-total Upper Zone**	**71,938**	**1,813**	**13,489**	**0.96**	**7.71**	**694**	**5,549**	**591**	**4,347**
	Lower Zone	Proven	5,712	1,389	8,357	0.74	4.78	42	273	34	207
	L6 Unit	Probable	13,592	1,334	7,856	0.71	4.49	96	611	77	463
		Sub-total Lower Zone	**19,303**	**1,350**	**8,004**	**0.72**	**4.58**	**139**	**883**	**110**	**670**
	Total Stream 1 (all zones)	Proven	39,428	1,824	13,235	0.97	7.57	383	2,984	323	2,331
		Probable	51,813	1,632	11,640	0.87	6.66	450	3,448	377	2,686
		Sub-total Stream 1	**91,241**	**1,715**	**12,329**	**0.91**	**7.05**	**833**	**6,432**	**700**	**5,017**
Stream 2 ($16.54/t net value cut-off grade. Low Clay)	Upper Zone	Proven	4,528	2,219	2,143	1.18	1.23	53	55	46	43
	B5 Unit	Probable	4,384	2,118	2,415	1.13	1.38	49	61	42	47
		Sub-total B5 Unit	**8,912**	**2,169**	**2,277**	**1.15**	**1.30**	**103**	**116**	**88**	**91**
	Upper Zone	Proven	15,005	1,022	1,125	0.54	0.64	82	97	69	45
	S5 Unit	Probable	27,495	825	866	0.44	0.50	121	136	102	64
		Sub-total S5 Unit	**42,500**	**895**	**957**	**0.48**	**0.55**	**202**	**233**	**172**	**109**
	Upper Zone	Proven	19,533	1,299	1,361	0.69	0.78	135	152	115	89
	(B5 & S5)	Probable	31,880	1,003	1,079	0.53	0.62	170	197	144	111
	Sub-Total	**Sub-total Upper Zone**	**51,413**	**1,116**	**1,186**	**0.59**	**0.68**	**305**	**349**	**259**	**200**
	Lower Zone	Proven	24,936	1,254	1,279	0.67	0.73	166	182	131	60
	L6 Unit	Probable	68,952	1,196	1,535	0.64	0.88	439	605	345	199

Area	Group	Classification	Short	Lithium	Boron	Contained Equivalent Grade		Contained Equivalent Tons		Recovered Equivalent Tons	
			Tons	Grade	Grade						
				Li	B	Li_2CO_3	H_3BO_3	Li_2CO_3	H_3BO_3	Li_2CO_3	H_3BO_3
			(kt)	(ppm)	(ppm)	(wt.%)	(wt.%)	(kt)	(kt)	(kt)	(kt)
		Sub-total Lower Zone	**93,888**	**1,211**	**1,467**	**0.64**	**0.84**	**605**	**788**	**476**	**259**
	Total Stream 2 (all zones)	Proven	44,469	1,274	1,315	0.68	0.75	302	334	246	149
		Probable	100,832	1,135	1,391	0.60	0.80	609	802	490	310
		Sub-total Stream 2	**145,301**	**1,177**	**1,368**	**0.63**	**0.78**	**911**	**1,136**	**736**	**459**
Stream 3 ($16.54/t net value cut-off grade, High Clay)	**Total Stream 3 (M5 zone)**	Proven	5,621	2,199	1,702	1.17	0.97	66	55	51	36
		Probable	18,178	2,082	1,145	1.11	0.65	201	119	157	77
		Sub-total Stream 3	**23,799**	**2,110**	**1,277**	**1.12**	**0.73**	**267**	**174**	**208**	**113**
TOTAL of All Streams, All Seams, and All Proven & Probable			**260,341**	**1,451**	**5,201**	**0.77**	**2.97**	**2,010**	**7,742**	**1,645**	**5,588**

Notes:

1. Li= lithium; B= boron' ppm= parts per million; Li_2CO_3 = lithium carbonate; H_3BO_3 = boric acid; kt = thousand metric tonnes.
2. Totals may differ due to rounding, Mineral Reserves reported on a dry in-situ basis. The Contained and Recovered Lithium Carbonate (Li_2CO_3) and Boric Acid (H_3BO_3) are reported in the table above in short tons. Lithium is converted to Equivalent Contained Tonnes of Lithium Carbonate (Li_2CO_3) using a stochiometric conversion factor of 5.322, and boron is converted to Equivalent Contained Tonnes of Boric Acid (H_3BO_3) using a stochiometric conversion factor of 5.718. Equivalent stochiometric conversion factors are derived from the molecular weights of the individual elements which make up Lithium Carbonate (Li_2CO_3) and Boric Acid (H_3BO_3). The Equivalent Recovered Tons of Lithium Carbonate (Li_2CO_3) and Boric Acid (H_3BO_3) is the portion of the contained tonnage that can be recovered after processing.
3. The statement of estimates of Mineral Reserves has been compiled by Independent Mining Consultants, Inc. (IMC) and is independent of ioneer and its affiliates. IMC 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 S-K §229.1304 of the United States Securities and Exchange Commission ("SEC").
4. All Mineral Reserve figures reported in the table above represent estimates at August 2025. Mineral Reserve estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. The totals contained in the above table have been rounded to reflect the relative uncertainty of the estimate.
5. Mineral Reserves are reported in accordance with the US SEC Regulation S-K Subpart 1300. The Mineral Reserves in this report were estimated and reported using the regulation S-K §229.1304 of the United States Securities and Exchange Commission ("SEC"). Mineral Reserves are also reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The Joint Ore Reserves Committee Code – JORC 2012 Edition).
6. The Mineral Reserve estimate is the result of determining the measured and indicated resource that is economically minable allowing for the conversion to proven and probable. In making this determination, constraints were applied to the geological model based upon a pit optimization analysis that defined a conceptual pit shell limit. The conceptual pit shell was based upon a net value per ton calculation including a 5,000 ppm boron cut-off grade for high boron – high lithium (HiB-Li) mineralization (Stream 1) and $11.13 net value per metric tonne cut-off for low boron (LoB-Li) mineralization below 5,000 ppm boron broke in to two material types low clay and high clay material respectfully (Stream 2 and Stream 3). The conceptual pit shell was constrained by the measured and indicated resource that incorporates the potential mining, metallurgical and processing grade parameters identified by mining, metallurgical and processing studies performed to date on the Project. The conceptual pit shell was used a guide for an engineered pit design. Key inputs in developing the Mineral Reserve pit shell included a 5,000 ppm boron cut-off grade for HiB-Li mineralization, $11.13 net value per metric tonne cut-off for LoB-Li low clay mineralization and $11.13 Net value per metric tonne cut-off for LoB-Li high clay mineralization; base mining cost of US$1.69/t and incremental cost of $0.055/t per bench below 1,896 m (6,220 ft) elevation; plant feed processing and grade control costs which range between US$52.92/t and US$82.55/t of plant feed for stream 1, US$18.87 and US$98.62 for streams 2&3; boron and lithium recovery for Stream 1: M5= of 80.2% and 85.7%, B5=80.2% and 78.3%, S5=77.0% and 82.5%, L6=75.8% and

79.4%; Stream 2 and 3: M5 65% and 78%, B5 78.3% and 85.2%, S5 46.8% and 84.8%, L6 32.9% and 78.7%, respectively; boric acid sales price of US$1,172.78/t; lithium carbonate sales price of $19,351.38/t.

7. The Mineral Reserve is reported exclusive of Mineral Resources.
8. Equivalent Lithium Carbonate (Li_2CO_3) and Boric Acid (H_3BO_3) grades have been rounded to the nearest tenth of a percent.

1.11. Mining Methods

The Rhyolite Ridge Project is designed to use conventional truck-shovel methods for operation.

Geotechnical quarry slope designs were completed with designed bench height of 9.14 m (30 ft) and bench width of 6.4 m (21 ft). A phased approach to the quarry design has been used to develop the mine plan. The ore production to the processing facility is planned at a target rate of approximately 8,700 tpd (3.2 Mt/y), which is constrained by plant acid consumption of approximately 3,131 tpd (1.14 Mt/y). The life of mine plan indicates an expected mine life of approximately 82 years under the target annual production rate.

Overburden storage facilities were designed to contain the 735.6 Mt of overburden and non-ore grade material to be removed from quarry. Four overburden storage facilities were located external to the quarry and the fifth one will be the quarry itself.

An autonomous haulage system and conventional support equipment were considered for estimating quarry equipment requirements, labor requirements, capital costs, and operating costs. The use of autonomous haulage in mining and quarry operations has proven to be reliable, safe, and cost effective in the long term.

1.12. Recovery Methods

The Rhyolite Ridge ores differ from traditional brines and spodumene ores in terms of their mineralogy and chemistry. The processing methods proposed differ from traditional installations, and there are no existing, commercialized reference operations. However, while the application and sequencing are unique, the unit operations and equipment types selected for ore processing are not novel, and many unit operations are adopted from existing boric acid, potash, nitrate and lithium production facilities.

The Rhyolite Ridge processing facilities were designed to produce technical grades of boric acid and lithium carbonate (purities of 99.9-100.9% and 98.5%, respectively). The stream 1 material is characterized as having boron grades > 5,000 ppm, which is mostly seen in the B5, M5, and L6 mineralized units where boron grades exceed 5,000 ppm. Lithium-bearing zones with boron content < 5,000 ppm, primarily in the L6, M5 and S5 mineralized units, are identified as stream 2 and stream 3.

The main processing areas designed for the planned Rhyolite Ridge processing facilities include:

- Ore storage, handling and sizing:
  - Run-of-mine ore will be stockpiled before entering a two-stage crushing circuit, where it will be reduced in size before being conveyed to the leaching vats;
- Vat leaching:
  - Boron and lithium will be leached into solution by sulfuric acid, producing a pregnant leach solution (PLS);
- Boric acid circuit:
  - Boric acid will be crystallized by cooling the PLS past its saturation limit and separating it;

  - Boric acid will be refined by redissolution and recrystallization, followed by dewatering via centrifugation prior to drying and packaging for sale to the market. The final product will be technical grade boric acid;
- Evaporation and crystallization:
  - The resultant solution from boric acid filtration will undergo impurity removal by chemical addition and precipitation;
  - The purified solution will undergo several stages of evaporation and crystallization. Boric acid will be recovered via flotation and returned to the boric acid crystallization circuit. The flotation tails (primarily salts of magnesium, potassium and sodium sulfate) will be dewatered via centrifugation and sent to a spent ore storage facility;
- Lithium carbonate circuit:
  - The remaining solution will undergo further impurity removal, followed by the precipitation of technical grade lithium carbonate by chemical addition. The lithium carbonate will be filtered from solution prior to product drying and packaging. The final product will be technical grade lithium carbonate.
- Lithium hydroxide circuit:
  - Lithium carbonate will undergo further processing to convert to lithium hydroxide monohydrate (LHM). The installation of the LHM conversion plant will occur post startup. The selected conversion route is the liming route.
  - Technical grade lithium carbonate is combined with lime to produce lithium hydroxide and calcium carbonate. The lithium hydroxide slurry is filtered and the resulting calcium carbonate byproduct is recycled to lithium carbonate plant to offset new lime consumption.
  - The clarified lithium hydroxide solution is subject to ion exchange.
  - The refined lithium hydroxide solution is concentrated through multiple stages of evaporation. Lithium hydroxide monohydrate is crystallized and dewatered using centrifuges. The LHM solids are redissolved in clean process condensate and filtered to remove insoluble impurities. And subject to a final stage of crystallization to produce battery grade LHM. The solids are dewatered and washed using centrifuges.
  - The wet LHM solids are direct to dryers and packaging systems.

The power requirements for the process area will be met by an onsite power plant consisting of a 42 MW steam turbine generator. It is estimated that 9,464 lpm (2,500 gpm) of water will be required for the Project on average, based on a sitewide water balance model. Water will be sourced from existing wells located in Fish Lake Valley, which has been determined to be sufficient to meet the demands of the project. Reagents required for process operations include elemental sulfur, hydrated lime, soda ash, and caustic soda.

1.13. Infrastructure

The Project is a greenfield project remote from existing infrastructure. Key infrastructure required to support the Project will include the following:

- Process plant;

- Assay and metallurgical lab;
- Access through paved state and local county roads;
- Haul roads;
- Pit dewatering and monitoring wells;
- First aid and communications building;
- Explosives storage area;
- Steam turbine generator power plant;
- Spent ore storage facility;
- Switchgear and electrical distribution system;
- Emergency facilities;
- Water systems;
- Sedimentation and contact water ponds;
- Truck shop;
- Fueling station;
- Lunch facility building;
- Administrative building.

The Project site can be accessed from Dyer via Highway 264 or from Tonopah via Highways 95 and/or 265. Each of the highways are connected to unpaved county roads that lead directly to the Project site. ioneer is responsible for road maintenance for the access road/ other small roads per an agreement with Esmeralda County officials.

Electrical power necessary to operate the process plant will be supplied by the onsite steam turbine generator (STG) power plant, as the Project facilities will not be connected to Nevada power grid. The STG has a design capacity of 42 MW although actual power output will vary depending on the operation conditions. Two 3 MW diesel generator units (producing power at 4.16 kV) and a high-pressure auxiliary boiler are included to facilitate the black start of the sulfuric acid plant, as well as to support emergency and critical power requirements when the STG is offline.

A 3,500 metric tonnes (100% H_2SO_4 basis) double absorption, sulfur-burning sulfuric acid plant will produce sulfuric acid at a concentration of 98.5% to be used for the vat leaching of the ore.

The primary source of water supply to the processing facilities will be ground water from wells located in the Fish Lake Valley agricultural area at White Mountain ranch (1,472 m [4830 ft] ASL) and piped to the process and fire water tank in the processing plant (1,720 m [5644 ft] ASL). The well pumps will be connected to the local grid and the booster pumps will be powered from the process plant via overhead electrical lines. Secondary sources of water supply will be from contact water from captured storm water that has been diverted to contact water ponds as well as water from dewatering the mine.

No accommodation facilities are planned. Personnel will reside in adjacent communities.

By-products from the leaching and mineral extraction process including spent ore, sulfate salts, and precipitation filter cake will be stored in the spent ore storage facility. The spent ore storage facility is designed to be a zero-discharge facility and includes the necessary environmental containment, drainage, and collection systems to support these criteria.

1.14. Market Studies

1.14.1. Markets

The current market demand for lithium is substantial, driven primarily by the increasing adoption of electric vehicles (EVs) and the growing use of lithium-ion batteries in various applications, including consumer electronics and energy storage systems.

Lithium, which is extracted from primary or secondary sources, can be used to produce lithium carbonate, lithium hydroxide, lithium chloride, lithium sulfate, butyl lithium, and lithium metal. Lithium carbonate will be the primary form of lithium product from the Rhyolite Ridge Project. Lithium carbonate can be produced in different qualities, including industrial grade (typically 98.5% purity), technical grade (99% purity), and battery grade (≥ 99.5% purity). Some industrial-grade lithium carbonate (i.e., from brines in China) has a lower purity than 95%. Industrial-grade and technical-grade lithium carbonate are typically used in glass, as fluxing agents, for ceramics, and in lubricants. Battery-grade lithium carbonate is used to produce cathodes for lithium-ion batteries.

Borates are usually refined, but some manufacturers sell raw minerals or concentrate at lower prices, when higher levels of impurities can be tolerated. Borates have more than 300 applications, including specialty glasses (i.e., borosilicate and TFT glasses), fiberglass, ceramics, insulation, agricultural products, industrial/chemical applications, pesticides, cleaning products, cosmetics, and pharmaceuticals. Boric acid demand may fluctuate as customers switch between various borate products, considering factors such as price, product availability, and technological advancements.

The boric acid market is less clear and there are no reliable market intelligence providers. In line with major borate supplier, Rio Tinto Minerals, ioneer's boric acid price forecasts were based on internal analysis of historical prices and volumes extracted from Datamyne's trade data, import prices and volumes from Japan, South Korea, Southeast Asia, and China, customers and dealers' interviews, China Boron Association data, and internal market equilibrium assumptions.

1.14.2. Commodity Price Forecasts

For the financial model of the Project, price forecasts rather than the current or historic prices were used. This approach allows to better account for future market conditions and potential price trends, providing a more accurate financial assessment for the Project.

Battery-grade lithium hydroxide index forecast prices (in real terms) from Benchmark Mineral Intelligence (Q1, 2025) are the basis to forecast lithium revenue. Representative terms from existing offtake agreements are applied to the index forecast price to calculate the realized price of 1) technical-grade lithium carbonate for the first two years and 2) battery-trade lithium hydroxide from years three onwards. For periods beyond contracted offtake, management assumptions are applied to index forecast prices to calculate the realized price of lithium.The price forecast of delivered technical-grade lithium carbonate and battery-grade lithium hydroxide in real terms ranges from US$16,591/t (US$15,051/st) to US$22,317/t (US$20,246/st) between 2028 and 2050, with an average price of US$21,594/t (US$19,589/st).

In line with major borate supplier, Rio Tinto Minerals, ioneer boric acid price forecasts were based on internal analysis of historical prices and volumes extracted from Datamyne's trade data, import prices and volumes from Japan, South Korea, Southeast Asia, and China, customers and dealers' interviews, China Boron Association data, and Internal market equilibrium assumptions.

The price forecast for boric acid ranges from US$830/t (US$753/st) to US$1,400/t (US$1,270/st) between 2025 and 2040, with an average price of US$1,136/t (US$1,031/st).

1.14.3. Contracts

ioneer has signed offtake agreements with Ford Motor Company and PPES (a joint venture between Toyota and Panasonic) in 2022, Korea's EcoPro Innovation in 2021 and Dragonfly Energy in 2023. ioneer's contracts embed a volume adjustment clause to mitigate the risk of increased or decreased volume.

Other contracts that will be required include mine and haul road design, sulfuric acid plant engineering and technology licensing, engineering for main processing facilities, spent ore storage facility detailed engineering, material handling design, evaporators and crystallizers package design, power and controls, haulage system design, sulfur supply, lime supply, water rights, earth works, and material management and general site services.

1.15. Environmental, Permitting, and Social Considerations

1.15.1. Environmental Considerations

Baseline studies conducted to support project design included air quality impact assessment, aquatic resources delineation, biology, cultural resources, geochemistry, geology and mineral resource, groundwater, infrastructure, paleontological resource, recreation, socioeconomic, soils and rangeland, surface water resources and visual resources. These baseline studies were intended to support project design and establish a basis from which potential impacts can be assessed.

1.15.2. Closure and Reclamation

During Phase 1, Project operations and as closure approaches, spent materials will be evaluated to preclude the potential for pollutants from reclaimed sites to degrade the existing environment. Nevada Administrative Code requires a closure plant to stabilize all process components with an emphasis on stabilizing spent process materials (445A.398b). Closure activities will be conducted to standards required by the Nevada Administrative Code (445A.433) and Nevada Reclamation Statue (519A).

Concurrent reclamation will be completed to the extent practical throughout the life of the Project. A Final Plan for Permanent Closure will be submitted to NDEP-BMRR at least two years before the anticipated date of permanent closure of each process component.

Closure and reclamation costs are currently estimated at US$61 million, using the Nevada Standardized Reclamation Cost Estimator with 2023 cost data.

1.15.3. Permitting Considerations

ioneer has focused its efforts on obtaining permits for the initial Phase 1 Quarry. The development of the Phase 2 Quarry will require revisions to some of the Project permits and these revised permits will need to be secured prior to Phase 2 Quarry development.

1.15.4. Social Considerations

Social and community impacts associated with development of the Project are being considered and will be evaluated in accordance with the National Environmental Policy Act and other federal laws. Potential impacts are generally restricted to the existing population, including changes in demographics, income, employment, local economy, public finance, housing, community facilities, and community services.

ioneer envisions preparing and implementing a community development plan prior to Project development.

1.16. Capital Costs

The capital cost estimate has an estimated accuracy of +15%/-10% and a contingency of 10%. All capital costs were expressed in Q1 2024 US dollars. The total initial capital costs were estimated at US$1,667.9 million and a summary is provided in Table 1-4.

Table 1-4 - Summary of Initial Capital Cost Estimate Updated in 2024

Discipline		Total Cost (US$ Million)
Direct field costs		
00	Earthwork & civil	52.2
10	Concrete	64.9
20	Structural steel	55.7
30	Architectural and buildings	5.2
40	Machinery and equipment	437.3
50	Piping	121.2
60	Electrical	120.0
70	Control systems	38.8
75	Communications and security	4.7
81	Painting and coatings	31.7
82	Insulation & refractory	21.7
83	Modularization	5.2
87	Scaffolding	8.3
Sub-total direct cost		966.9
Sub-total direct distributable		282.2
Sub-total indirect cost		82.1
Other Cost		
9800000	Escalation	65.8
9900000	Contingency (project @ risk)	107.3
9900000	Contingency (schedule risk analysis)	40.2
Sub-total other cost		213.3
Owner’s managed cost		
8500000	Owner’s project cost	91.5
Sub-total owner’s cost		91.5
Indicative total cost		**1,636.0**
Late Additions (order of magnitude)		31.90
Indicative total cost with late additions		**1,667.9**

The sustaining capital costs were estimated at US$2241.9 million, with additional deferred stripping costs estimated at US$798.3 million.

Closure and reclamation costs (estimated at approximately US$61 million) are incurred after the life of mine plan is completed, and they are not tabulated in the capital cost or sustaining capital cost estimates.

1.17. Operating Costs

The operating cost estimate has an estimated accuracy of ±15% and no contingency has been allocated in the operating cost estimate. US dollars are used as the base currency. A total and average operating cost was estimated for the Project based on the proposed mining schedule. The total operating cost was estimated at US$15,708.8 million or an average of approximate US$60.3/Mt of run-of-mine ore feed, over the proposed 82-year mine life.

A summary of operating costs for the mine and process plant are summarized in Table 1-5.

Table 1-5 - Summary of Total Operating Costs – Mine vs Process Plant

Description	Total Cost (US$ Million)	Average Cost per Ton RoM[1] (US$/t RoM)	Percentage (%)
Mine (excluding deferred stripping)	1,830.00	7.0	11.3
Process plant (excluding sales tax)	13,878.80	54.9	88.7
Total operating costs excluding sales tax	15,708.80	60.3	100.0

Note:

1. RoM = run-of-mine plant feed ton

1.18. Economic Analysis

1.18.1. Cashflow Analysis

The economics of the Rhyolite Ridge Project were evaluated using a real (non-escalated), after-tax discounted cash flow model on a 100% project equity basis (unlevered). The economic analysis and sensitivities were completed using ±15% variation in one variable at a time.

The Project's total cash flow is detailed in Table 1-6, resulting in a post-tax cash flow of US$23.8 billion total for the 82-year life-of-mine and on average US$290.1 million annually.

Table 1-6 - Economic Summary

Item	Unit	Description
Revenue	US$ million	47,179
Pre-tax cash flow	US$ million	26,701
Post-tax cash flow	US$ million	23,773
Unlevered post-tax net present value	US$ million	1,888
Unlevered post-tax internal rate of return	%	16.8
Payback period	Years	10
Mine life	Years	82

Notes:

1. The Rhyolite Ridge Project has closed a loan with the U.S. Department of Energy Loan Programs Office for US$996 million. The conditions for the first draw have not yet been met. If the conditions are met, the levered post-tax internal rate of return of the Project would be 20.9%.
1. As further described in Section 19.3.3, production tax credit and net operating loss carry forwards are used to offset federal income tax to compute post-tax economic metrics.

1.18.2. Sensitivity Analysis

A sensitivity analysis was performed on fuel costs, labor costs, operating costs, capital costs, lithium carbonate price and grade, boric acid price and grade, lithium recovery, and boron recovery in the financial model. Based on ± 15% changes in factors, the Project net present value in real dollars was calculated at an applied 8% discount rate.

The Project is considered most sensitive to increases in lithium grade, recovery, price and discount rate. A 15% change in operating or capital expense impacts NPV by approximately US$275-325 million. The model is least sensitive to changes such as labor cost.

1.19. Risks and Opportunities

1.19.1. Risks

Risks to the Project include:

- The mineral resource estimates could change significantly if there are major changes in forecasted product prices, mining recoveries, or production costs. If prices decrease or costs increase significantly, the cut-off grade would need to rise, which could have a major impact on the mineral resource estimates and would need to be re-evaluated;
- The mineral reserve estimates could change positively or negatively with further exploration that updates the geological data and models for lithium-boron mineralization. They could also be significantly affected by changes in assumptions about slope stability (such as new hydrogeologic or geological data), product prices, mining recoveries, or production costs. If prices drop or production costs rise significantly, the cut-off grade would need to be increased, which could have a material impact on the mineral reserve estimates and would require re-evaluation;
- Marketing risks include customers not honoring contracts and memorandum of understanding's resulting in lower sales levels, commercial team unable to secure contracts to meet production levels, lowered prices due to oversupply or lower demand, and a slow market resulting in less sales volume;
- Project economic could be impacted by factors such as skilled labor availability, and volatility in raw materials and transportation costs;
- Blending with LoB-Li high clay mineralization (M5 unit) should be limited to 10% to avoid adverse permeability issues in the vats caused by its high clay content. The large volume of M5 unit ore will result in the great portion of this ore type being unsuited for vat leaching through prior blending with low clay ores. Additionally, blending with other LoB-Li low clay mineralization types in stream 2 (L6 & S5 units) will result in lower boric acid production.

1.19.2. Opportunities

Opportunities include:

- Converting the remainder of LoB-Li high clay mineralization in the M5 unit from current classification of mineral resources to mineral reserves, following appropriate supporting studies and tests.

1.20. Conclusions

Factors that have the potential to influence the prospect of economic extraction relate primarily to the permitting, mining, processing and market economic factors, parameters, and assumptions. These factors and assumptions are used to support the reasonable prospects for eventual economic extraction of the mineral resources.

ioneer's economic analysis has formed the basis of the mineral reserve estimates. The outcome from the economic analysis demonstrates that the Project is economically viable and made possible by having significant lithium and boron revenue streams.

1.21. Recommendations

It is recommended by the hydrogeological resource QP to allow additional cost for additional hydrogeological data collection and modelling likely required for NEPA analysis required for project expansion. This recommendation was estimated to have a cost of approximately US$2-3 million.

2. INTRODUCTION

2.1. Introduction

AtkinsRéalis Minerals & Metals LLC (AtkinsRéalis), IMC, Westland Engineering & Environmental Services (Westland), Mr. Yoshio Nagai, Leonard Rice Consulting Water Engineers, Inc. (LRE Water), NewFields, Geo-Logic Associates, Inc., Mr. Chad Yeftich, and Piteau prepared this technical report summary (Report) for ioneer Ltd. (ioneer) on the Rhyolite Ridge Lithium-Boron Project (the Rhyolite Ridge Project or the Project) located in Nevada, USA.

ioneer is the 100% owner of the Project.

2.2. Terms of Reference

The purpose of this Report summary is to support disclosure of updated mineral resource and mineral reserve estimates for the Rhyolite Ridge Project.

The Report uses the following:

- United States (US) English;
- Metric measurement units;
- Grades are presented in parts per million (ppm), or weight percent (wt. %);
- The coordinate system is presented using the Nevada State Plane Coordinate System of 1983, West Zone (NVSPW 1983) projection, and the North American Vertical Datum of 1988 (NAVD 88);
- Constant US dollars (US$) as of the Report date;
- Mineral resources and mineral reserves are reported using the definitions in Subpart 229.1300 – Disclosure by Registrants Engaged in Mining Operations in Regulation S–K 1300 (SK1300).

2.3. Qualified Persons

Table 2-1 provides a list of the firms and individuals that acted as third-party QPs in preparation of this Report.

Table 2-1 Report Contributions by Entity

Qualified Person	Report Sections	Report Responsibilities
AtkinsRéalis	1.1, 1.2, 1.4, 1.8, 1.12, 1.13, 1.16, 1.17, 1.19.1, 2-5, 10, 14, 15.1-15.5, 18, 21, 22.1, 22.5, 22.9, 22.10.1, 22.13, 22.14, 22.16.1.1, 22.16.1.6, 24, 25	Introduction, property description, resources and physiography, history, metallurgy and mineral processing, recovery methods, infrastructure, capital and operating costs
IMC	1.3, 1.5.1, 1.5.2, 1.6, 1.7, 1.9-1.11, 1.19.1, 1.19.2, 1.20, 1.21, 6, 7.1, 7.2, 8, 9, 11, 12, 13.2-13.4, 20, 22.2, 22.3.1, 22.4, 22.6-22.8, 22.16.1.2, 22.16.1.3	Geology and mineralization, exploration and drilling, data verification, mineral resources, mineral reserves, mine design, mining methods
Westland	1.15, 17.1, 17.3-17.7, 22.12, 22.16.1.5	Environmental studies, permitting, mine closure plans
Mr. Yoshio Nagai	1.14, 1.19.1, 16, 22.11, 22.16.1.4	Marketing, market studies
LRE Water	7.3.1, 7.3.2, 7.3.4, 7.3.5, 22.3.2, 23	Hydrogeology
NewFields	1.5.4, 7.5, 13.1.3, 13.1.4, 15.6, 17.2, 17.7, 22.3.3, 22.10.2	Geotechnical exploration and analysis, spent ore storage, site monitoring
Geo-Logic Associates, Inc.	1.5.3, 7.4, 13.1.1, 13.1.4	Geotechnical quarry slope stability
Mr. Chad Yeftich	1.18, 17.1.7, 19, 22.15, 22.16.1.6	Economic analysis
Piteau Associates	7.3.3, 13.1.2	Hydrogeology

2.4. Scope of Personal Inspection

AtkinsRéalis' process and infrastructure QPs visited the Rhyolite Ridge site on April 16th, 2024. During the site visit, they reviewed core logs and inspected property access, future sites of the mine, spent ore storage facility, and the processing plant.

IMC QPs visited the Project site on August 10, 2023 to observe ioneer's core storage shed in Tonopah, NV, and the South Basin area. The QPs developed an understanding of the general geology of the Rhyolite Ridge Project and was able to visually confirm the presence of a selection of monumented drill holes from each of the previous drilling programs. They also observed the drilling, logging, and sampling procedures during the drilling program and reviewed documentation for the logging, sampling, and chain of custody protocols for previous drilling programs. They also gained an understanding of the geometry of the current surface. This included various features such as proposed locations for facilities, haulage routes, overburden storage facilities, Tiehm's Buckwheat, critical habitat, and areas of cultural preservation.

The QP from Westland visited the site several times from 2018 to the most recent site visit on May 7, 2024. The QP observed environmental site conditions and assisted with environmental studies whilst onsite.

The independent QP for market studies, Mr. Yoshio Nagai, visited the Rhyolite Ridge site twice with investors on the week of June 25, 2018, and received an introductory tour by the ioneer Senior Vice-President of Operations, and other senior ioneer personnel. The site tour provided an understanding of the Project development details as envisaged in 2018, an overview of where each major facility would be located, an overview of the site road access, and a briefing on the mineralization type (searlesite and lithium clay), and lithium and boron contents.

The QP from LRE Water was the independent QP for the hydrogeological studies and was the project manager for the baseline study that included the hydrogeology and geochemistry. While executing the baseline work, the QP was on site many times in 2018 and 2019, including an initial site reconnaissance, and subsequent shifts on site during the field activities for supervision and shift work (i.e., drilling, well and vertical well point installation, and well testing).

NewFields QP visited the site on January 30, 2019, and reviewed the site conditions for the future location of the spent ore storage facility. Mr. Rocco also reviewed the plant site location from a geotechnical standpoint.

The QP from Geo-Logic Associates, Inc. has made several visits over the years with his involvement in the Project, most recently on August 8th and 9th of 2023 to assist in field work involving spring evaluation and investigation.

The independent QP for market analyses, Mr. Chad Yeftich, visited the Rhyolite Ridge site several times with the latest on May 2, 2025. Mr. Yeftich visited the mine area, processing area, the core shed, and Fish Lake Valley.

Piteau Associates's hydrogeological QPs visited the Rhyolite Ridge site two times during April 25-27, 2023 and November 7-10, 2023. During their site visits, the QPs reviewed volcanic and sedimentary sequences of the Project area, alluvial and sedimentary sequences of Fish Lake Valley, and inspected the mine and overburden storage areas from hydrogeological perspectives.

2.5. Information Sources

The reports and documents listed in Section 24 and Section 25 of the Report were used to support the preparation of the Report.

A portion of the information was provided by ioneer as the registrant as set forth in Section 25. The third-party firms and QPs have relied on the registrant for the information specified in Section 25.

2.6. Report Date

The Report is current as of September 30, 2025.

2.7. Previously Filed Technical Report Summaries

The Report is an update to the previously filed technical report summaries by ioneer:

- Golder Associates Inc., 2021: Technical Report Summary of the Rhyolite Ridge Lithium-Boron Project: report prepared for ioneer Ltd., current as of September 30, 2021.
- Golder Associates USA Inc., 2022: Technical Report Summary of the Rhyolite Ridge Lithium-Boron Project: report prepared for ioneer Ltd., current as of February 28, 2022.
- WSP USA Inc., 2023: Technical Report Summary of the Rhyolite Ridge Lithium-Boron Project: report prepared for ioneer Ltd., current as of October 25, 2023.

2.8. Definitions

Definitions for abbreviated terms used throughout this report are provided in Table 2-2.

Table 2-2 - Acronym and Abbreviation Definitions

Acronym/Abbreviation	Definitions
°C	degrees Celsius
3D	three-dimensional
AAL	American Assay Laboratories
ABA	acid-base accounting
AFW	Amec Foster Wheeler
AHT	autonomous haul truck
ALM	American Lithium Minerals
amsl	above mean sea level
ANP	acid neutralization potential
APE	area of potential effect
APEGA	Association of Professional Engineers and Geoscientists of Alberta
arb	as-received basis
ARD	acid-rock drainage
asl	above sea level
ATV	all-terrain vehicle
B	boron
bgs	below ground surface
BH	Borate Hills
BIA	Bureau of Indian Affairs
BLM	U.S. Department of Interior's Bureau of Land Management
BMRR	Bureau of Mining Regulation and Reclamation
$CaCO_3$	calcium carbonate / limestone
capex	capital cost expenditure
CAT	Caterpillar
cm	centimeter
CO_2	carbon dioxide
CPE	chlorinated polyethylene
CRM	certified reference material
CRZ1	boric acid crystallization
CRZ2	sulfate acid crystallization
CRZ3	boric acid crystallization
Cs	cesium
CWP	contact water pond
CY	cubic yard
DGPS	differential global positioning system

EA	Environmental Assessment
EBITDA	earnings before interest, taxes, depreciation, and amortization
EDA	exploratory data analysis
EIS	Environmental Impact Statement
EMS	EM Strategies, a WestLand Resources Inc. company
EnviroMINE	EnviroMine Inc.
EPCM	engineering, procurement, and construction management
ET	evapotranspiration
EU	effective utilization
EV	electric vehicle
EVP1	downstream PLS evaporation
EVP2	lithium brine evaporation
F	fluorine
FS	feasibility study
FCC	Federal Communications Commission
FEL	front-end loader
FEM	finite element
Fluor	Fluor Enterprises, Inc.
FMS	fleet management system
FPC	fleet production and cost analysis software
FPPC	Final Plan for Permanent Closure
ft	feet
ft/d	feet per day
GLA	Geo-Logic Associates, Inc.
Golder	Golder Associates USA Inc., member of WSP
gpm	gallons per minute
GPS	global positioning system
H_3BO_3	boric acid
HCM	hydrogeological conceptual model
HCT	humidity cell testing
HDPE	high-density polyethylene
HGL	HydroGeoLogica, Inc.
HGU	hydrogeological unit
hr	hour
Hwy	highway
ICE	internal combustion engine
ICP-MS	Inductively coupled plasma mass spectrometry

ID^2	inverse distance interpolation weighted to the second power
ID^3	Inverse distance interpolation weighted to the third power
IOB	in-pit overburden backfill
ioneer	ioneer Ltd. or ioneer USA Corporation
IR1	impurity removal 1
IR2	lithium brine impurity removal
IRR	internal rate of return
IRS	Internal Revenue Service
JOGMEC	Japan Oil, Gas and Metals National Corporation
KCA	Kappes Cassiday Associates
KNA	kriging neighborhood analysis
kst	thousand short tons
kstpy	thousand short tons per year
kt	thousand metric tons
kV	kilovolt
lb	pound
LCE	lithium carbonate equivalent
LDS	leak detection system
LG	Lerchs-Grossmann
Li	lithium
Li_2CO_3	lithium carbonate
LiOH	lithium hydroxide
LOM	life-of-mine
LOMP	life-of-mine plan
LOQ	life-of-quarry
LS	lacustrine sediments of the Cave Springs Formation
m	meter
m^2	square meter
MA	mechanical availability
MACRS	modified accelerated cost recovery system
MCY	million cubic yard
MEG	Minerals Exploration & Environmental Geochemistry Inc.
mg/L	milligram per liter
ML	metals leaching
mm	millimeter
Mo	molybdenum
Mph	miles per hour

MPO	mine plan of operations
MQC	manufacturer quality control
MS	Microsoft
MSHA	Mine Safety and Health Administration
Mst	million short tons
Mstpy	million short tons per year
Mt	million metric tons
MTO	material take-off
MW	megawatt
Na_2CO_3	soda ash
$NaBSi_2O_5(OH)_2$	sodium borosilicate
NAC	Nevada Administrative Code
$NaCaB_5O_6(OH)_6 \cdot 5H_2O$	sodium calcium borate hydroxide
NAICS	North American Industry Classification System
NDEP	Nevada Division of Environmental Protection
NEPA	National Environmental Policy Act
Newfields	NewFields Companies, LLC
NLB	north lithium basin
NOL	net operating loss
NPS	National Park Services
NPV	net present value
NRHP	National Register of Historic Places
OEM	original equipment manufacturer
OHWM	ordinary high water mark
Opex	operating cost estimate
OSF	overburden storage facility
OU	operational usage
P.E.	Professional Engineer
P.Geo.	Professional Geologist
pcf	pounds per cubic foot
PFS	prefeasibility study
PLS	pregnant leach solution
ppm	parts per million
psi	pounds per square inch
QA/QC	quality assurance and quality control
QAL	Quaternary alluvium
QP	Qualified Person

RAM	reliability, availability, and maintenance
Rb	rubidium
RC	reverse circulation
Rhyolite Ridge Project or the Project	Rhyolite Ridge Lithium-Boron Project
ROM	run-of-mine
ROW	right-of-way
RQD	rock quality designation
s	seconds
SAP	sulfuric acid plant
SD	standard deviation
S-K 1300	United States Security and Exchange Commission's Regulation Subpart S-K 1300
SLB	south lithium basin
SLM	solid leasable minerals
SME	Society for Mining, Metallurgy, & Exploration
SMU	service meter units
SOP	standard operating procedure
SOSF	spent ore storage facility
stpy	short tons per year
SQM	Sociedad Química y Minera de Chile
Sr	strontium
SRM	standard reference material
Stantec	Stantec Consulting Services, Inc.
STG	steam turbine generator
stpd	short tons per day
SWBM	site-wide, operational water balance model
Tbx	Rhyolite Ridge Tuff and volcanic breccia
TDS	total dissolved solids
Trinity	Trinity Consultants
TRS	technical report summary
TS	Tertiary sedimentary unit
TW	testing well
UNR	University of Nevada, Reno
US$	United States dollar
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

VWP	vibrating-wire piezometers
WBS	work breakdown structure
WOTUS	waters of the United States
WPCP	Water Pollution Control Permit
WSP	WSP USA Inc.
Ω-cm	ohm-centimeters

3. PROPERTY DESCRIPTION

3.1. Property Location

The Project is located in Esmeralda County in southwestern Nevada, USA (Figure 3-1).

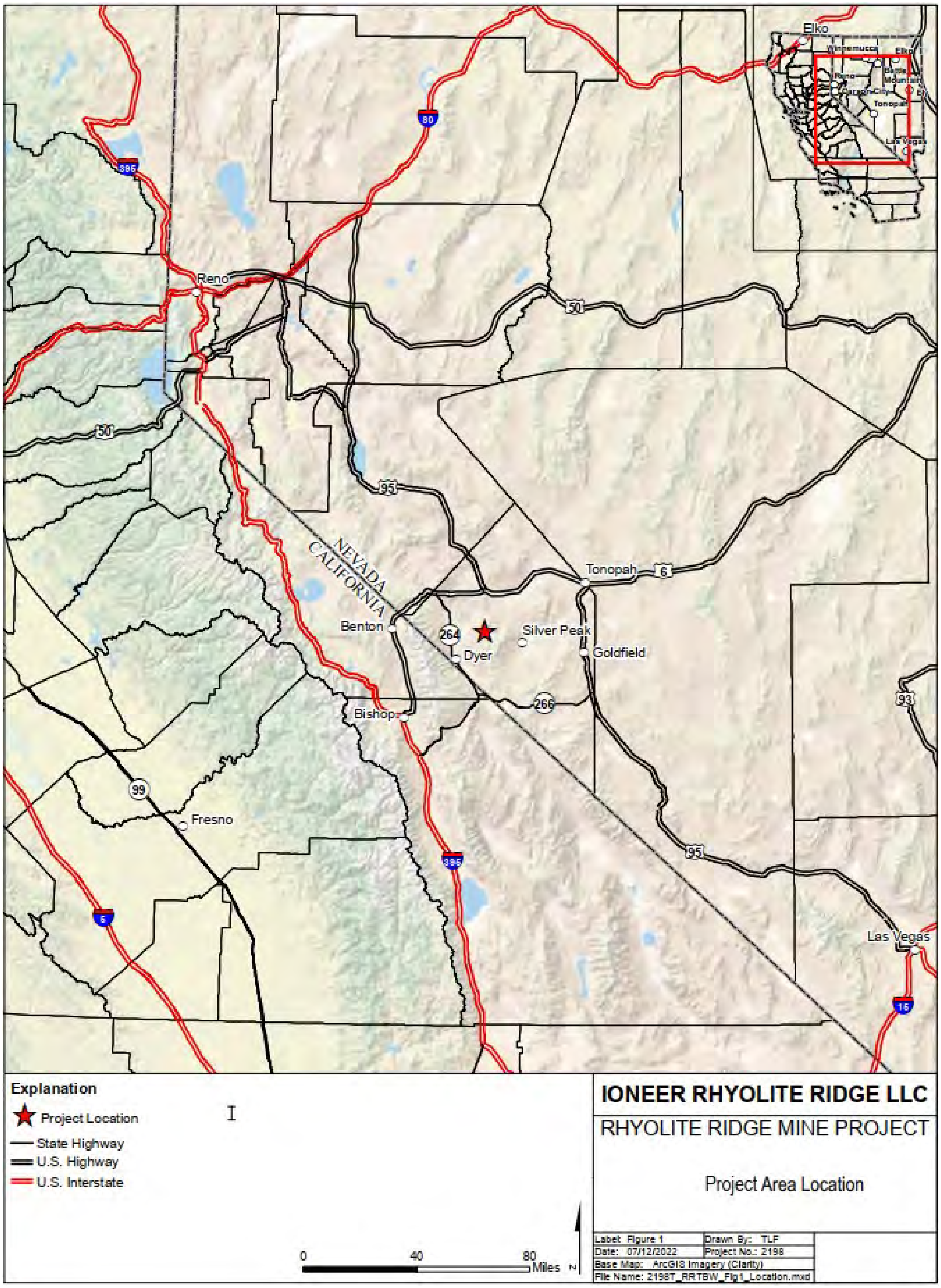

Figure 3-1 - Project Location Map

Source: ioneer, 2022

The Project site is approximately 23 km (14 miles) northeast of Dyer, Nevada (the nearest town) and approximately 105 km (65 miles) southwest of Tonopah, Nevada (the nearest city). The Project site is approximately 410 km (255 miles) by road from Las Vegas and 346 km (215 miles) from Reno, Nevada's largest and third largest cities, respectively.

The Rhyolite Ridge area includes two lithium-boron deposits (South Basin and North Basin), which cover a total area of approximately 40 square miles. The proposed mine and facilities are based on the South Basin. The South Basin geographic coordinates are approximately 37.82°N and 117.86°W.

3.2. Property Ownership

ioneer is currently the 100% owner of the Project.

In January 2025, the U.S. Department of Energy finalized a $996 million loan debt financing for Rhyolite Ridge Lithium Project.

3.3. Mineral Rights

3.3.1. Name and Number of Mineral Rights

The mineral tenement and land tenure for the Project comprises a total of 418 unpatented lode mining claims, covering 8,478 acres. Of these claims, all are listed as "active" in three claim groups, held by two wholly owned ioneer subsidiaries. The three claim groups include the South Lithium Basin (SLB), Solid Leasable Mineral (SLM), and Rhyolite Ridge groups (RR). All are held by ioneer Rhyolite Ridge, LLC.

There are also an additional 11 unpatented lode mining claims (PR limestone claims, 227 acres), 120 placer claims (SLP), and 348 mill sites (RMS) held by ioneer subsidiaries in the Project area. The placer claims and mill sites are within the boundary of the project but are not mineral bearing, therefore they will not be discussed in detail in the Report and will not be included in Table 3-1. ioneer Rhyolite Ridge, LLC, is the holder of the mill site claims in Esmeralda County which is presented in Table 3-2. The mill sites were staked on all the planned surface facilities, so no lode claims were withdrawn. The 348 mill sites locations labeled RMS 1-347 are shown in Figure 3-3.

The annual maintenance fees for all claims owned by ioneer Rhyolite Ridge, LLC, totaling US$179,400 and US$10,872 are payable to the BLM and Esmeralda County, respectively. The active SLB, SLM, and RR lode mining claims are summarized in Table 3-1. All claims presented in the table meet the following criteria:

Holder: ioneer Rhyolite Ridge, LLC;

County: Esmeralda;

Claim type: lode claim;

Claim status: active;

BLM annual maintenance fee: US$200.00;

Esmeralda County annual maintenance fee: US$12.00.

Next payment date: BLM September 1, 2026, Esmeralda County November 1, 2025.

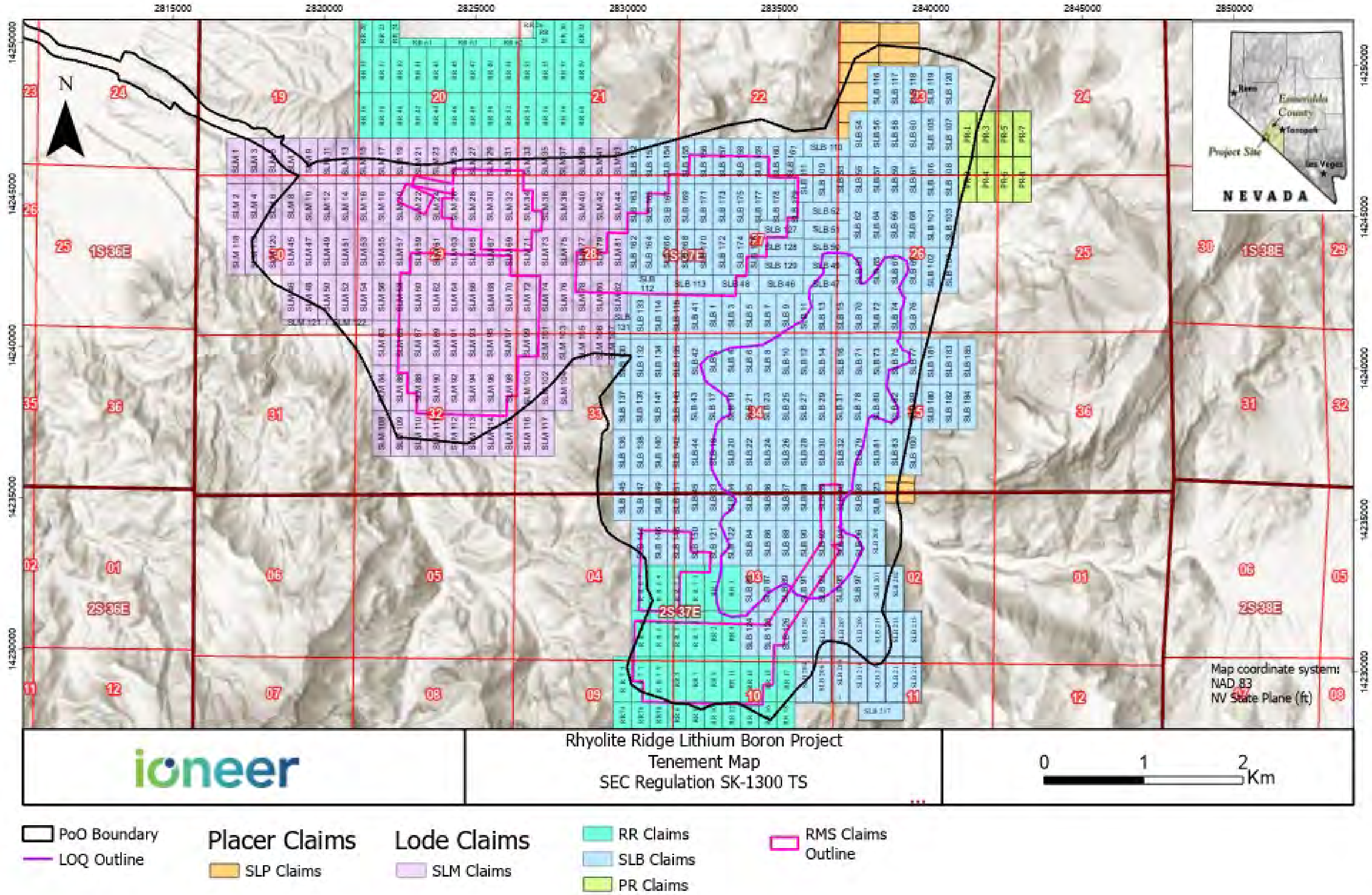

Figure 3-2 - Tenement Map

Source: ioneer, 2025

Table 3-1 - SLB, SLM, and RR Lode Mining Claims

Serial Number	Claim Name	Acres	Date Of Location	Claim Group
NV101868927	RR 1	20.66	9/2/2018	RR
NV101868928	RR 2	20.66	9/2/2018	RR
NV101868929	RR 3	20.66	9/2/2018	RR
NV101868930	RR 4	20.66	9/2/2018	RR
NV101868931	RR 5	20.66	9/2/2018	RR
NV101868932	RR 6	20.66	9/2/2018	RR
NV101868933	RR 7	20.66	9/2/2018	RR
NV101868934	RR 8	20.66	9/2/2018	RR
NV101868935	RR 9	20.66	9/2/2018	RR
NV101868936	RR 10	20.66	9/2/2018	RR
NV101868937	RR 11	20.66	9/2/2018	RR
NV101870117	RR 12	20.66	9/2/2018	RR
NV101870118	RR 13	20.66	9/2/2018	RR
NV101870119	RR 14	20.66	9/2/2018	RR
NV101870120	RR 15	20.66	9/2/2018	RR
NV101870121	RR 16	20.66	9/2/2018	RR
NV101870122	RR 17	20.66	9/2/2018	RR
NV101870123	RR 18	20.66	9/2/2018	RR
NV101714938	RR 19	20.66	8/26/2018	RR
NV101714939	RR 20	20.66	8/26/2018	RR
NV101714940	RR 21	20.66	8/26/2018	RR
NV101714941	RR 22	20.66	8/26/2018	RR
NV101714942	RR 23	10.33	8/26/2018	RR
NV101714943	RR 25b	10.33	8/26/2018	RR
NV101714944	RR 25	3.44	8/25/2018	RR
NV101714945	RR 26	3.44	8/25/2018	RR
NV101714946	RR 27	20.66	8/25/2018	RR
NV101714947	RR 28	20.66	8/25/2018	RR
NV101714948	RR 29	20.66	8/25/2018	RR
NV101714949	RR 30	20.66	8/25/2018	RR
NV101714950	RR 31	20.66	8/25/2018	RR
NV101714951	RR 32	20.66	8/25/2018	RR
NV101714952	RR 33	20.66	8/26/2018	RR
NV101714953	RR 34	20.66	8/26/2018	RR
NV101716096	RR 35	20.66	8/25/2018	RR
NV101716097	RR 36	20.66	8/25/2018	RR
NV101716098	RR 37	20.66	8/25/2018	RR
NV101716099	RR 38	20.66	8/25/2018	RR
NV101716100	RR 39	20.66	8/25/2018	RR
NV101716101	RR 40	20.66	8/25/2018	RR
NV101716102	RR 41	20.66	8/25/2018	RR
NV101716103	RR 42	20.66	8/25/2018	RR
NV101716104	RR 43	20.66	8/25/2018	RR
NV101716105	RR 44	20.66	8/25/2018	RR
NV101716106	RR 45	20.66	8/25/2018	RR
NV101716107	RR 46	20.66	8/25/2018	RR
NV101716108	RR 47	20.66	8/25/2018	RR
NV101716109	RR 48	20.66	8/25/2018	RR
NV101716110	RR 49	20.66	8/25/2018	RR
NV101716111	RR 50	20.66	8/25/2018	RR
NV101716112	RR 51	20.66	8/25/2018	RR
NV101716113	RR 52	20.66	8/25/2018	RR

Serial Number	Claim Name	Acres	Date Of Location	Claim Group
NV101716114	RR 53	20.66	8/25/2018	RR
NV101716115	RR 54	20.66	8/25/2018	RR
NV101716116	RR 55	20.66	8/25/2018	RR
NV101868917	RR 56	20.66	8/25/2018	RR
NV101868918	RR 57	20.66	8/25/2018	RR
NV101868919	RR 58	20.66	8/25/2018	RR
NV101868920	RR 59	20.66	8/25/2018	RR
NV101868921	RR 60	20.66	8/25/2018	RR
NV101868922	RR 61	10.33	8/25/2018	RR
NV101868923	RR 62	10.33	8/25/2018	RR
NV101868924	RR 63	10.33	8/25/2018	RR
NV101868925	RR 64	10.33	8/25/2018	RR
NV101868926	RR 65	10.33	8/25/2018	RR
NV105810398	RR 66	20.66	11/03/2022	RR
NV105810399	RR 67	20.66	11/03/2022	RR
NV105810400	RR 68	20.66	11/03/2022	RR
NV105810401	RR 69	20.66	11/03/2022	RR
NV105810402	RR 70	20.66	11/03/2022	RR
NV105810403	RR 71	20.66	11/03/2022	RR
NV105810404	RR 72	20.66	11/03/2022	RR
NV105810405	RR 73	20.66	11/03/2022	RR
NV105810406	RR 74	20.66	11/04/2022	RR
NV105810407	RR 75	20.66	11/03/2022	RR
NV105810408	RR 76	20.66	11/04/2022	RR
NV105810409	RR 77	20.66	11/04/2022	RR
NV105810410	RR 78	20.66	11/04/2022	RR
NV105810411	RR 79	20.66	11/03/2022	RR
NV101740707	SLB 1	20.66	12/2/2015	SLB
NV101740708	SLB 2	20.66	12/2/2015	SLB
NV101740709	SLB 3	20.66	12/2/2015	SLB
NV101740710	SLB 4	20.66	12/2/2015	SLB
NV101740711	SLB 5	20.66	12/2/2015	SLB
NV101740712	SLB 6	20.66	12/2/2015	SLB
NV101740713	SLB 7	20.66	12/2/2015	SLB
NV101740714	SLB 8	20.66	12/2/2015	SLB
NV101740715	SLB 9	20.66	12/2/2015	SLB
NV101740716	SLB 10	20.66	12/2/2015	SLB
NV101740717	SLB 11	20.66	12/2/2015	SLB
NV101740718	SLB 12	20.66	12/2/2015	SLB
NV101740719	SLB 13	20.66	12/2/2015	SLB
NV101740720	SLB 14	20.66	12/2/2015	SLB
NV101740721	SLB 15	20.66	12/2/2015	SLB
NV101740722	SLB 16	20.66	12/2/2015	SLB
NV101740723	SLB 17	20.66	12/2/2015	SLB
NV101740724	SLB 18	20.66	12/2/2015	SLB
NV101741353	SLB 19	20.66	12/2/2015	SLB
NV101741354	SLB 20	20.66	12/2/2015	SLB
NV101741355	SLB 21	20.66	12/2/2015	SLB
NV101741356	SLB 22	20.66	12/2/2015	SLB
NV101741357	SLB 23	20.66	12/2/2015	SLB
NV101741358	SLB 24	20.66	12/2/2015	SLB
NV101741359	SLB 25	20.66	12/2/2015	SLB

Serial Number	Claim Name	Acres	Date Of Location	Claim Group
NV101741360	SLB 26	20.66	12/2/2015	SLB
NV101741361	SLB 27	20.66	12/2/2015	SLB
NV101741362	SLB 28	20.66	12/2/2015	SLB
NV101741363	SLB 29	20.66	12/2/2015	SLB
NV101741364	SLB 30	20.66	12/2/2015	SLB
NV101741365	SLB 31	20.66	12/2/2015	SLB
NV101741366	SLB 32	20.66	12/2/2015	SLB
NV101741367	SLB 33	20.66	12/3/2015	SLB
NV101741368	SLB 34	20.66	12/3/2015	SLB
NV101741369	SLB 35	20.66	12/3/2015	SLB
NV101741370	SLB 36	20.66	12/3/2015	SLB
NV101741371	SLB 37	20.66	12/3/2015	SLB
NV101741372	SLB 38	20.66	12/3/2015	SLB
NV101741373	SLB 39	20.66	12/3/2015	SLB
NV101741690	SLB 40	20.66	12/3/2015	SLB
NV101741691	SLB 41	20.66	12/2/2015	SLB
NV101741692	SLB 42	20.66	12/2/2015	SLB
NV101741693	SLB 43	20.66	12/3/2015	SLB
NV101741694	SLB 44	20.66	12/3/2015	SLB
NV101741695	SLB 45	20.66	12/3/2015	SLB
NV101741696	SLB 46	20.66	12/3/2015	SLB
NV101741697	SLB 47	20.66	12/3/2015	SLB
NV101741698	SLB 48	20.66	12/3/2015	SLB
NV101783654	SLB-49	20.66	4/28/2016	SLB
NV101783655	SLB-50	20.66	4/28/2016	SLB
NV101783656	SLB-51	20.66	4/28/2016	SLB
NV101783657	SLB-52	20.66	4/28/2016	SLB
NV101783658	SLB 53	20.66	4/28/2016	SLB
NV101783659	SLB 54	20.66	4/28/2016	SLB
NV101783660	SLB 55	20.66	4/28/2016	SLB
NV101783661	SLB 56	20.66	4/28/2016	SLB
NV101783662	SLB 57	20.66	4/28/2016	SLB
NV101783663	SLB 58	20.66	4/28/2016	SLB
NV101783664	SLB 59	20.66	4/28/2016	SLB
NV101783665	SLB 60	20.66	4/28/2016	SLB
NV101783666	SLB 61	20.66	4/28/2016	SLB
NV101783667	SLB 62	20.66	4/28/2016	SLB
NV101783668	SLB 63	20.66	4/28/2016	SLB
NV101783669	SLB 64	20.66	4/28/2016	SLB
NV101783670	SLB 65	20.66	4/28/2016	SLB
NV101783671	SLB 66	20.66	4/28/2016	SLB
NV101783672	SLB 67	20.66	4/28/2016	SLB
NV101783673	SLB 68	20.66	4/28/2016	SLB
NV101784825	SLB 69	20.66	4/28/2016	SLB
NV101784826	SLB 70	20.66	4/28/2016	SLB
NV101784827	SLB 71	20.66	4/28/2016	SLB
NV101784828	SLB 72	20.66	4/28/2016	SLB
NV101784829	SLB 73	20.66	4/28/2016	SLB
NV101784830	SLB 74	20.66	4/28/2016	SLB
NV101784831	SLB 75	20.66	4/28/2016	SLB
NV101784832	SLB 76	20.66	4/28/2016	SLB
NV101784833	SLB 77	20.66	4/28/2016	SLB

Serial Number	Claim Name	Acres	Date Of Location	Claim Group
NV101784834	SLB 78	20.66	4/28/2016	SLB
NV101784835	SLB 79	20.66	4/28/2016	SLB
NV101784836	SLB 80	20.66	4/28/2016	SLB
NV101784837	SLB 81	20.66	4/28/2016	SLB
NV101784838	SLB 82	20.66	4/28/2016	SLB
NV101784839	SLB 83	20.66	4/28/2016	SLB
NV101784840	SLB 84	20.66	4/28/2016	SLB
NV101784841	SLB 85	20.66	4/28/2016	SLB
NV101784842	SLB 86	20.66	4/28/2016	SLB
NV101784843	SLB 87	20.66	4/28/2016	SLB
NV101784844	SLB 88	20.66	4/28/2016	SLB
NV101784845	SLB 89	20.66	4/28/2016	SLB
NV101786020	SLB 90	20.66	4/28/2016	SLB
NV101786021	SLB 91	20.66	4/28/2016	SLB
NV101786022	SLB 92	20.66	4/28/2016	SLB
NV101786023	SLB 93	20.66	4/28/2016	SLB
NV101786024	SLB 94	20.66	4/28/2016	SLB
NV101786025	SLB 95	20.66	4/28/2016	SLB
NV101786026	SLB 96	20.66	4/28/2016	SLB
NV101786027	SLB 97	20.66	4/28/2016	SLB
NV101786028	SLB-98	20.66	4/28/2016	SLB
NV101786029	SLB 99	20.66	4/28/2016	SLB
NV101786030	SLB 100	20.66	4/28/2016	SLB
NV101786031	SLB 101	20.66	4/28/2016	SLB
NV101786032	SLB 102	20.66	4/28/2016	SLB
NV101786033	SLB 103	20.66	4/28/2016	SLB
NV101786034	SLB 104	20.66	4/28/2016	SLB
NV101786035	SLB 105	20.66	4/28/2016	SLB
NV101786036	SLB 106	20.66	4/28/2016	SLB
NV101786037	SLB 107	20.66	4/28/2016	SLB
NV101786038	SLB 108	20.66	4/28/2016	SLB
NV101786039	SLB 109	20.66	4/28/2016	SLB
NV101737172	SLB 110	20.66	5/26/2017	SLB
NV101737173	SLB 111	20.66	5/26/2017	SLB
NV101737174	SLB 112	20.66	5/26/2017	SLB
NV101737175	SLB 113	20.66	5/26/2017	SLB
NV101737176	SLB 114	20.66	5/26/2017	SLB
NV101737177	SLB 115	20.66	5/26/2017	SLB
NV101737178	SLB 116	20.66	5/26/2017	SLB
NV101737179	SLB 117	20.66	5/26/2017	SLB
NV101738169	SLB 118	20.66	5/26/2017	SLB
NV101738170	SLB 119	20.66	5/26/2017	SLB
NV101738171	SLB 120	20.66	5/26/2017	SLB
NV101738172	SLB 121	20.66	5/25/2017	SLB
NV101738175	SLB 124	20.66	5/25/2017	SLB
NV101738176	SLB 125	20.66	5/25/2017	SLB
NV101738177	SLB 126	20.66	5/25/2017	SLB
NV101738178	SLB 127	20.66	5/26/2017	SLB
NV101738179	SLB 128	20.66	5/26/2017	SLB
NV101738180	SLB 129	20.66	5/26/2017	SLB
NV101570767	SLB 130	20.66	11/3/2017	SLB
NV101570768	SLB 131	20.66	11/3/2017	SLB

Serial Number	Claim Name	Acres	Date Of Location	Claim Group
NV101570769	SLB 132	20.66	11/3/2017	SLB
NV101570770	SLB 133	20.66	11/3/2017	SLB
NV101570771	SLB 134	20.66	11/3/2017	SLB
NV101570772	SLB 135	20.66	11/3/2017	SLB
NV101570773	SLB 136	20.66	11/3/2017	SLB
NV101570774	SLB 137	20.66	11/3/2017	SLB
NV101570775	SLB 138	20.66	11/3/2017	SLB
NV101570776	SLB 139	20.66	11/3/2017	SLB
NV101570777	SLB 140	20.66	11/3/2017	SLB
NV101570778	SLB 141	20.66	11/3/2017	SLB
NV101570779	SLB 142	20.66	11/3/2017	SLB
NV101782359	SLB 143	20.66	11/3/2017	SLB
NV101782360	SLB 144	20.66	11/4/2017	SLB
NV101782361	SLB 145	20.66	11/4/2017	SLB
NV101782362	SLB 146	20.66	11/4/2017	SLB
NV101782363	SLB 147	20.66	11/4/2017	SLB
NV101782364	SLB 148	20.66	11/3/2017	SLB
NV101782365	SLB 149	20.66	11/4/2017	SLB
NV101782366	SLB 150	20.66	11/3/2017	SLB
NV101782367	SLB 151	20.66	11/3/2017	SLB
NV101782368	SLB 152	20.66	11/2/2017	SLB
NV101782369	SLB 153	20.66	11/2/2017	SLB
NV101782370	SLB 154	20.66	11/2/2017	SLB
NV101782371	SLB 155	20.66	11/2/2017	SLB
NV101782372	SLB 156	20.66	11/2/2017	SLB
NV101782373	SLB 157	20.66	11/2/2017	SLB
NV101782374	SLB 158	20.66	11/2/2017	SLB
NV101782375	SLB 159	20.66	11/2/2017	SLB
NV101782376	SLB 160	20.66	11/2/2017	SLB
NV101782377	SLB 161	20.66	11/6/2017	SLB
NV101782378	SLB 162	20.66	11/2/2017	SLB
NV101782379	SLB 163	20.66	11/2/2017	SLB
NV101783581	SLB 164	20.66	11/2/2017	SLB
NV101783582	SLB 165	20.66	11/2/2017	SLB
NV101783583	SLB 166	20.66	11/2/2017	SLB
NV101783584	SLB 167	20.66	11/2/2017	SLB
NV101783585	SLB 168	20.66	11/2/2017	SLB
NV101783586	SLB 169	20.66	11/2/2017	SLB
NV101783587	SLB 170	20.66	11/2/2017	SLB
NV101783588	SLB 171	20.66	11/2/2017	SLB
NV101783591	SLB 174	20.66	11/2/2017	SLB
NV101783592	SLB 175	20.66	11/2/2017	SLB
NV101783593	SLB 176	13.77	11/2/2017	SLB
NV101783594	SLB 177	20.66	11/2/2017	SLB
NV101783595	SLB 178	20.66	11/2/2017	SLB
NV101783596	SLB 179	20.66	11/2/2017	SLB
NV101783597	SLB 180	20.66	11/6/2017	SLB
NV101783598	SLB 181	20.66	11/6/2017	SLB
NV101783599	SLB 182	20.66	11/6/2017	SLB
NV101783600	SLB 183	20.66	11/6/2017	SLB
NV101783779	SLB 184	20.66	11/6/2017	SLB
NV101784959	SLB 185	20.66	11/6/2017	SLB
NV101784960	SLB 186	20.66	11/5/2017	SLB
NV101784961	SLB 187	20.66	11/5/2017	SLB

Serial Number	Claim Name	Acres	Date Of Location	Claim Group
NV101784962	SLB 188	20.66	11/5/2017	SLB
NV101784963	SLB 189	20.66	11/5/2017	SLB
NV101784964	SLB 190	20.66	11/5/2017	SLB
NV101784965	SLB 191	20.66	11/5/2017	SLB
NV101784966	SLB 192	20.66	11/5/2017	SLB
NV101784967	SLB 193	20.66	11/5/2017	SLB
NV101784968	SLB 194	20.66	11/5/2017	SLB
NV101784969	SLB 195	20.66	11/5/2017	SLB
NV101784970	SLB 196	20.66	11/5/2017	SLB
NV101784971	SLB 197	20.66	11/5/2017	SLB
NV101784972	SLB 198	20.66	11/5/2017	SLB
NV101784973	SLB 199	20.66	11/5/2017	SLB
NV105809159	SLB 200	20.66	11/3/2022	SLB
NV105809160	SLB 201	20.66	11/3/2022	SLB
NV105809161	SLB 202	20.66	11/3/2022	SLB
NV105809162	SLB 203	20.66	11/4/2022	SLB
NV105809163	SLB 204	20.66	11/4/2022	SLB
NV105809164	SLB 205	20.66	11/5/2022	SLB
NV105809165	SLB 206	20.66	11/4/2022	SLB
NV105809166	SLB 207	20.66	11/5/2022	SLB
NV105809167	SLB 208	20.66	11/4/2022	SLB
NV105809168	SLB 209	20.66	11/5/2022	SLB
NV105809169	SLB 210	20.66	11/5/2022	SLB
NV105809170	SLB 211	20.66	11/5/2022	SLB
NV105809171	SLB 212	20.66	11/4/2022	SLB
NV105809172	SLB 213	20.66	11/5/2022	SLB
NV105809173	SLB 214	20.66	11/4/2022	SLB
NV105809174	SLB 215	20.66	11/5/2022	SLB
NV105809175	SLB 216	20.66	11/3/2022	SLB
NV105809176	SLB 217	20.66	11/4/2022	SLB
NV101833819	SLM 1	20.66	4/9/2018	SLM
NV101833820	SLM 2	20.66	4/9/2018	SLM
NV101833821	SLM 3	20.66	4/9/2018	SLM
NV101833822	SLM 4	20.66	4/9/2018	SLM
NV101833823	SLM 5	20.66	4/9/2018	SLM
NV101833824	SLM 6	20.66	4/9/2018	SLM
NV101833825	SLM 7	20.66	4/9/2018	SLM
NV101833826	SLM 8	20.66	4/9/2018	SLM
NV101833827	SLM 9	20.66	4/9/2018	SLM
NV101833828	SLM 10	20.66	4/9/2018	SLM
NV101833829	SLM 11	20.66	4/9/2018	SLM
NV101833829	SLM 11	20.66	4/9/2018	SLM
NV101833830	SLM 12	20.66	4/9/2018	SLM
NV101833831	SLM 13	20.66	4/9/2018	SLM
NV101833832	SLM 14	20.66	4/9/2018	SLM
NV101833833	SLM 15	20.66	4/9/2018	SLM
NV101833834	SLM 16	20.66	4/9/2018	SLM
NV101833835	SLM 17	20.66	4/9/2018	SLM
NV101833836	SLM 18	20.66	4/9/2018	SLM
NV101834306	SLM 19	20.66	4/9/2018	SLM
NV101834307	SLM 20	20.66	4/9/2018	SLM
NV101834308	SLM 21	20.66	4/9/2018	SLM
NV101834309	SLM 22	20.66	4/9/2018	SLM
NV101834310	SLM 23	20.66	4/9/2018	SLM

Serial Number	Claim Name	Acres	Date Of Location	Claim Group
NV101834311	SLM 24	20.66	4/9/2018	SLM
NV101834312	SLM 25	20.66	4/9/2018	SLM
NV101834313	SLM 26	20.66	4/9/2018	SLM
NV101834401	SLM 27	20.66	4/9/2018	SLM
NV101834402	SLM 28	20.66	4/9/2018	SLM
NV101834403	SLM 29	20.66	4/9/2018	SLM
NV101834404	SLM 30	20.66	4/9/2018	SLM
NV101834405	SLM 31	20.66	4/9/2018	SLM
NV101834406	SLM 32	20.66	4/9/2018	SLM
NV101834407	SLM 33	20.66	4/9/2018	SLM
NV101834408	SLM 34	20.66	4/9/2018	SLM
NV101834409	SLM 35	20.66	4/9/2018	SLM
NV101834410	SLM 36	20.66	4/9/2018	SLM
NV101834411	SLM 37	20.66	4/9/2018	SLM
NV101834412	SLM 38	20.66	4/9/2018	SLM
NV101834413	SLM 39	20.66	4/9/2018	SLM
NV101834907	SLM 40	20.66	4/9/2018	SLM
NV101834908	SLM 41	20.66	4/9/2018	SLM
NV101834909	SLM 42	20.66	4/9/2018	SLM
NV101834910	SLM 43	20.66	4/9/2018	SLM
NV101834911	SLM 44	20.66	4/9/2018	SLM
NV101834912	SLM 45	20.66	4/11/2018	SLM
NV101834913	SLM 46	20.66	4/11/2018	SLM
NV101834914	SLM 47	20.66	4/11/2018	SLM
NV101834915	SLM 48	20.66	4/11/2018	SLM
NV101834916	SLM 49	20.66	4/11/2018	SLM
NV101834917	SLM 50	20.66	4/11/2018	SLM
NV101834918	SLM 51	20.66	4/9/2018	SLM
NV101834919	SLM 52	20.66	4/9/2018	SLM
NV101834920	SLM 53	20.66	4/9/2018	SLM
NV101834921	SLM 54	20.66	4/9/2018	SLM
NV101834922	SLM 55	20.66	4/9/2018	SLM
NV101834923	SLM 56	20.66	4/9/2018	SLM
NV101834924	SLM 57	20.66	4/9/2018	SLM
NV101834925	SLM 58	20.66	4/9/2018	SLM
NV101834926	SLM 59	20.66	4/9/2018	SLM
NV101834927	SLM 60	20.66	4/9/2018	SLM
NV101835543	SLM 61	20.66	4/9/2018	SLM
NV101835544	SLM 62	20.66	4/9/2018	SLM
NV101835545	SLM 63	20.66	4/9/2018	SLM
NV101835546	SLM 64	20.66	4/9/2018	SLM
NV101835547	SLM 65	20.66	4/9/2018	SLM
NV101835548	SLM 66	20.66	4/9/2018	SLM
NV101835549	SLM 67	20.66	4/9/2018	SLM
NV101835550	SLM 68	20.66	4/9/2018	SLM
NV101835551	SLM 69	20.66	4/9/2018	SLM
NV101835552	SLM 70	20.66	4/9/2018	SLM
NV101835553	SLM 71	20.66	4/9/2018	SLM
NV101835554	SLM 72	20.66	4/9/2018	SLM
NV101835555	SLM 73	20.66	4/9/2018	SLM
NV101835556	SLM 74	20.66	4/9/2018	SLM
NV101835557	SLM 75	20.66	4/9/2018	SLM
NV101835558	SLM 76	20.66	4/9/2018	SLM
NV101835559	SLM 77	20.66	4/9/2018	SLM

Serial Number	Claim Name	Acres	Date Of Location	Claim Group
NV101835560	SLM 78	20.66	4/9/2018	SLM
NV101835561	SLM 79	20.66	4/9/2018	SLM
NV101835562	SLM 80	20.66	4/9/2018	SLM
NV101835563	SLM 81	20.66	4/9/2018	SLM
NV101836148	SLM 82	20.66	4/9/2018	SLM
NV101836149	SLM 83	20.66	4/10/2018	SLM
NV101836150	SLM 84	20.66	4/10/2018	SLM
NV101836151	SLM 85	20.66	4/10/2018	SLM
NV101836152	SLM 86	20.66	4/10/2018	SLM
NV101836153	SLM 87	20.66	4/10/2018	SLM
NV101836154	SLM 88	20.66	4/10/2018	SLM
NV101836155	SLM 89	20.66	4/10/2018	SLM
NV101836156	SLM 90	20.66	4/10/2018	SLM
NV101836157	SLM 91	20.66	4/10/2018	SLM
NV101836158	SLM 92	20.66	4/10/2018	SLM
NV101836159	SLM 93	20.66	4/10/2018	SLM
NV101836160	SLM 94	20.66	4/10/2018	SLM
NV101836161	SLM 95	20.66	4/10/2018	SLM
NV101836162	SLM 96	20.66	4/10/2018	SLM
NV101836163	SLM 97	20.66	4/10/2018	SLM
NV101836164	SLM 98	20.66	4/10/2018	SLM
NV101836165	SLM 99	20.66	4/10/2018	SLM
NV101836749	SLM 100	20.66	4/10/2018	SLM
NV101836750	SLM 101	20.66	4/10/2018	SLM
NV101836751	SLM 102	20.66	4/10/2018	SLM
NV101836752	SLM 103	20.66	4/10/2018	SLM
NV101836753	SLM 104	20.66	4/10/2018	SLM
NV101836754	SLM 105	20.66	4/10/2018	SLM
NV101836755	SLM 106	20.66	4/10/2018	SLM
NV101836756	SLM 107	6.89	4/10/2018	SLM
NV101836757	SLM 108	20.66	4/10/2018	SLM
NV101836758	SLM 109	20.66	4/10/2018	SLM
NV101836759	SLM 110	20.66	4/10/2018	SLM
NV101836760	SLM 111	20.66	4/10/2018	SLM
NV101836761	SLM 112	20.66	4/10/2018	SLM
NV101836762	SLM 113	20.66	4/10/2018	SLM
NV101836763	SLM 114	20.66	4/10/2018	SLM
NV101836764	SLM 115	20.66	4/10/2018	SLM
NV101836765	SLM 116	20.66	4/10/2018	SLM
NV101836766	SLM 117	20.66	4/10/2018	SLM
NV101836767	SLM 118	20.66	4/11/2018	SLM
NV101836768	SLM 119	20.66	4/11/2018	SLM
NV101836769	SLM 120	20.66	4/11/2018	SLM
NV101837342	SLM 121	5.165	4/11/2018	SLM
NV101837343	SLM 122	5.165	4/11/2018	SLM

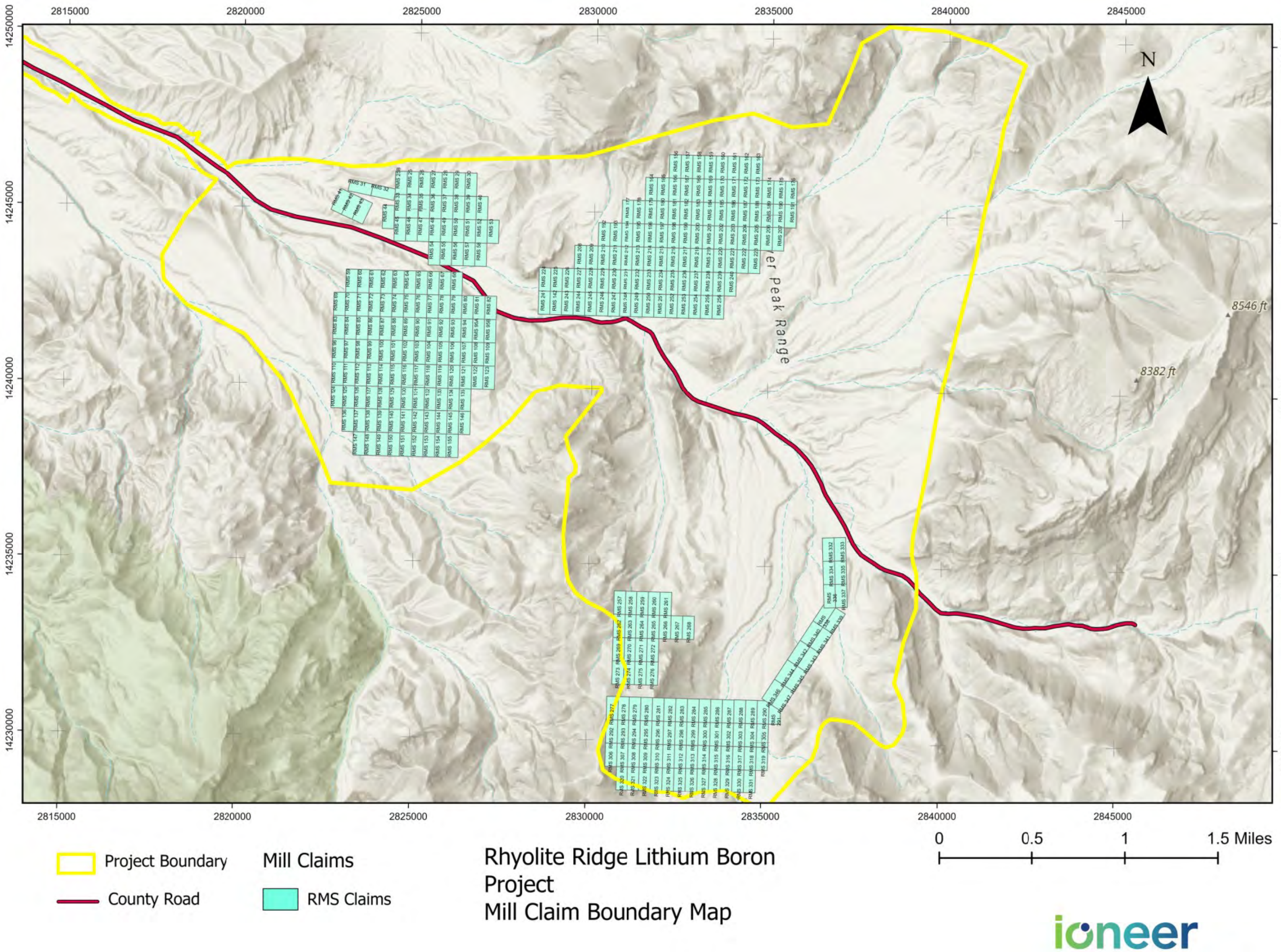

Figure 3-3 – Additional Mill Site Claims (RMS 1 – 347)

Source: ioneer, 2024

Table 3-2 – RMS Mill Site Claims

Serial Number	Claim Name	Acres	Date Of Location
NV105272779	RMS 1	5	10/3/2021
NV105272780	RMS 2	5	10/3/2021
NV105272781	RMS 3	5	10/3/2021
NV105272782	RMS 4	5	10/3/2021
NV105272783	RMS 5	5	10/3/2021
NV105272784	RMS 6	5	10/3/2021
NV105272785	RMS 7	5	10/3/2021
NV105272786	RMS 8	5	10/3/2021
NV105272787	RMS 9	5	10/3/2021
NV105272788	RMS 10	5	10/3/2021
NV105272789	RMS 11	5	10/3/2021
NV105272790	RMS 12	5	10/3/2021
NV105272791	RMS 13	5	10/3/2021
NV105272792	RMS 14	5	10/3/2021
NV105272793	RMS 15	5	10/3/2021
NV105272794	RMS 16	5	10/3/2021
NV105272795	RMS 17	5	10/3/2021
NV105272796	RMS 18	5	10/3/2021
NV105272797	RMS 19	5	10/3/2021
NV105272798	RMS 20	5	10/3/2021
NV105272799	RMS 21	5	10/3/2021
NV105272800	RMS 22	5	10/3/2021
NV105272801	RMS 23	5	10/3/2021
NV106354216	RMS 25B	5	12/21/2023
NV106354217	RMS 25	5	12/21/2023
NV106354218	RMS 26	5	12/21/2023
NV106354219	RMS 27	5	12/21/2023
NV106354220	RMS 28	5	12/21/2023
NV106354221	RMS 29	5	12/21/2023
NV106354222	RMS 30	5	12/21/2023
NV106354223	RMS 31	5	12/21/2023
NV106354224	RMS 32	5	12/21/2023
NV106354225	RMS 33	5	12/27/2023
NV106354226	RMS 34	5	12/27/2023
NV106354227	RMS 35	5	12/27/2023
NV106354228	RMS 36	5	12/27/2023
NV106354229	RMS 37	5	12/27/2023
NV106354230	RMS 38	5	12/27/2023
NV106354231	RMS 39	5	12/27/2023
NV106354232	RMS 40	5	12/27/2023
NV106354233	RMS 41	5	12/28/2023
NV106354234	RMS 42	5	12/21/2023
NV106354235	RMS 43	5	12/21/2023
NV106354236	RMS 44	5	12/21/2023
NV106354237	RMS 45	5	12/21/2023
NV106354238	RMS 46	5	12/27/2023
NV106354239	RMS 47	5	12/27/2023
NV106354240	RMS 48	5	12/27/2023
NV106354241	RMS 49	5	12/27/2023

Serial Number	Claim Name	Acres	Date Of Location
NV106354242	RMS 50	5	12/27/2023
NV106354243	RMS 51	5	12/27/2023
NV106354244	RMS 52	5	12/27/2023
NV106354245	RMS 53	5	12/27/2023
NV106354246	RMS 54	5	12/27/2023
NV106354247	RMS 55	5	12/27/2023
NV106354248	RMS 56	5	12/27/2023
NV106354249	RMS 57	5	12/27/2023
NV106354250	RMS 58	5	12/27/2023
NV106354251	RMS 59	5	12/27/2023
NV106354252	RMS 60	5	12/27/2023
NV106354253	RMS 61	5	12/27/2023
NV106354254	RMS 62	5	12/27/2023
NV106354255	RMS 63	5	12/27/2023
NV106354256	RMS 64	5	12/27/2023
NV106354257	RMS 65	5	12/27/2023
NV106354258	RMS 66	5	12/27/2023
NV106354259	RMS 67	5	12/28/2023
NV106354260	RMS 68	5	12/28/2023
NV106354261	RMS 69	5	12/28/2023
NV106354262	RMS 70	5	12/28/2023
NV106354263	RMS 71	5	12/28/2023
NV106354264	RMS 72	5	12/28/2023
NV106354265	RMS 73	5	12/28/2023
NV106354266	RMS 74	5	12/28/2023
NV106354267	RMS 75	5	12/28/2023
NV106354268	RMS 76	5	12/28/2023
NV106354269	RMS 77	5	12/28/2023
NV106354270	RMS 78	5	12/28/2023
NV106354271	RMS 79	5	12/28/2023
NV106354272	RMS 80	5	12/28/2023
NV106354273	RMS 81	5	12/28/2023
NV106354274	RMS 82	5	12/28/2023
NV106354275	RMS 83	5	12/28/2023
NV106354276	RMS 84	5	12/28/2023
NV106354277	RMS 85	5	12/28/2023
NV106354278	RMS 86	5	12/28/2023
NV106354279	RMS 87	5	12/28/2023
NV106354280	RMS 88	5	12/28/2023
NV106354281	RMS 89	5	12/28/2023
NV106354282	RMS 90	5	12/28/2023
NV106354283	RMS 91	5	12/28/2023
NV106354284	RMS 92	5	12/28/2023
NV106354285	RMS 93	5	12/28/2023
NV106354286	RMS 94	5	12/28/2023
NV106354287	RMS 95A	5	12/28/2023
NV106354288	RMS 95B	5	12/28/2023
NV106354289	RMS 96	5	12/28/2023
NV106354289	RMS 97	5	12/28/2023

Serial Number	Claim Name	Acres	Date Of Location
NV106354290	RMS 98	5	12/28/2023
NV106354291	RMS 99	5	12/28/2023
NV106354292	RMS 100	5	12/28/2023
NV106354293	RMS 101	5	12/28/2023
NV106354294	RMS 102	5	12/28/2023
NV106354295	RMS 103	5	12/28/2023
NV106354296	RMS 104	5	12/28/2023
NV106354297	RMS 105	5	12/28/2023
NV106354298	RMS 106	5	12/28/2023
NV106354300	RMS 107	5	12/28/2023
NV106354301	RMS 108	5	12/28/2023
NV106354302	RMS 109	5	12/28/2023
NV106354303	RMS 110	5	12/28/2023
NV106354304	RMS 111	5	12/28/2023
NV106354305	RMS 112	5	12/28/2023
NV106354306	RMS 113	5	12/28/2023
NV106354307	RMS 114	5	12/28/2023
NV106354308	RMS 115	5	12/28/2023
NV106354309	RMS 116	5	12/28/2023
NV106354310	RMS 117	5	12/28/2023
NV106354311	RMS 118	5	12/28/2023
NV106354312	RMS 119	5	12/28/2023
NV106354313	RMS 120	5	12/28/2023
NV106354314	RMS 121	5	12/28/2023
NV106354315	RMS 122	5	12/28/2023
NV106354316	RMS 123	5	12/28/2023
NV106354317	RMS 124	5	12/28/2023
NV106354318	RMS 125	5	12/28/2023
NV106354319	RMS 126	5	12/28/2023
NV106354320	RMS 127	5	12/28/2023
NV106354321	RMS 128	5	12/28/2023
NV106354322	RMS 129	5	12/28/2023
NV106354323	RMS 130	5	12/28/2023
NV106354324	RMS 131	5	12/28/2023
NV106354325	RMS 132	5	12/28/2023
NV106354326	RMS 133	5	12/28/2023
NV106354327	RMS 134	5	12/28/2023
NV106354328	RMS 135	5	12/28/2023
NV106354329	RMS 136	5	12/28/2023
NV106354330	RMS 137	5	12/28/2023
NV106354331	RMS 138	5	12/28/2023
NV106354332	RMS 139	5	12/28/2023
NV106354333	RMS 140	5	12/28/2023
NV106354334	RMS 141	5	12/28/2023
NV106354335	RMS 142	5	12/28/2023
NV106354336	RMS 143	5	12/28/2023
NV106354337	RMS 144	5	12/28/2023
NV106354338	RMS 145	5	12/28/2023
NV106354339	RMS 146	5	12/28/2023

Serial Number	Claim Name	Acres	Date Of Location
NV106354340	RMS 147	5	12/28/2023
NV106354341	RMS 148	5	12/28/2023
NV106354342	RMS 149	5	12/28/2023
NV106354343	RMS 150	5	12/28/2023
NV106354344	RMS 151	5	12/28/2023
NV106354345	RMS 152	5	12/28/2023
NV106354346	RMS 153	5	12/28/2023
NV106354347	RMS 154	5	12/28/2023
NV106354348	RMS 155	5	12/28/2023
NV106354349	RMS 156	5	12/28/2023
NV106354350	RMS 157	5	12/28/2023
NV106354351	RMS 158	5	12/28/2023
NV106354352	RMS 159	5	12/28/2023
NV106354353	RMS 160	5	12/28/2023
NV106354354	RMS 161	5	12/28/2023
NV106354355	RMS 162	5	12/28/2023
NV106354356	RMS 163	5	12/28/2023
NV106354357	RMS 164	5	12/28/2023
NV106354358	RMS 165	5	12/28/2023
NV106354359	RMS 166	5	12/28/2023
NV106354360	RMS 167	5	12/28/2023
NV106354361	RMS 168	5	12/28/2023
NV106354362	RMS 169	5	12/28/2023
NV106354363	RMS 170	5	12/28/2023
NV106354364	RMS 171	5	12/28/2023
NV106354365	RMS 172	5	12/28/2023
NV106354366	RMS 173	5	12/28/2023
NV106354367	RMS 174	5	12/28/2023
NV106354368	RMS 175	5	12/28/2023
NV106354369	RMS 176	5	12/28/2023
NV106354370	RMS 177	5	12/28/2023
NV106354371	RMS 178	5	12/28/2023
NV106354372	RMS 179	5	12/28/2023
NV106354373	RMS 180	5	12/28/2023
NV106354374	RMS 181	5	12/28/2023
NV106354375	RMS 182	5	12/28/2023
NV106354376	RMS 183	5	12/28/2023
NV106354377	RMS 184	5	12/28/2023
NV106354378	RMS 185	5	12/28/2023
NV106354379	RMS 186	5	12/28/2023
NV106354380	RMS 187	5	12/28/2023
NV106354381	RMS 188	5	12/28/2023
NV106354382	RMS 189	5	12/28/2023
NV106354383	RMS 190	5	12/28/2023
NV106354384	RMS 191	5	12/28/2023
NV106354385	RMS 192	5	12/28/2023
NV106354386	RMS 193	5	12/28/2023
NV106354387	RMS 194	5	12/28/2023
NV106354388	RMS 195	5	12/28/2023

Serial Number	Claim Name	Acres	Date Of Location
NV106354389	RMS 196	5	12/28/2023
NV106354390	RMS 197	5	12/28/2023
NV106354391	RMS 198	5	12/28/2023
NV106354392	RMS 199	5	12/28/2023
NV106354393	RMS 200	5	12/28/2023
NV106354394	RMS 201	5	12/28/2023
NV106354395	RMS 202	5	12/28/2023
NV106354396	RMS 203	5	12/28/2023
NV106354397	RMS 204	5	12/28/2023
NV106354398	RMS 205	5	12/28/2023
NV106354399	RMS 206	5	12/28/2023
NV106354400	RMS 207	5	12/28/2023
NV106354401	RMS 208	5	12/28/2023
NV106354402	RMS 209	5	12/28/2023
NV106354403	RMS 210	5	12/28/2023
NV106354404	RMS 211	5	12/28/2023
NV106354405	RMS 212	5	12/28/2023
NV106354406	RMS 213	5	12/28/2023
NV106354407	RMS 214	5	12/28/2023
NV106354408	RMS 215	5	12/28/2023
NV106354409	RMS 216	5	12/28/2023
NV106354410	RMS 217	5	12/28/2023
NV106354411	RMS 218	5	12/28/2023
NV106354412	RMS 219	5	12/28/2023
NV106354413	RMS 220	5	12/28/2023
NV106354414	RMS 221	5	12/28/2023
NV106354415	RMS 222	5	12/28/2023
NV106354416	RMS 223	5	12/28/2023
NV106354417	RMS 224	5	12/28/2023
NV106354418	RMS 225	5	12/28/2023
NV106354419	RMS 226	5	12/28/2023
NV106354420	RMS 227	5	12/28/2023
NV106354421	RMS 228	5	12/28/2023
NV106354422	RMS 229	5	12/28/2023
NV106354423	RMS 230	5	12/28/2023
NV106354424	RMS 231	5	12/28/2023
NV106354425	RMS 232	5	12/28/2023
NV106354426	RMS 233	5	12/28/2023
NV106354427	RMS 234	5	12/28/2023
NV106354428	RMS 235	5	12/28/2023
NV106354429	RMS 236	5	12/28/2023
NV106354430	RMS 237	5	12/28/2023
NV106354431	RMS 238	5	12/28/2023
NV106354432	RMS 239	5	12/28/2023
NV106354433	RMS 240	5	12/28/2023
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NV106354435	RMS 242	5	12/28/2023
NV106354436	RMS 243	5	12/28/2023
NV106354437	RMS 244	5	12/28/2023
NV106354438	RMS 245	5	12/28/2023
NV106354439	RMS 246	5	12/28/2023
NV106354440	RMS 247	5	12/28/2023
NV106354441	RMS 248	5	12/28/2023
NV106354442	RMS 249	5	12/28/2023
NV106354443	RMS 250	5	12/28/2023
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NV106354445	RMS 252	5	12/28/2023
NV106354446	RMS 253	5	12/28/2023
NV106354447	RMS 254	5	12/28/2023
NV106354448	RMS 255	5	12/28/2023
NV106354449	RMS 256	5	12/28/2023
NV106354450	RMS 257	5	12/28/2023
NV106354451	RMS 258	5	12/28/2023
NV106354452	RMS 259	5	12/28/2023
NV106354453	RMS 260	5	12/28/2023
NV106354454	RMS 261	5	12/28/2023
NV106354455	RMS 262	5	12/28/2023
NV106354456	RMS 263	5	12/28/2023
NV106354457	RMS 264	5	12/28/2023
NV106354458	RMS 265	5	12/28/2023
NV106354459	RMS 266	5	12/28/2023
NV106354460	RMS 267	5	12/28/2023
NV106354461	RMS 268	5	12/28/2023
NV106354462	RMS 269	5	12/28/2023
NV106354463	RMS 270	5	12/28/2023
NV106354464	RMS 271	5	12/28/2023
NV106354465	RMS 272	5	12/28/2023
NV106354466	RMS 273	5	12/28/2023
NV106354467	RMS 274	5	12/28/2023
NV106354468	RMS 275	5	12/28/2023
NV106354469	RMS 276	5	12/28/2023
NV106354470	RMS 277	5	12/28/2023
NV106354471	RMS 278	5	12/28/2023
NV106354472	RMS 279	5	12/28/2023
NV106354473	RMS 280	5	12/28/2023
NV106354474	RMS 281	5	12/28/2023
NV106354475	RMS 282	5	12/28/2023
NV106354476	RMS 283	5	12/28/2023
NV106354477	RMS 284	5	12/28/2023
NV106354478	RMS 285	5	12/28/2023
NV106354479	RMS 286	5	12/28/2023
NV106354480	RMS 287	5	12/28/2023
NV106354481	RMS 288	5	12/28/2023
NV106354482	RMS 289	5	12/28/2023
NV106354483	RMS 290	5	12/28/2023
NV106354484	RMS 291	5	12/28/2023
NV106354485	RMS 292	5	12/28/2023
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NV106354495	RMS 302	5	12/28/2023
NV106354496	RMS 303	5	12/28/2023
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NV106354498	RMS 305	5	12/28/2023
NV106354499	RMS 306	5	12/28/2023
NV106354500	RMS 307	5	12/28/2023
NV106354501	RMS 308	5	12/28/2023
NV106354502	RMS 309	5	12/28/2023
NV106354503	RMS 310	5	12/28/2023
NV106354504	RMS 311	5	12/28/2023
NV106354505	RMS 312	5	12/28/2023
NV106354506	RMS 313	5	12/28/2023
NV106354507	RMS 314	5	12/28/2023
NV106354508	RMS 315	5	12/28/2023
NV106354509	RMS 316	5	12/28/2023
NV106354510	RMS 317	5	12/28/2023
NV106354511	RMS 318	5	12/28/2023
NV106354512	RMS 319	5	12/28/2023
NV106354513	RMS 320	5	12/28/2023
NV106354514	RMS 321	5	12/28/2023
NV106354515	RMS 322	5	12/28/2023
NV106354516	RMS 323	5	12/28/2023
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NV106354519	RMS 326	5	12/28/2023
NV106354520	RMS 327	5	12/28/2023
NV106354521	RMS 328	5	12/28/2023
NV106354522	RMS 329	5	12/28/2023
NV106354523	RMS 330	5	12/28/2023
NV106354524	RMS 331	5	12/28/2023
NV106354525	RMS 332	5	12/28/2023
NV106354526	RMS 333	5	12/28/2023
NV106354527	RMS 334	5	12/28/2023
NV106354528	RMS 335	5	12/28/2023
NV106354529	RMS 336	5	12/28/2023
NV106354530	RMS 337	5	12/28/2023
NV106354531	RMS 338	5	12/28/2023
NV106354532	RMS 339	5	12/28/2023
NV106354533	RMS 340	5	12/28/2023
NV106354534	RMS 341	5	12/28/2023
NV106354535	RMS 342	5	12/28/2023
NV106354536	RMS 343	5	12/28/2023
NV106354537	RMS 344	5	12/28/2023
NV106354538	RMS 345	5	12/28/2023
NV106354539	RMS 346	5	12/28/2023
NV106354540	RMS 347	5	12/28/2023

3.3.2. Description on Acquisition of Mineral Rights

The 418 unpatented lode mining claims are located on federal land and are administered by the BLM.

These are claims staked on public lands (BLM, Forest Service) for the intent and purpose of locating mineable mineral resources. A claim of 183 m by 457 m (20.66 acres) may be located on the ground and must be properly surveyed. Mining claim paperwork and a location map must be filed with the BLM and the county recorder in the county where the claim is situated. Fees must be paid to the BLM and county totalling approximately $224 per claim for the initial filing and must be renewed every year to keep the claim active. Failure to pay the fees will result in the expiration of the claims.

Based on review of the documents provided by ioneer, it is the QP's understanding that the claims are held in good standing with the BLM and Esmeralda County and as such there are no identified concerns regarding the security of tenure nor are there any known impediments to obtaining a license to operate within the limits of the Project.

3.3.3. Surface Rights

Roughly 85% of the land in Nevada is controlled by the Federal Government; most of this land is administered by the Bureau of Land Management, the Forest Service, the Department of Energy, or the Department of Defense. Much of the land controlled by the Bureau of Land Management and Forest Service is open to prospecting and claim location.

The Project including the access roads are located on public lands controlled by BLM and therefore no private surface rights are required.

As of the Report date, there has been no coordination with the holders of rights-of-way, geothermal leases, and mining claims off Hot Ditch Road and in the Project area. ioneer was not required to consider the cumulative impacts due to the holders of rights-of-way, geothermal leases, and mining claims not filing applications with BLM.

3.3.4. Water Rights

Groundwater surface rights will be transferred from existing Fish Lake Valley basin water rights holders to ioneer, as Fish Lake Valley is a closed basin such that it is closed to new groundwater rights. ioneer currently has sufficient lease options in place with landowners to cover all construction and operational water needs.

Groundwater change applications will need to be submitted to Nevada Division of Water Resources (NDWR) to officially transfer point of diversion and place of use for all Project groundwater rights. The groundwater change process will include NDWR review as well as a public comment period.

Surface water will be diverted into process ponds. The necessary surface water rights will be required through new applications submitted to the NDWR for the Spent Ore Storage Pond, North OSF Pond, and South OSF Pond. These applications are currently being prepared. Additionally, ioneer will obtain the dam safety permits for these ponds.

3.4. Permits

The permitting requirements and current status of the permitting process are presented in Chapter 17.

3.5. Significant Encumbrances to the Property

There are no known significant encumbrances.

There are no current material violations or fines as understood in the United States mining regulatory context that apply to the Project.

3.6. Species of Conservation Interest

Eight subpopulations of Tiehm’s buckwheat are present within the Project area. Tiehm’s buckwheat has been listed as an endangered species by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA) in December 2022. As part of this, 3.68 km^2 (910 acres) have been designated as critical habitat to help conserve the species.

ioneer is committed to the conservation of Tiehm’s buckwheat and is funding research and protection measures for the species. ioneer’s plans include appropriate actions to minimize and mitigate the impacts on the Tiehm’s buckwheat populations within the designated critical habitat areas. These have included installing signage/fencing around critical areas, as well as developing measures to minimize fugitive dust emissions.

ioneer submitted a plan of operations in 2020 to the BLM and revised it in 2022. The revision included a modification to relocate the quarry to avoid some of the Tiehm’s buckwheat populations. Figure 3-4 shows the location of Tiehm’s buckwheat and critical habitat area in relation to the proposed mine facilities.

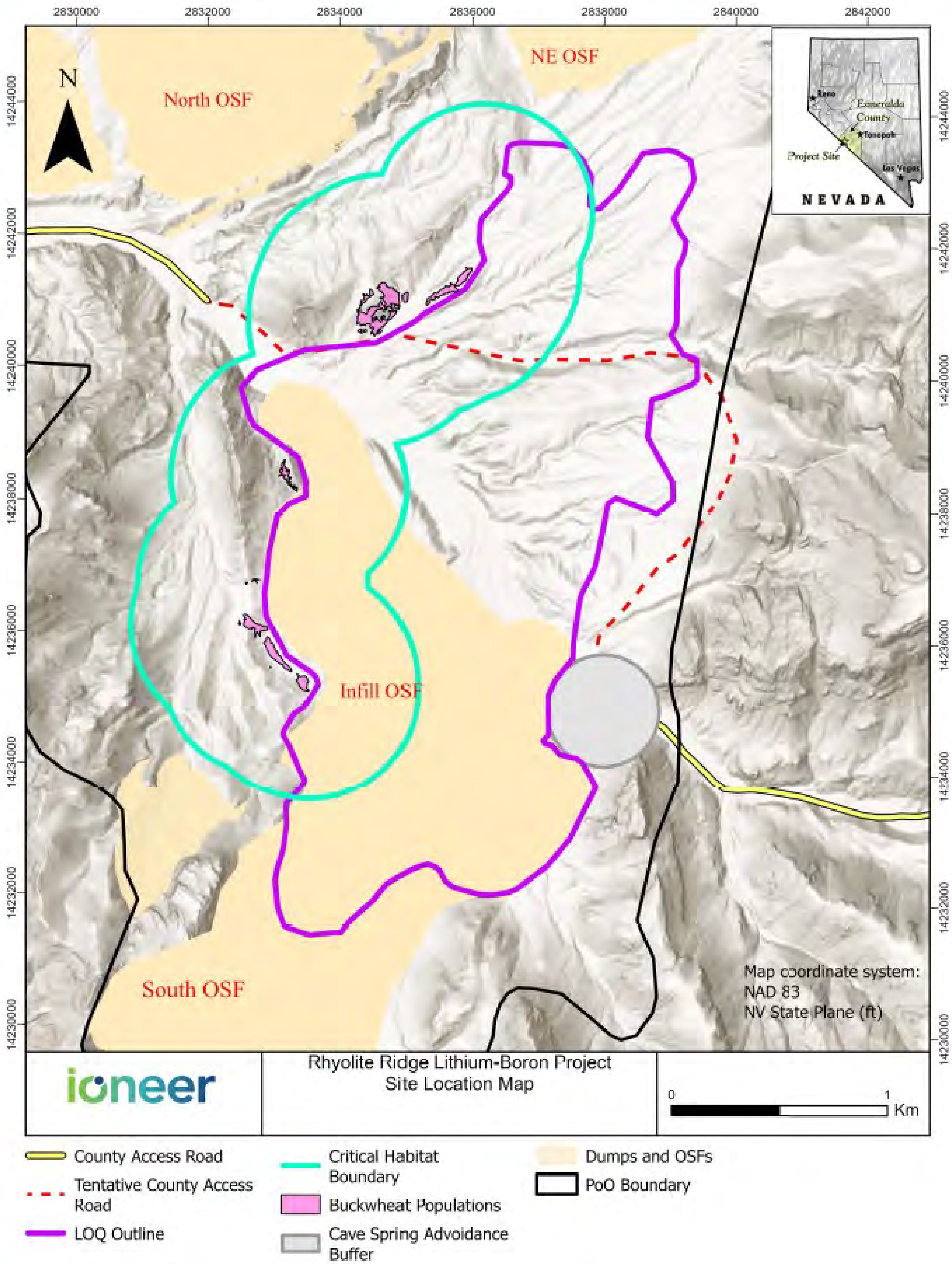


Figure 3-4 - Tiehm's Buckwheat Populations and Critical Habitat Area in relation to the Proposed Mine Facilities

Source: ioneer, 2025

In addition to Tiehm's buckwheat, there are several other species of plants and wildlife present within the project area that are classified as BLM sensitive species. Sensitive species are those species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA.

3.7. Royalty Payments

There are no royalty payments due for the Rhyolite Ridge Project.

3.8. QP Statement

To the extent known to the QPs, there are no significant factors and risks that may affect access, title, or the right or ability to perform work on the Project other than those discussed in this Report. The QPs are not aware of any agreements or material issues with third parties such as partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings relating to the 418 lode mining claims that comprise the Project.

4. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

4.1. Topography and Land Description

The Project will be located on previously undeveloped land in a sedimentary basin south of Rhyolite Ridge (referred to as the South Basin). The site is on the western side of the Silver Peak Range, near the western border of the Basin and Range physiographic province. This region is characterized by abrupt elevation changes, with a landscape alternating between mountain ranges and valleys or basins. The site location relative to surrounding geographic landmarks is shown in Figure 4-1, with the property boundary outlined in red.

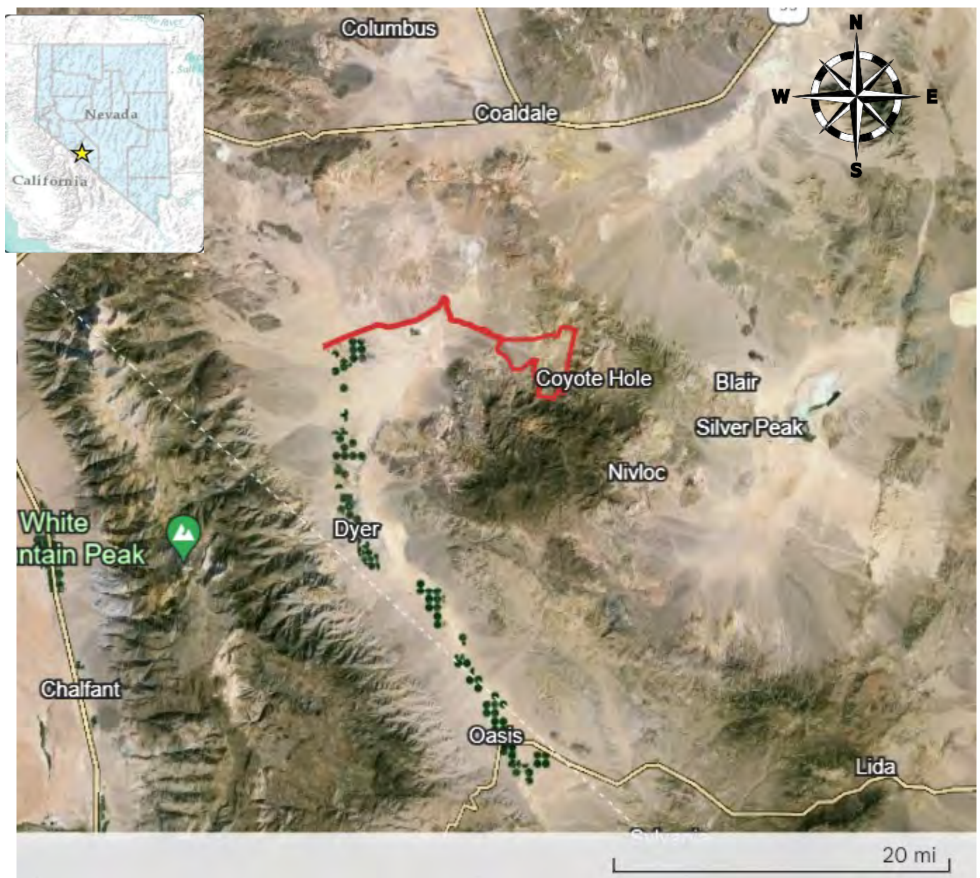


Figure 4-1 - Site Location

Source: ioneer, 2024

Note: Site coordinates approximately 37.82°N and 117.86°W

The Project site has a flat to undulating topography, with mountains surrounding the property. The elevation ranges from 1,687 m to 1,832 m (5,535' to 6,010') above sea level, and the processing plant top of grade elevation will be 5,559'-6" above sea level.

The terrain is typical of a desert landscape with limited topsoil and vegetation, of which predominantly comprises small plants.

The site lies within a precipitation-induced drainage corridor, locally known as Cave Spring or Coyote Hole, which flows from the Silver Peak Range westward into the Fish Lake Valley.

4.2. Access to the Property

The Project site can be accessed from Dyer via Highway 264 or from Tonopah via Highways 95 and/or Highway 265 (Highway 265 not shown in Figure 4-2). It is intended that the primary access route throughout construction and operations will be via Highway 264. Each of the highways connect with unpaved county roads that lead directly to the Project site. The site location and adjacent highways for access are shown in Figure 4-2 below.

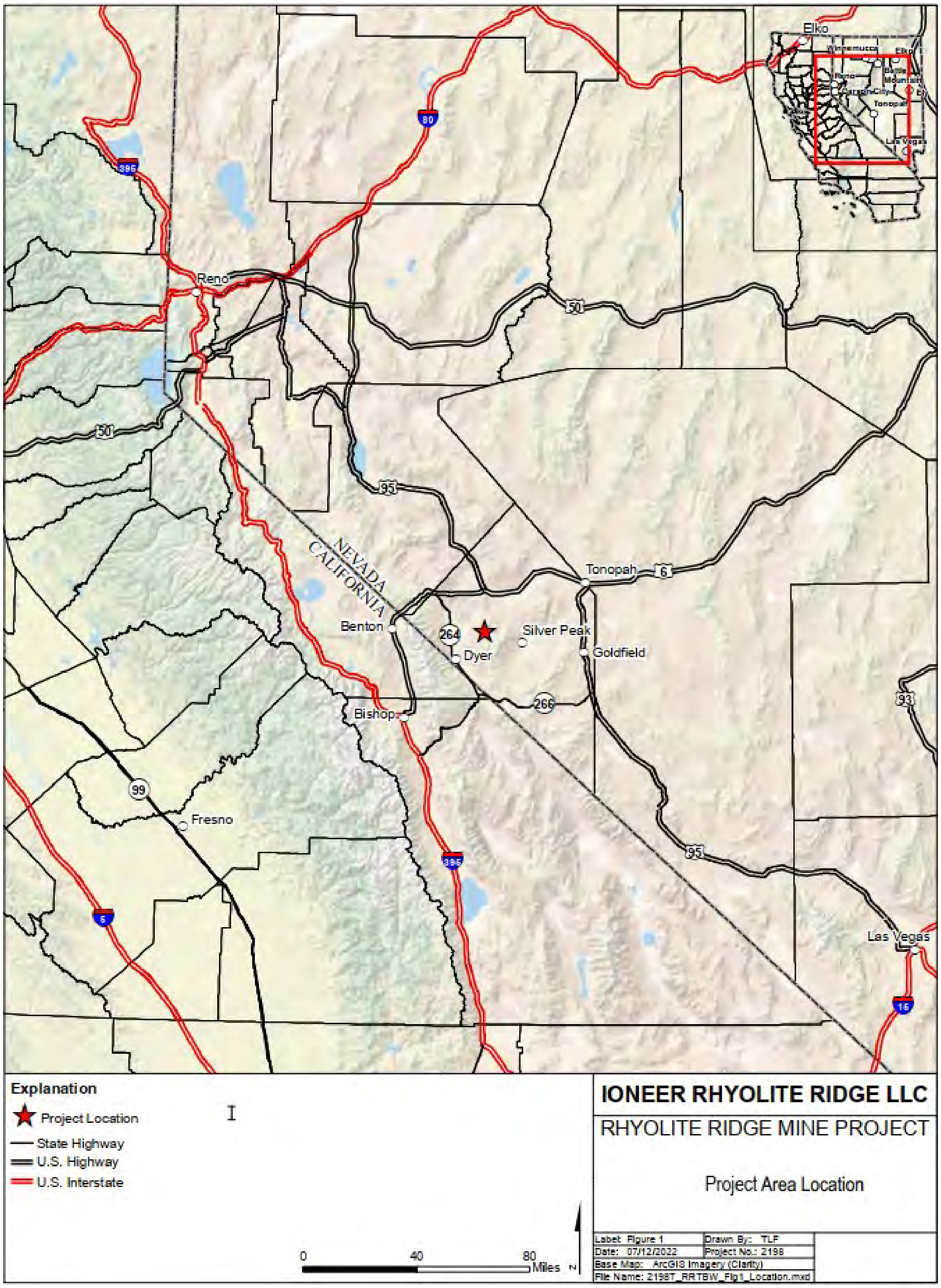


Figure 4-2 - Site Location and Highways for Site Access

Source: ioneer, 2022

ioneer and Esmeralda County officials have signed a road maintenance agreement which makes ioneer responsible for the access road maintenance and other small roads. Plans have been developed to integrate new site access roads with the existing county roads, with the ongoing safety of all county road users regarded as paramount.

The nearest commercial airport to Rhyolite Ridge is the Reno-Tahoe International Airport (RNO) in Reno, Nevada, situated approximately 346 km (215 miles) away by road. Another viable option is the Harry Reid International Airport (LAS) in Las Vegas, which is nearly equidistant at approximately 410 km (255 miles) from Rhyolite Ridge by road.

The property is not crossed by any rivers; river access is not relevant to the Project.

The property is not traversed by any railway and rail is not being considered as a mode of transporting products or importing raw materials; rail access is not relevant to this Project.

4.3. Climate Description

The Project area has a typical desert climate, with warm summers, cold winters, and minimal precipitation. As per the climate and meteorological evaluation conducted by HydroGeoLogica in 2018, the following climatic information describe the Project location. Annual precipitation estimates at the Project site are in the range of 14.1-20.6 cm (5.54-8.10 inches) per year. Average daily temperatures at the Project site are estimated to range from -1 to 20°C (30.1 to 68.1°F) throughout the year with an average daily minimum temperature of -9°C (15.2°F) in the winter and an average daily maximum temperature of 30°C (86.8°F) in the summer.

Humidity levels are moderate (26-58% on average), with the winter months being the most humid and summer months being the least. Evaporation levels are high and often exceed the annual precipitation rates. Estimated annual pan and free water evaporation at the Project site are 230.4 and 161.3 cm (90.7 and 63.5 inches), respectively.

The moderate climate does not pose any limitations with respect to site access, availability, or the length of the operating season.

4.4. Availability of Required Infrastructure

4.4.1. Transportation

Rhyolite Ridge is located near Scorpio Gold Corporation's Mineral Ridge gold mine and Albemarle Corporation's active lithium brine extraction operation at the Silver Peak lithium mine. The area benefits from infrastructure, including paved roads, power lines, and nearby small towns that have contributed to the operation of existing and prior mining activities.

Supplies for the region are sourced from or transit through various larger cities in proximity (i.e. Reno and Las Vegas), with transportation primarily facilitated by truck.

4.4.2. Labor and Accommodation

Nevada is recognized as one of the most favorable and stable mining jurisdictions, boasting a significant pool of experienced, qualified, and skilled personnel. Leveraging this base and drawing upon skills from other nearby states as necessary will provide a skilled workforce capable of meeting the project's workforce needs. Nevertheless, labor market conditions in the US have been tight for several years, with structural changes resulting in a smaller workforce. This is especially true for skilled production personnel and industrial trades. These conditions were also further exacerbated by the COVID-19 pandemic.

The Rhyolite Ridge facility will be situated in a rural area of Esmeralda County, Nevada, near the small town of Dyer, situated approximately 40 km (25 miles) away, which has a population of around 275 residents. Given its rural nature, Dyer does not provide municipal water and sewage systems. Larger communities such as Tonopah, NV and Bishop, CA, with populations of approximately 1,780 and 3,800, respectively, in 2022 (DataUSA.io), are within 130 to 145 km (80 to 90 miles) of the Project site and do provide municipal services. It's important to note that in Nevada commutes of 1 to 1.5 hours are not unusual and are sometimes supported by employer transportation. While current housing opportunities in the area are limited, several developmental activities are underway in Tonopah, a community that welcomes economic development and growth.

Rather than establish a workforce camp, ioneer favors working with local communities to develop affordable housing options. ioneer is committed to offering housing incentives and assistance programs to employees. ioneer believes that working with communities and supporting employees derives greater economic benefits for members of the local communities, enhances housing infrastructure, and helps employees attain meaningful long-term housing. Housing assistance and employee transportation have been included in the operating cost estimate.

4.4.3. Power

The Rhyolite Ridge Project has been designed to operate independently from Nevada's power grid using byproduct steam that will be generated at the onsite sulfuric acid plant. The surplus heat from the waste heat boiler in the sulfuric acid plant will be recovered and harnessed to produce steam. This steam will then be used to drive the steam turbine generators, effectively generating the required power for the processing facilities onsite.

4.4.4. Water

The primary source of water supply to the processing facilities will be ground water from wells located in the Fish Lake Valley agricultural area, which will be piped to the processing plant. Secondary sources of water supply will be from contact water from captured storm water that has been diverted to contact water ponds as well as water from dewatering the quarry.

5. HISTORY

Before ioneer acquired the Project in 2016, two prior exploration campaigns focused on lithium or boron mineralization at the Rhyolite Ridge site. The first occurred during the 1980s, followed by a second campaign in 2010-2011.

US Borax, targeting boron mineralization, conducted surface sampling and drilling in the 1980s. A total of 44 conventional mud rotary drill holes (totaling approximately 17130 m (56,200 ft)) were drilled in the North Borate Hills area, with an additional 16 drill holes (estimated 4,360 m (14,300 ft)) in the South Basin area.

Shortly after 2000, Gold Summit Corp. acquired the Project area but did not conduct any exploration work.

Around June 2010 American Lithium Mineral Inc (ALM) and Japan Oil, Gas and Metals National Corporation (JOGMEC) signed a joint exploration agreement and acquired the Project from Gold Summit Corp. Their aim was to explore for lithium mineralization. Between 2010 and 2011, the joint venture resampled the existing trenches and completed drilling campaigns consisting of 21 HQ (2.50-inch core diameter) sized core holes and 15 reverse circulation (RC) rotary percussion holes totaling approximately 8,840 m (29,000 ft).

Exploration campaigns by ioneer and predecessor companies included a combination of mechanical trenching, surface geophysics, surface geological mapping, topographic surveys, exploration drilling, hydrogeological drilling, and geotechnical drilling. A high-level summary of the historical and recent exploration campaigns is presented in Table 5-1.

Table 5-1 - Summary of Exploration Campaigns

Year	Operator	Type of Exploration Work
1980s	US Borax	Exploration drilling
2010	ALM	Surface trenching
2010-2012		Exploration drilling (RC and core)
2016	Global Geoscience	Surface gravity geophysical survey
2016-2017		Exploration drilling (RC and core)
2018	ioneer	Topographic survey
2019		Surface reflection seismic geophysical survey
2019		Surficial geological mapping
2018-2023		Exploration drilling (RC and core)
		Hydrogeological baseline studies (piezometers, monitoring & test wells, surface spring sampling)
		Geotechnical drilling & test pits

6. GEOLOGICAL SETTING, MINERALIZATION, AND DEPOSIT

6.1. Deposit Type

Rhyolite Ridge is a geologically unique sediment-hosted lithium-boron deposit that occurs within lacustrine sedimentary rocks of the South Basin, peripheral to the Silver Peak Caldera. It is one of only two major lithium-boron deposits globally and the only known deposit associated with the boron mineral searlesite.

6.2. Regional Geology

The Project is situated in the Silver Peak Range, which is part of the larger geo-physiographic Basin and Range Province of western Nevada. Horst and graben normal faulting is the dominant characteristic of the Basin and Range Province, which is believed to have occurred in conjunction with large-scale deformation due to lateral shear stress. This is evidenced in the disruption of large-scale topographic features throughout the area. The Project area sits within the Walker Lane Fault System, a northwest-trending belt of right lateral strike slip faults, adjacent to the larger San Andreas Fault System, further to the west.

The regional surface geology is characterized by relatively young Tertiary volcanic rocks, which are interpreted to be extruded from the Silver Peak Caldera, which dates at approximately 6.1 to 4.8 mega-annum. The northern edge of the caldera is exposed approximately 3.2 km (2 miles) to the south of the South Basin area and is roughly 6.6 km by 13 km (4 miles by 8 miles) in size. The Tertiary rocks are characterized by a series of interlayered sedimentary and volcanic rocks, which were deposited throughout west-central Nevada. These rocks unconformably overly folded and faulted metasedimentary basement rocks that range from Precambrian through Paleozoic (Ordovician).

Precambrian and Cambrian rocks in the Silver Peak Range are composed of siltstones, claystone, quartzites, and carbonates. Outcrops of these rocks occur in the Mineral Ridge area of the Silver Peak Range, to the east of the Project area, and are variably metamorphosed and structurally deformed. While there are no outcrops of Silurian through Oligocene rocks in the Silver Peak Range, these rocks are found elsewhere in the region. Regional volcanic arc magmatism was initiated during the Jurassic period and continued to the Tertiary period. A late-Cretaceous to early-Tertiary granite pluton is found in the Mineral Ridge area.

6.3. Local and Property Geology

The South Basin stratigraphy comprises lacustrine sedimentary rocks of the Cave Spring Formation, overlaying volcanic flows and volcaniclastic rocks of the Rhyolite Ridge Volcanic unit. The Rhyolite Ridge Volcanic rocks are underlain by sedimentary rocks of the Silver Peak Formation.

The Cave Spring Formation comprises a series of 11 sedimentary units deposited in a lacustrine environment, as shown in Table 6-1 and illustrated in Figure 6-1 and Figure 6-2. Within the Project area, the Cave Spring Formation can reach a total thickness of more than 300 m (1,000 ft). Age dating of overlying units outside of the Project area, and dates for the underlying Rhyolite Ridge Volcanic unit, bracket deposition of the Cave Spring Formation at between 4 and 6 mega-annum; this relatively young geological age indicates limited time for deep burial and compaction of the units.

Table 6-1 - Stratigraphic Column – South Basin

FORMATION	TEXTURE	GEOLOGICAL MODEL UNIT NAME	*AVERAGE THICKNESS (M)	*MINIMUM THICKNESS (M)	*MAXIMUM THICKNESS (M)	LITHOLOGY DESCRIPTION
Alluvium		Q1	25	1	65	Sand through cobble sized clasts, isolated boulder size clasts of Rhyolite Ridge Volcanic rocks and other nearby volcanic units
Cave Springs Formation		S3	80	1	260	Mixed lacustrine sediments (claystone, marl, siltstone, gritstone, and thin sandstone)
		G4	10	1	30	Coarse gritstone (immature volcaniclastic wacke)
		M4	10	1	60	Carbonate rich, with interbedded marl, variable-to-high-grade lithium
		G5	5	1	30	Coarse gritstone
		M5	10	1	50	Carbonate-clay rich marl, high-grade lithium, low-to moderate-grade boron
		B5	15	5	85	Marl, high-grade boron, moderate-grade lithium
		S5	15	5	80	Siltstone-claystone, lithium in upper zone
		G6	10	1	35	Coarse gritstone
		L6	55	5	215	Marl, siltstone-claystone, Mineralization is laterally discontinuous: low-to-high-grade lithium and boron
		Lsi	25	5	65	Silica lenses interbedded with marl, low-to-moderate-grade lithium
		G7	10	1	100	Coarse gritstone, debris flow, grading into tuff
Rhyolite Ridge Volcanics		Tlv	N/A	0	>100	Extrusive latite flow, Argentite Canyon formation
		Tbx	140	20	550	Tuff breccia, Rhyolite Ridge formation

Note: *Thickness values averaged to nearest 5m and based on geologic model dated July 2024 ǂ Grade based on resource model dated June 2025 ‡ Graphic Representation of unit thickness is not to scale

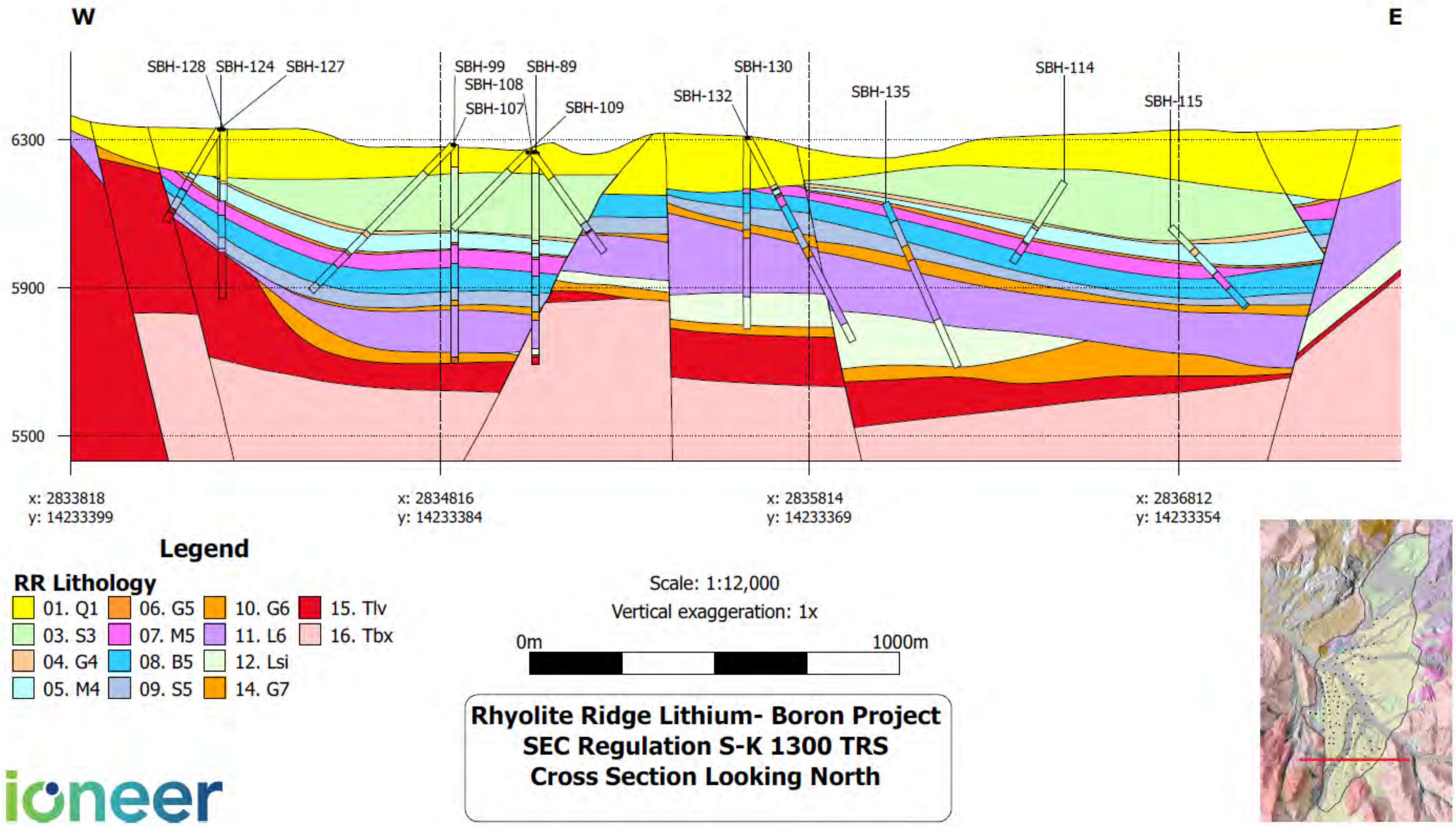


Figure 6-1 - Geological Cross Section

Source: ioneer, 2025
Note: The Rhyolite Ridge lithology units are explained in Table 6-1. Cross section elevations shown in feet.

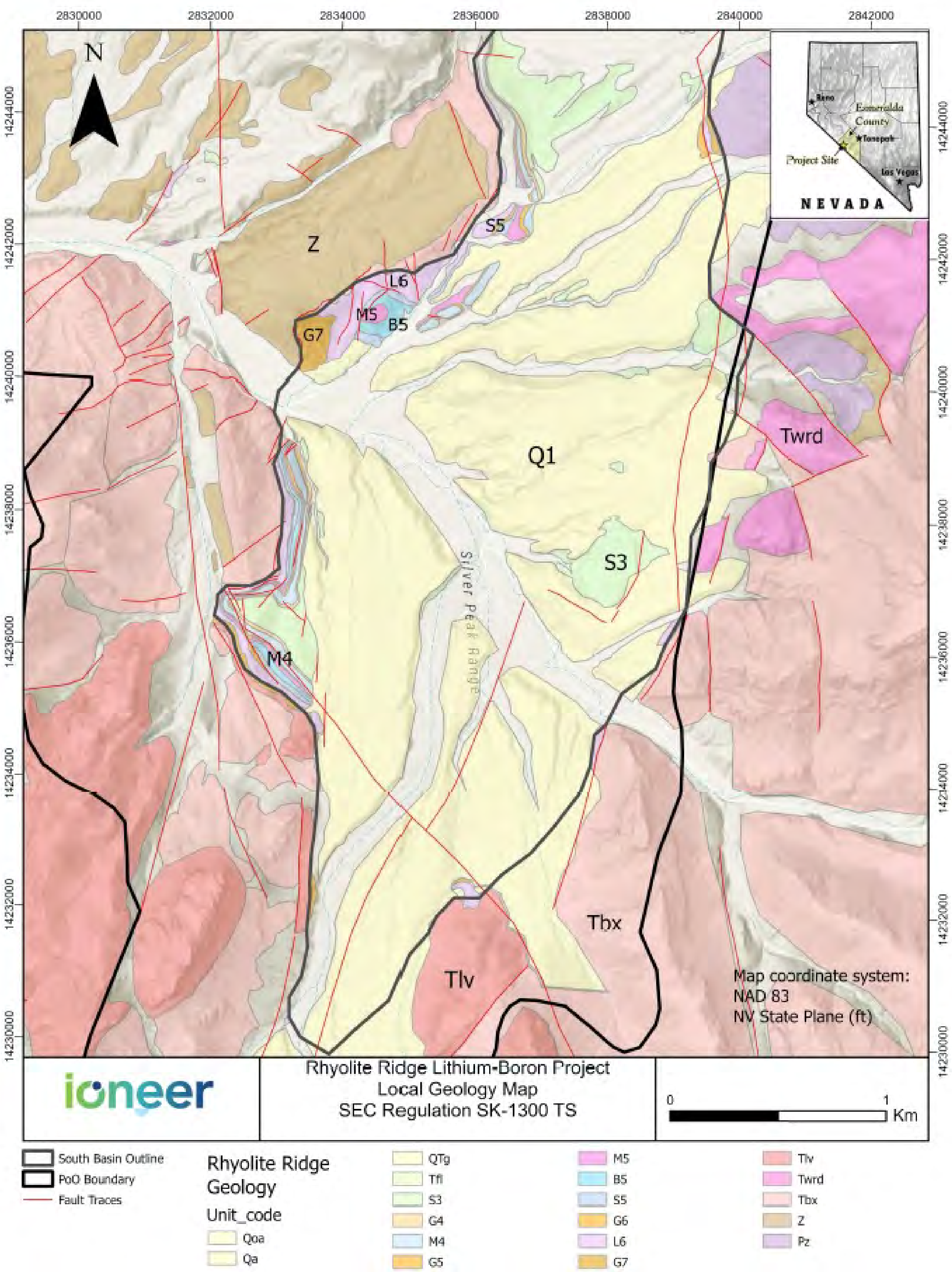


Figure 6-2 - Local Geological Map

Source: ioneer, 2025

The Cave Spring Formation units are generally laterally continuous over several miles across the extent of the South Basin; however, thickness of the units can vary due to both primary depositional and secondary structural features. The sedimentary sequence generally fines upwards, from coarse clastic units at the base of the formation, upwards through siltstones, marls, and carbonate units toward the top of the sequence.

There are two main types of mineralization encountered: high-grade boron and lithium (HiB-Li) mineralization and low-grade boron and lithium (LoB-Li) mineralization.

The key mineralized units of the Cave Spring Formation in the sequence are as follows (highlighted in Table 6-1), from top to bottom:

- M5 (high-grade lithium, low- to moderate-grade boron bearing carbonate-clay rich marl);
- B5 (high-grade boron, moderate-grade lithium marl);
- S5 (moderate-grade lithium, low-grade boron, occurring near the top of this siltstone-claystone unit, transitional from the overlying B5 mineralization);
- L6 (broad zone of laterally discontinuous low- to high-grade lithium and boron mineralized horizons as well as LoB-Li mineralization horizons within a larger low-grade to barren sequence of siltstone-claystone).

Two thick units of siltstone-claystone and other mixed lacustrine sediments occur above (S3) and below (S5) the lithium boron mineralized intervals. Except for LoB-Li mineralization in the upper portion of the S5, as discussed above, these units are generally unmineralized but do have isolated lithium and boron mineralized lenses; however, these mineralized intervals appear to be thin and are not extensive laterally, and are often only encountered in a single drill hole.

The sequence is marked by a series of four thin (generally on the scale of several feet thick or less) coarse gritstone layers (units G4 through G7). These units are interpreted to be pyroclastic deposits that blanketed the area. The lateral continuity across the South Basin along with the distinctive visual appearance of the gritstone layers relative to the less distinguishable sequence of siltstone-claystone-marl that comprises the bulk of the Cave Spring Formation make the four gritstone units good marker horizons within the stratigraphic sequence.

The Cave Spring Formation is unconformably overlain by a unit of poorly-sorted alluvium within the Project area. The alluvium is unconsolidated and comprises sand through cobble sized clasts, with isolated occurrences of large boulder sized clasts, of the Rhyolite Ridge Volcanic rocks and other nearby volcanic units.

Structurally, the South Basin is folded into a broad, open syncline with the sub-horizontal fold axis oriented approximately north-south representing the long axis of the basin. The syncline is asymmetric, with moderate to locally steep dips along the western limb, a flat central area, and interpreted steep dips on the eastern edge. The stratigraphy is further folded, including one significant southeast plunging syncline located in the southern part of the Project area.

The basin is bounded along its western and eastern margins by regional-scale high-angle faults of unknown displacement. Localized steeply dipping normal, reverse, and strike-slip faults transect the Cave Spring Formation throughout the basin. Displacement on these faults is generally poorly known. Most appear to be on the order of tens of feet of displacement although several located faults along the edge of the basin may have displacements greater than 100 ft.

6.4. Mineralization

The mineral resource evaluation presented in this TRS covers an area of approximately 4.6 km^2 (1,132 acres) within the South Basin of Rhyolite Ridge. The mineral resource plan dimensions, defined by the spatial extent of the B5 unit inferred classification limits, are approximately 3.7 km (2.27 miles) north-south by 1.40 km (0.87 miles) east-west. The upper and lower limits of the mineral resource span from surface, where the mineralized units outcrop locally, through to a maximum depth of 420 m (1,378 ft) below surface for the base of the lower mineralized zone (L6 unit).

The boron mineralization encountered in the South Basin occurs in the form of searlesite, a sodium borosilicate ($NaBSi_2O_5(OH)_2$), and minor ulexite, a hydrated sodium calcium borate hydroxide ($NaCaB_5O_6(OH)_6 \cdot 5H_2O$). Lithium mineralization is attributed to smectite and illite clays. The lithium-boron mineralization is interpreted to have been emplaced by hydrothermal/epithermal fluids travelling up the basin bounding faults. Based on lithium-boron grade distribution and continuity, it is hypothesized that the primary fluid pathway for the South Basin mineralization was along the western bounding fault.

The mineralization occurs as both HiB-Li searlesite mineralization and LoB-Li mineralization. Differential mineralogical and permeability characteristics of the various units within the Cave Spring Formation resulted in the preferential emplacement of HiB-Li bearing minerals in the M5, B5, and L6 units. LoB-Li mineralization occurs primarily in the B5, S5, and L6 units and LoB-Li high clay mineralization in the M5 geologic unit.

A feasibility study was completed in 2020 for the HiB-Li searlesite mineralization. A summary of metallurgical testwork undertaken on the HiB-Li mineralization is provided in section 10, and the intended metallurgical processing methods for the HiB-Li mineralization are discussed in section 14.

Some characterization and leaching testwork has been completed on the LoB-Li mineralization, as described in section 10.

7. EXPLORATION

7.1. Exploration

7.1.1. 2010 Outcrop/Subcrop Trenching

Surface trenching was performed as part of the 2010 American Lithium Mineral exploration program. Trench samples were collected from 19 mechanically excavated trenches. The trenches were excavated from the outcrop/subcrop using a backhoe and/or hand tools. Chip samples were then collected from the floor of the trench. However, upon review of the trench data and based on discussions with senior ioneer personnel, the QP agrees that the trench data and observations as collected are not representative of the full thickness and grades of the units.

Due to concerns with correlation and reliability of the results from the trenches, the QP did not use the geological or grade data from the trenches in the preparation of the geological model or resultant mineral resource estimates.

Further drilling near the outcrop during the 2018 to 2019 drilling program, as well as the completion and incorporation of the detailed surficial geological mapping, rendered the spatial geological information from the trenches of minimal value for modeling purposes.

7.1.2. 2017 Surface Gravity Geophysical Survey

A surface gravity geophysical survey was performed in December 2017 by Thomas Carpenter, an independent consulting geophysicist.

The gravity survey comprised of collecting gravity data from 184 stations across the South Basin, as shown in Figure 7-1, over a period of six days in December 2017. The stations were read using 200 to 600 m (656 to 1,968 ft) spacings. Eight of the gravity stations were on drill holes and another three drill holes were surveyed separately to obtain good coordinates for these sites. Station locations and elevations were determined using Leica GPS System 1200 survey equipment run in the rapid static mode. All stations repeated with a gravity meter were also reoccupied with a GPS system to check elevation repeatability. Elevation repeatability varied from ±0.001 to 0.042 m (0.003 to 0.138 ft) with an average repeatability of ±0.013 m (0.042 ft). The gravity data were processed to simple Bouguer values and terrain corrections were applied to account for the variable topographic relief of the surveyed area. Additional processing included the calculation of vertical and horizontal gradients and derivatives to allow for the identification of local patterns or changes in the gravity response that can be attributed to lithology or structure.

The processed gravity maps prepared by Carpenter were evaluated by WSP alongside geological data from drill holes and surficial geological mapping for the purpose of evaluating the potential spatial extents of the South Basin outside of the areas of drilling and mapping.

Based on observable relationships between the processed gravity maps and the drilling and mapping data, the general extent of the basin can be readily identified on a basin scale due to the differences in gravity responses by the basin fill sedimentary rocks and the underlying volcanic basement rocks. The gravity data did not provide sufficient contrast between the various units within the basin fill sequence to allow for differentiation or mapping of the sedimentary units using the geophysical data.

The gravity maps were used by WSP during the modeling process as a high-level constraint on the overall basin extents but were not used to provide control or constraint on the geological units of the Cave Spring Formation in the model.

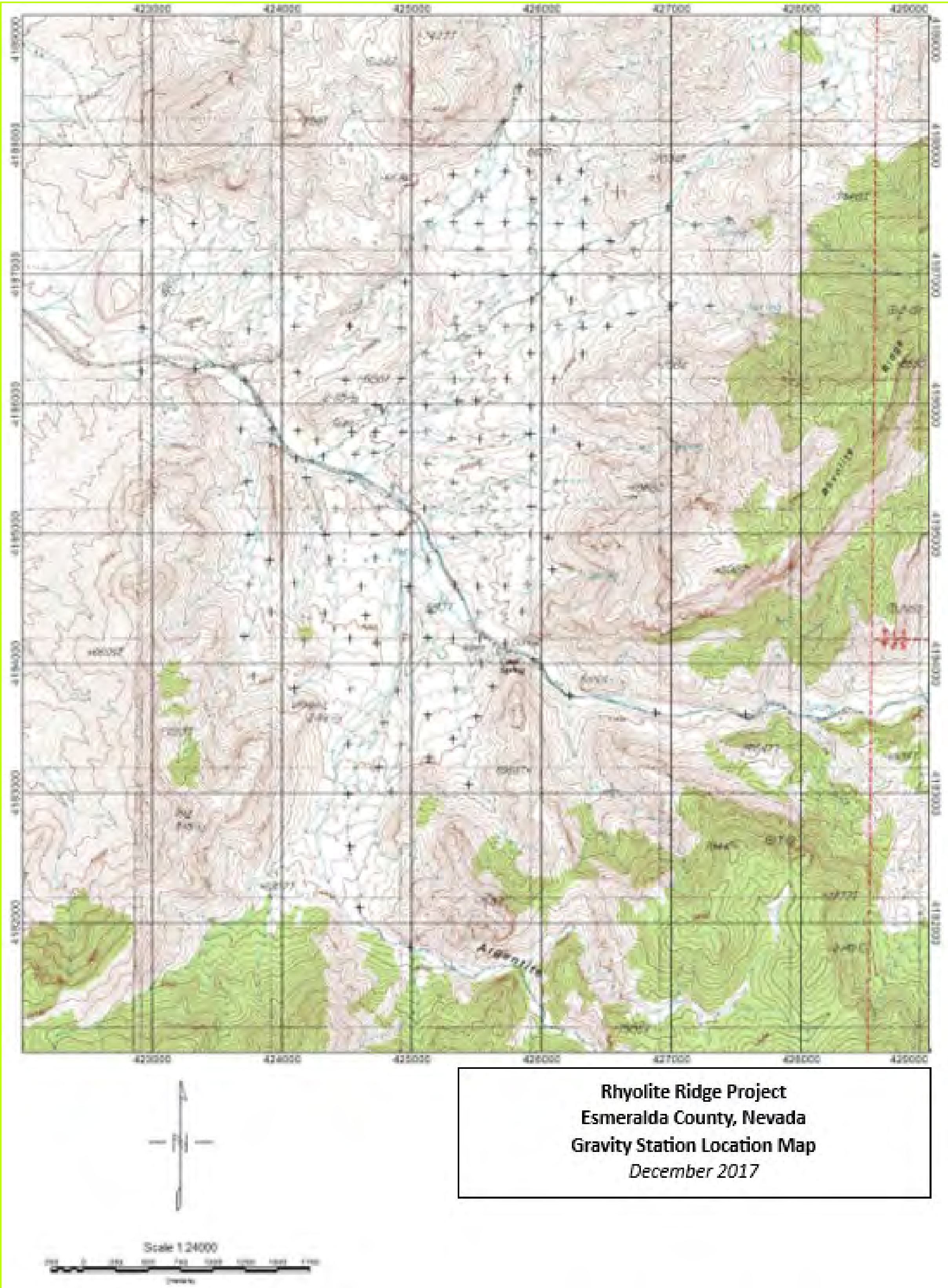


Figure 7-1 - Gravity Station Locations

Source: Carpenter, 2017

7.1.3. 2019 Surface Reflection Seismic Geophysical Survey

A surface seismic geophysical survey, comprising three reflection seismic lines, was performed in March and April 2019 by Wright Geophysics. Results from this seismic study suggested that this method would be useful for defining some of the geological unit contacts within the basin fill sequence as well as for the defining the presence and geometry of faulting. The 2019 geophysical data, along with the geophysical data collected by IDS Geophysical Surveying through 2023, were used to create a preliminary 3D geophysical model. This preliminary model was only used to guide drill hole and program decisions for the 2023-2024 drilling program. This preliminary model will be updated to a full geological model by incorporating all of the 2023-2024 drill holes.

7.1.4. 2019 Magnetic Drone Survey

In December 2019, a magnetic survey of most of the South Basin was completed by Zonge International. A drone was flown at an average altitude of 43 m (141 ft) above ground surface on East-West lines spaced 50 m (164 ft) apart. The grid of East-West directed lines was designed to visualize geologic structures that are thought to be dominated by North-South trending grain. The method was chosen to illuminate expected relatively magnetic latite volcanic rocks, which directly underlie the lacustrine section of the Cave Spring formation, and thus provide some indication of the thickness of those strata as well as of potential fault boundaries.

The overall pattern of highs and lows demonstrated a field nearly as predicted, where the highest values represented latite, moderately high values reflected near-surface volcanics, and relative lows were found in deep parts of the basin. Complications arose from differing susceptibilities of various volcanic rocks, surface channel concentrations of magnetite, and possible remanent magnetic reversals in volcanics. While a few faults were inferred from local gradients and major overall trends may have been muted and subtle, the main North-South structural grain remained apparent. The data were only used to help confirm faulting and guide drilling programs in subsurface targets.

7.1.5. 2019 Surficial Geological Mapping

From February 2017 to July 2022, bi-annual campaigns of surficial geological mapping efforts were performed by senior ioneer geologists. The data were used, in support of the drill hole locations, to define the outcrops and subcrops. Several methods were used in defining the surface geology:

- Photogeology, which involved interpreting aerial satellite photographs, to help identify geologic features and stratigraphic outcropping throughout the basin;
- Foundational techniques, which involved direct observation and in-field measurements;
- Brunton compass mapping, to measure the orientation of bedding planes, faults, and other structures, and plot these measurements on a geologic map;
- Hand lenses, to help in close examination of minerals and textures, and rock hammers, to break off fresh samples for analysis;
- GPS and field notebooks, which were crucial for recording observations, measurements, and sketches systematically;
- Measuring of stratigraphic sections, which involved documenting the thickness and characteristics of rock layers in outcrops and historical excavation;
- Field photography, which involved capturing images of outcrops with scales for reference;
- Sample collection, which involved gathering representative rock and soil samples for further geochemical analysis.

With the use of GPS, geologists were able pinpoint the exact location of outcrops, sample sites, and structural measurements. Among the 4,273 points collected throughout the region, 3,999 were in the South Basin. Of those, 757 included strikes and dips of bedding, 93 of joint sets, 152 of faults, 49 of veins, and 27 slicks, 4 of which had plunge and azimuth measurements, and 1,355 other geologic observations. For detailed geologic mapping, the recording of evidence from outcrops was warranted. If the same rock was found over distances of about 50 ft, the need to take multiple points was trivial unless new features were observed. In general, it was advisable to collect data over approximately 100 ft distances, though spacing was irregular. In areas of alluvial cover, occasional widely-spaced points were recommended. The general rock composition and size were noted. Observation of float was important to record if it contained signs of lacustrine units.

All collected field data were imported into a GIS software program (ArcGIS), where they were combined with other spatial data such as topographic maps and satellite images. In ArcGIS, geologists organized the data into layers allowing for detailed analysis and visualization. Spatial analyses were performed to identify patterns, calculate areas, and model geological processes. The resulting maps were highly informative by visually representing rock types, structural data, and other geological features. A summary of the surface mapping performed by ioneer is presented in Figure 7-2.

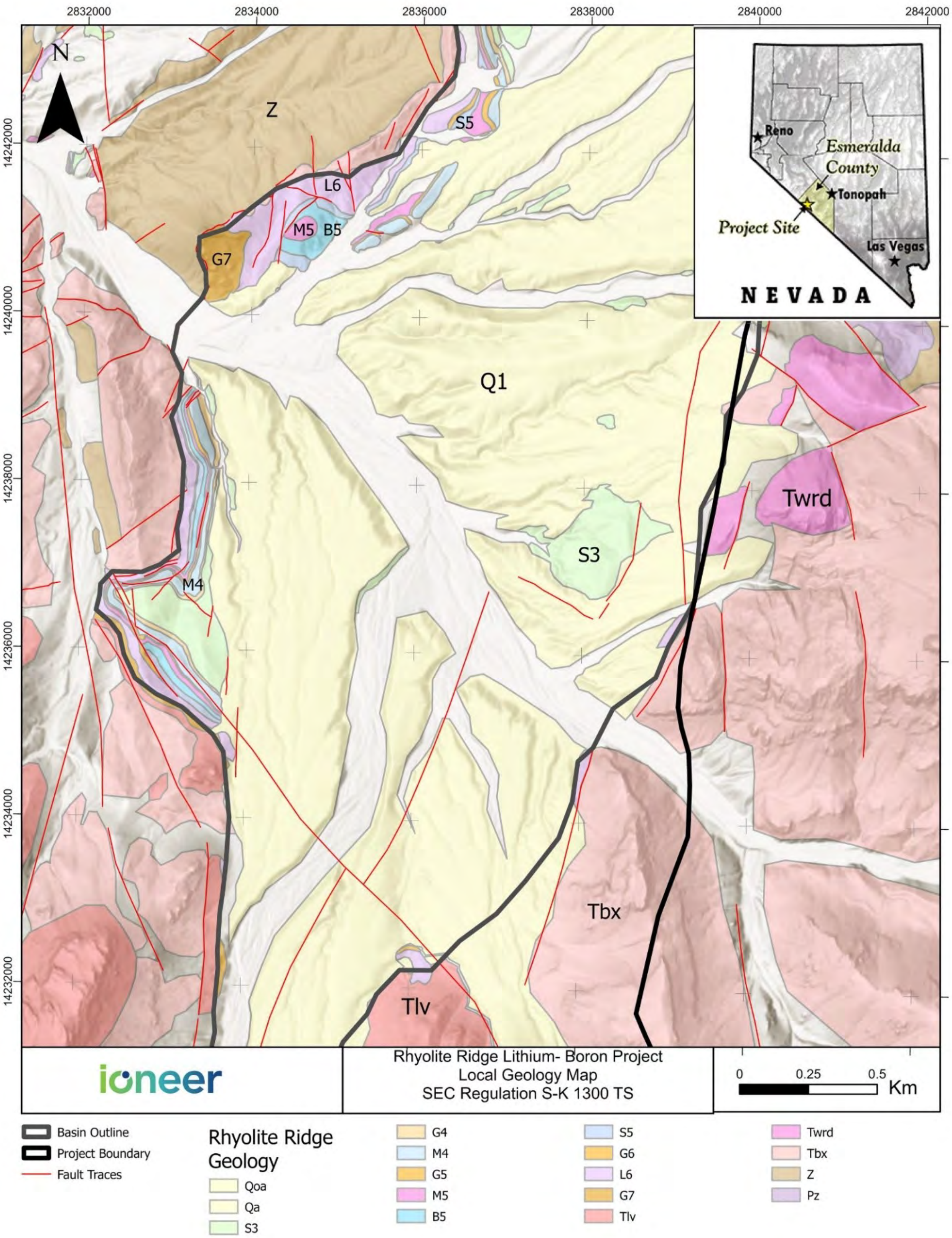


Figure 7-2 – Summary of ioneer Surficial Geology Mapping in the South Basin

Source: ioneer, 2024

At that time, the geological mapping incorporated into the geological model is focused on the area south of the road. Additional mapping along the eastern portion of the basin was added to the geological model in January 2020 to provide more geological constraints on the geometry of the basin stratigraphy east of the limits of drill hole data.

Mapped geological contacts and faults were imported into the geological model and used as surface control points for the corresponding beds or structures.

As the mapping was beneficial in controlling the spatial extent and geometry of the geological units south of the road, it is recommended that additional reconciliation efforts between surface mapping and drill hole intercepts be performed using the mapping data and observations north of the road, with the aim of incorporating this information into future iterations of the geological model.

7.1.6. 2018 Topographic Survey

A 2018 satellite survey with an accuracy of ±0.17 m (0.55 ft) was produced for the Project by PhotoSat Information Ltd. The final report generated by PhotoSat stated that the difference between the satellite and the ioneer provided ground survey control points was less than 0.80 m (2.62 ft). The quality and adequacy of the topographic surface and the topographic control is very good based on comparison against survey monuments, surveyed drill hole collars, and other surveyed surface features. In October 2022, this satellite survey was expanded to the south and to the west to assure full coverage on the site.

The topographic survey was prepared in NAD83, which was converted to NVSPW 1983 by NewFields prior to geological modeling.

7.2. Geological Exploration Drilling

7.2.1. Exploration Drilling Methods and Results

Exploration drilling programs targeting lithium-boron mineralization were completed by ALM in 2010-2012 and ioneer in 2016, 2017, 2018, 2019, 2022, 2023 and 2024. Both RC drilling and core drilling techniques have been used during each of the exploration drilling programs.

A summary of the RC and core drilling completed during the various drilling programs is presented in Table 7-1. A drill hole location map is illustrated in Figure 7-3.

Table 7-1 – Exploration Drilling Summary – Geological

Drill Type	Year	Inclined Drill Holes		Vertical Drill Holes		Total Drill Holes	Total Depth (m)
		Count	Total Depth (m)	Count	Total Depth (m)		
RC Drill Holes	2010-2012	6	1,353	9	2,310	15	3,664
	2016-2017	2	707	25	4,663	27	5,370
	2018-2019			2	549	2	549
	2023 (Phase 2)			7	1,266	7	1,266
Core Drill Holes	2010-2012	2	530	19	4,605	21	5,135
	2016-2017			3	853	3	853
	2018-2019	29	6,504	14	2,817	43	9,321
	2022 (Phase 1)			9	1,243	9	1,243
	2023 (Phase 2)	17	2,918			17	2,918
	2023-2024 (Phase 3)	13	1,876	9	1,325	22	3,201
Total		**69**	**13,559**	**97**	**19,960**	**166**	**33,519**

Drill Type	Year	Inclined Drill Holes		Vertical Drill Holes		Total Drill Holes	Total Depth (ft)
		Count	Total Depth (ft)	Count	Total Depth (ft)		
RC Drill Holes	2010-2012	6	4,440	9	7,580	15	12,020
	2016-2017	2	2,320	25	15,297	27	17,617
	2018-2019			2	1,800	2	1,800
	2023 (Phase 2)			7	4,155	7	4,155
Core Drill Holes	2010-2012	2	1,739	19	15,108	21	16,847
	2016-2017			3	2,797	3	2,797
	2018-2019	29	21,340	14	9,242	43	30,582
	2022 (Phase 1)			9	4,077	9	4,077
	2023 (Phase 2)	17	9,572			17	9,572
	2023-2024 (Phase 3)	13	6,155	9	4,347	22	10,502
Total		**69**	**45,566**	**97**	**64,403**	**166**	**109,969**

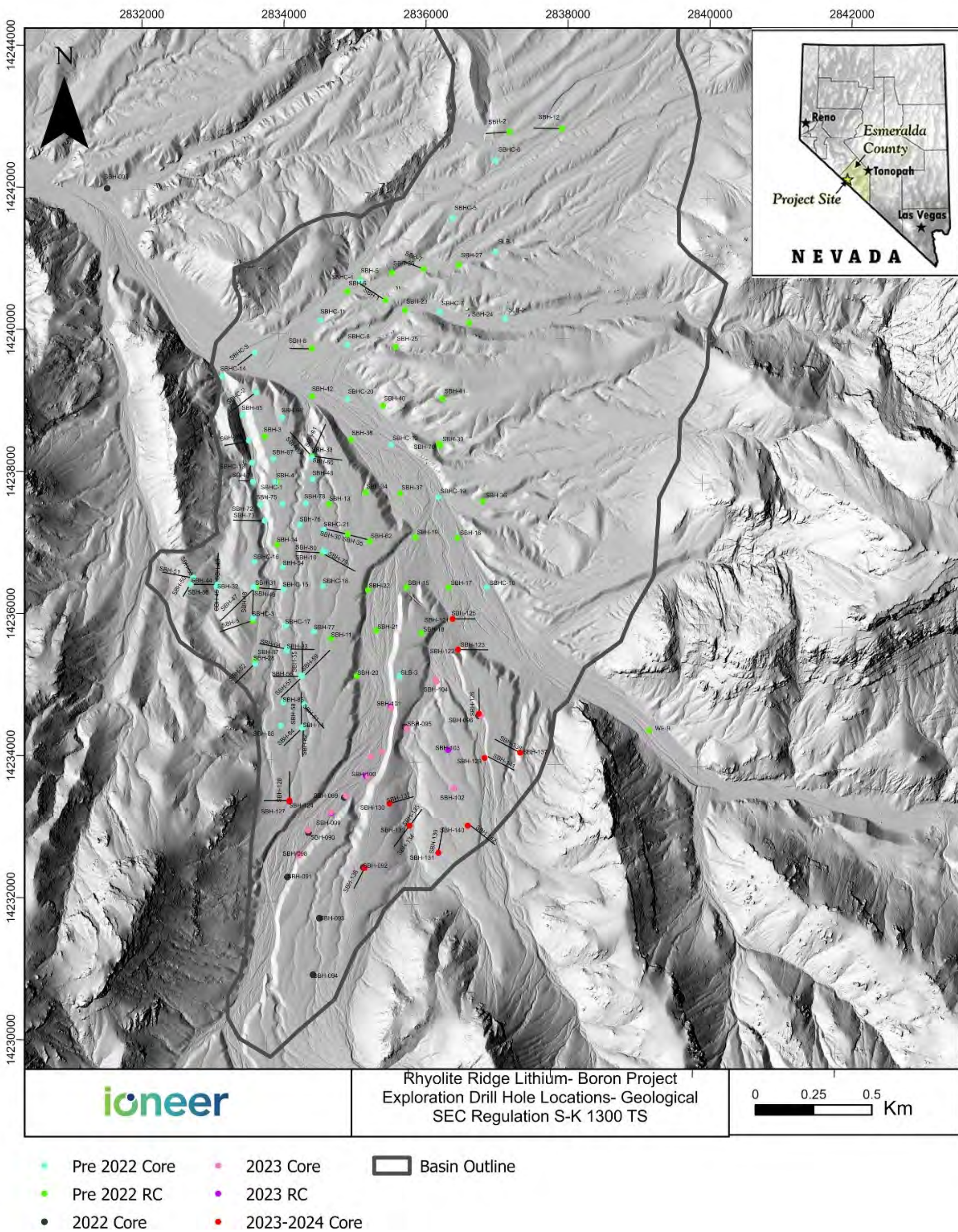


Figure 7-3 – Exploration Drill Hole Locations – Geological

Source: ioneer, 2024

Prior to 2018, all RC drilling was conducted using a 12.7 cm (5-inch) hammer, with a rig-mounted rotary splitter. In zones of high groundwater inflow, the hammer was switched to a tri-cone bit. All pre-2018 core drill holes were drilled using HQ (6.35 cm/ 2.50-inch core diameter) sized core with a double-tube core barrel.

For the 2018 to 2019 drilling program through 2024 Phase 3 drilling, all core holes (vertical and inclined) were tricone drilled through unconsolidated alluvium, then cored through to the end of the drill hole. All but two of the 43 core holes were drilled as PQ (8.5 cm [3.345-inch] core diameter) sized core, with the remaining two as HQ sized core. Drilling was completed using a triple-tube core barrel (split inner tube), which was preferred to a double tube core barrel (solid inner tube) as the triple-tube improved core recovery and core integrity during core removal from the core barrel.

As shown in the drilling campaigns presented above, ioneer completed 22 core holes from November 2023 through February 2024. In the Mine Plan of Operations, the southern quarry wall is located well to the south of the area with estimated mineral resources and mineral reserves due to geotechnical considerations and a sparsity of data. The core holes were drilled to provide additional geotechnical data to allow for better positioning and design of the southern and southeastern quarry walls. The holes also provided additional geological and geochemical data and were used for the August 2025 mineral resource estimate.

All 166 holes from 2022-2024 drilling programs were included in the database. Of the 166 validated holes, all were included in the geological model, with one RC hole excluded as a twin hole and three shallow exploration well holes. All samples were geologically and geotechnically logged to support mineral resource estimates, with acceptable core recovery rates varying by geological unit.

7.2.2. Recovery

For the core drilling programs, core recovery, and rock quality designation (RQD) was recorded for each cored interval. Core recovery was determined by measuring the recovered linear core length and then calculating the recovered percentage against the total length of the core run from the drill advance. The RQD was determined by measuring the solid core pieces greater than 4 inches in length and then calculating the RQD percentage against the total recovered core length. The core recovery values were recorded by the logging geologist and reviewed by the senior ioneer geologist.

During the 2018-2019 drilling program ioneer implemented the use of a triple-tube core barrel to maximize sample recovery and ensure a representative nature of samples. A triple-tube core barrel generally provides improved core recovery over double-tube core barrels, resulting in more complete and representative intercepts for core logging, sampling, and geotechnical evaluation. It also limited any potential sample bias, due to preferential loss/gain of material. The use of a triple-tube core barrel has been used on all core drill programs since the 2018-2019 program.

For the 2010-2012 and 2016 core drilling programs the mean core recovery for all drill holes ranged from 70% to 98%, with >65% of the drill holes having >85% mean core recovery. The majority of the 2010-2012 and 2016 core drill holes reported >95% recovery in the mineralized intervals (M5, B5, S5, and L6).

For the 2018-2019 drilling program, the core recovery for all the drilling ranged from 41% to 100%, with >65% of the drill holes having >90% mean core recovery. In the target mineralized intervals (M5, B5, S5, and L6), the mean core recovery was 86% in the B5, 87% in the M5 and 95% in the L6 units, with most of the drill holes reporting >90% recovery in the mineralized intervals.

For the 2022-2024 drilling programs, the core recovery for the core drilling ranged from 72.7% to 100%, with 58% of core holes having greater than 90% mean recovery. In the target mineralized intervals (M5, B5, S5 and L6), the mean core recovery was 94.5% in the B5, 95.3% in the M5 and 93.9% in the L6 units, with most of the drill holes reporting greater than 90% recovery in the mineralized intervals.

A summary of the mean core recovery and RQD by drilling program for the target zones (M5, B5, S5, and L6) is presented in Table 7-2.

Table 7-2 – Summary of Mean Core Recovery and RQD by Drilling Program and Target Zone

Model Unit	Mean Core Recovery (%)	Mean RQD (%)
Q1	31	4
S3	90	47
G4	94	68
M4	90	71
G5	87	71
M5	92	70
B5	94	64
S5	94	61
G6	95	80
L6	94	71
Lsi	94	68
G7	94	80
Tlv	95	78
Tbx	93	89
Mean	**93**	**61**

For the various RC drilling programs, chip recoveries were not recorded; and therefore, the QP cannot comment on drill sample recovery for this period of drilling.

The QP considers the core recovery for the 2010 to 2012, 2016, 2018 to 2019 and 2022 to 2024 core drilling programs to be acceptable based on statistical analysis, which identified no grade bias between sample intervals with high- versus low-core recoveries. On this basis, the QP has made the reasonable assumption that the sample results are reliable for use in estimating mineral resources.

7.2.3. Drill Hole Logging

Drill hole logging was conducted by core/chip logging geologists either on site at the drill or at the ioneer core storage facility. All logging was reviewed by the senior ioneer geologist. All core and chip samples have been geologically logged to a level of detail to support mineral resource estimation, such that there are lithological intervals for each drill hole, with a correlation to geological/lithological unit assigned to each interval. The core drill holes from all the core drilling programs were also geotechnically logged to a level of detail to support mineral resource estimation.

The QP has reviewed all unit boundaries with the ioneer senior geologist, and where applicable, adjustments have been made to the mineralized units based on the assay results intervals to limit geological dilution.

All drill core boxes and chip trays were photographed during logging, and the photo stored electronically for reference

To date, there has been a total 166 drill holes totaling 10,842 m (35,592 ft) of RC drilling, and 22,339 m (73,291 ft) of core drilling completed on the Project. The majority of the 166 drill holes have been drilled vertically (99) with 67 drilled at an incline, varying from -45 to -70 degrees from the horizontal at an azimuth of between 0- and 332-degrees. A summary of the RC and core drilling completed during the various drilling programs is presented in Table 7-1. A drill hole location map is illustrated in Figure 7-3.

7.2.4. Collar Surveys

At the completion of drilling, drill casing was removed, and drill collars were marked with a permanent concrete monument with the drill hole name and date recorded on a metal tag on the monument. All drill holes were originally surveyed using handheld global positioning system (GPS) devices, which have limited accuracy (±10 ft). For the pre-2018 drill holes, the locations were resurveyed during 2017-2018 using a higher precision differential GPS (DGPS) instrument, in UTM Zone 11 North, North American datum 1927 (NAD27) coordinate system.

From 2018 through 2024, drill hole collars and locatable pre-2018 drill holes were re-surveyed in 2019 using a Trimble R8s Integrated GNSS System DGPS in UTM Zone 11 North, North American datum 1983 (NAD83). This survey improved the location accuracy to ± 3 cm (0.1 ft).

All surveyed coordinates were subsequently converted to Nevada State Plane Coordinate System of 1983, West Zone (NVSPW 1983) for use in developing the geological model. Those drill holes that could not be located had the original coordinates converted to NVSPW 1983 and their locations verified against the original locations.

7.2.5. Downhole Surveys

All inclined core drill holes were surveyed to obtain downhole deviation using a downhole Reflex Mems Gyro tool, except for SBH-72, which could not be surveyed due to tool error. Two core drill holes (SBH-60, SBH-79) were surveyed using an acoustic televiewer instead of the Gyro tool. Drill holes completed during 2022 Phase 1 drilling used a Tru-Shot gyro that was surveyed by the drilling company. 2023-2024 drilling programs, Phase 2 and Phase 3, used IDS for both down hole survey and televiewer surveys.

7.2.6. Drill Hole Data Spacing and Distribution

Drill holes are generally spaced between 91 m (300 ft) and 152 m (550 ft) on east-west cross-section lines spaced approximately 183 m (600 ft) apart. There was no distinction between RC and core holes for the purpose of drill hole spacing. From 2018 onwards, in an effort to minimize disturbance and environmental impact there were multiple occurrences where several inclined drill holes were drilled from the same drill pad and oriented at varying angles away from each other. The collar locations for these inclined drill holes drilled from the same pad varied in distance from 0.3 m to 6 m (1 ft to 20 ft) apart; intercept distances on the floors of the target units were typically in excess of 91 m (300 ft) spacing.

The QP considers the drill hole spacing sufficient to establish geological and grade continuity appropriate for mineral resource estimation.

7.2.7. Relationship Between Mineralization Widths and Intercept Lengths

Both vertical and inclined drill holes have been completed on the Project. Drill holes were angled between -45 and -90 degrees from horizontal and at an azimuth of between 0- and 350-degrees. Inclined drill holes orientated between 220- and 332-degrees azimuth introduced minimal sample bias, as they primarily intercepted the mineralization at angles near orthogonal (102 drill holes with intercept angles between -70 to -90 degrees) to the dip of the beds, approximating true-thickness.

Inclined drill holes orientated between 0- and 220-degrees azimuth, especially those that were drilled at between 20- and 135-degrees azimuth, generally intercepted the beds down dip (7 drill holes with intercept angles between 20-70 degrees), exaggerating the mineralized zone widths in these drill holes.

Based on the geometry of the mineralization, it is reasonable to treat all samples collected from inclined drill holes at intercept angles of greater than 70 degrees as representative of the true thickness of the zone sampled.

7.2.8. QP Statement on Exploration Drilling

The QP is not aware of any drilling, sampling, or recovery factors that could materially affect the accuracy and reliability of the results of the historical or recent exploration drilling. The data are well documented via original digital and hard copy records and were collected using industry standard practices in place at the time. All data have been organized into a current and secure spatial relational database. The data have undergone thorough internal data verification reviews, as described in Section 9.0 of this Report.

7.3. Hydrogeological Drilling and Sampling

7.3.1. Sampling Methods and Laboratory Determinations

Sampling methods have included groundwater monitoring, drilling of three test wells, piezometer installation in selected drill holes, and water quality sampling. Slug and pumping tests were performed in monitoring wells, and airlift recovery tests were conducted during drilling of water exploration boreholes throughout the model area to provide information for outlying hydrogeologic units. Additionally, packer testing was completed in two boreholes. A spring and seep survey was completed.

Groundwater and piezometer monitoring was performed in the field, by HydroGeoLogica Inc. and NewFields personnel. HydroGeoLogica and NewFields were independent consultants contracted by ioneer.

Water quality samples were dispatched to Western Environmental Testing Laboratory for quality analysis for the parameters listed in Table 7-3. Western Environmental Testing Laboratory is a Nevada Division of Environmental Protection certified laboratory for water chemistry testing (Certificate Number NV009252020). Western Environmental Testing Laboratory is independent of ioneer.

Table 7-3 - Water Quality Analysis Parameters

Analyte	Unit	Nevada Profile I Reference Value	Analyte	Unit	Nevada profile I Reference Value
pH	pH units	6.5-8.5	Iron	mg/L	0.6
Total alkalinity	mg/L as $CaCO_3$	--	Lead	mg/L	0.015
Chloride	mg/L	400	Lithium	mg/L	--
Fluoride	mg/L	4	Magnesium	mg/L	150
Sulfate	mg/L	500	Manganese	mg/L	0.1
Total nitrogen	mg/L as N	10	Mercury	mg/L	0.002
Total dissolved solids	mg/L	1,000	Molybdenum	mg/L	--
Aluminum	mg/L	0.2	Nickel	mg/L	--
Antimony	mg/L	0.006	Phosphorus	mg/L	--
Arsenic	mg/L	0.01	Potassium	mg/L	--
Barium	mg/L	2	Scandium	mg/L	--
Beryllium	mg/L	0.004	Selenium	mg/L	0.05
Bismuth	mg/L	--	Silver	mg/L	0.1
Boron	mg/L	--	Sodium	mg/L	--
Cadmium	mg/L	0.005	Strontium	mg/L	--
Calcium	mg/L	--	Thallium	mg/L	0.002
Chromium	mg/L	0.1	Tin	mg/L	--
Cobalt	mg/L	--	Titanium	mg/L	--
Copper	mg/L	1	Vanadium	mg/L	--
Gallium	mg/L	--	Zinc	mg/L	5

7.3.2. Data Verification

Hydrogeologic information was collected as part of exploration activities as well as during several dedicated project-related hydrogeology characterization programs, which were developed and implemented in 2018 and 2019 to characterize the hydrogeology near the proposed quarry and throughout the HCM area. Hydrogeologic data collection, analysis, modelling, and prediction was conducted using standard practices. The groundwater flow model was well calibrated to observed conditions and hydraulic parameters. The model was run to evaluate uncertainty and sensitivity to variability in key parameters. The groundwater characterization plan, modelling, and results were reviewed and approved by State and NV BLM hydrogeologists.

Future detailed mine designs will need to incorporate dewatering wells and in-pit pumping to aid in quarry wall stability and to keep the quarry dry during operations. During dewatering, as groundwater is removed from the system, groundwater elevations will decline in the quarry and surrounding area.

7.3.3. Baseline Hydrogeology

A groundwater quality impacts report was prepared by Piteau in 2023 and includes development, assessment, and evaluation of typical hydraulic properties (i.e., hydraulic conductivity and storage) of various hydrogeologic units over the greater Project area (Figure 7-4).

Hydrogeologic information was collected as part of exploration activities as well as during several dedicated project-related hydrogeology characterization programs, which were developed and implemented in 2018 and 2019 to characterize the hydrogeology near the proposed quarry and throughout the hydrogeologic conceptual model area. This baseline study was developed in accordance with requirements outlined by the Nevada Division of Environmental Protection and the Nevada BLM.

The following summarizes the major findings relating to hydrogeology from the groundwater quality impacts report (Piteau, 2023):

- The regional groundwater system is recharged at higher elevation mountain areas; bases of mountain drainages; and mountain-front alluvial fans and then discharges to lower basin areas as evapotranspiration (i.e., in playas) or water supply discharge.
- Groundwater flow is compartmentalized and limited predominantly by north-south trending, listric-style faulting. This compartmentalization results in limited east-to-west groundwater flow and stair-stepping water levels.
- Higher hydraulic conductivities were observed in the basin fill alluvium and along some fracture zones.
- Groundwater flow through the quarry area is strongly affected (attenuated) due to the presence, and layered nature of the clay-rich ash-fall and lacustrine units of the Cave Spring Formation.

7.3.4. Groundwater Monitoring and Chemistry

Groundwater monitoring at 35 piezometers, three monitoring wells, and three test wells was designed to establish baseline conditions for the Project (Figure 7-4). Eleven piezometer installation locations consist of single or multi-level, grouted-in-place, vibrating wire piezometers with dataloggers. Seven piezometer locations in the area of the proposed quarry were completed with four vibrating wire piezometers each in both vertical and angled boreholes (for a total of 28 vibrating wire piezometers) and the four additional locations were completed with from 1 to 2 vibrating wire piezometers each in a vertical borehole (for a total of 7 vibrating wire piezometers). An upgradient bedrock monitoring well (MW-01) was located in the Cave Spring Drainage near the east Project area boundary. No alluvial groundwater was encountered during drilling at this location. Two downgradient monitoring wells were located in the Cave Spring Drainage wash near the west Project area boundary in the alluvium and bedrock (MW-2A and MW-2B, respectively).

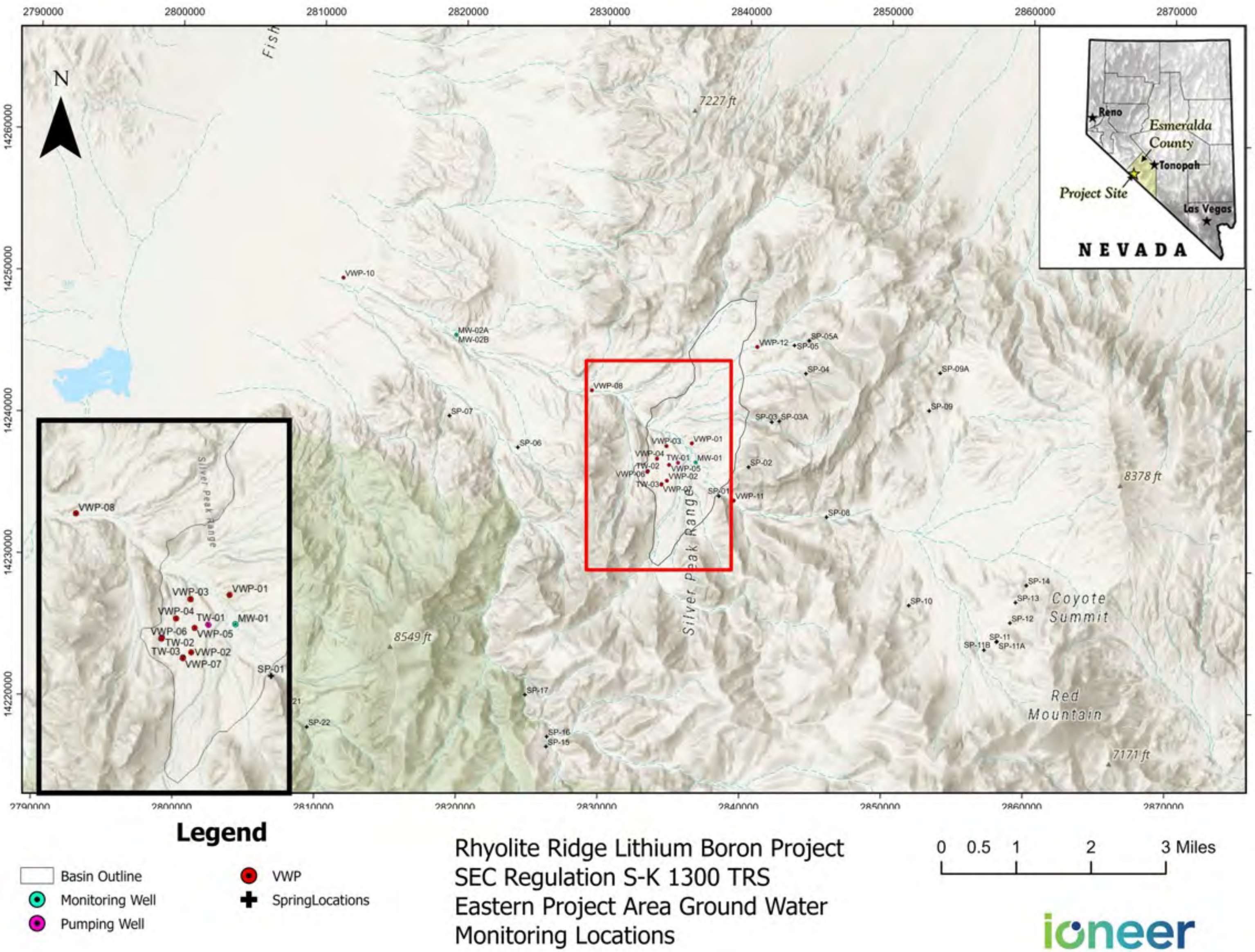


Figure 7-4 – Eastern Project Area Groundwater Monitoring Locations

Source: ioneer, 2024

Water quality samples were collected from each of the monitoring wells. In addition to monitoring wells and piezometers, a spring and seep survey was completed in summer 2019 to verify the presence of, and collect information on, groundwater at spring locations indicated in regional mapping. Water quality samples were collected, and discharge estimates were made at the nine discharging springs. Discharge rates were relatively low, mostly less than 3.79 lpm (1 gpm), with a maximum of 37.1 lpm (9.8 gpm) and a mean of 5.3 lpm (1.4 gpm).

Groundwater monitoring data from multilevel installations generally indicate that upward vertical gradients predominate across the proposed quarry area. This is consistent with confined conditions observed in testing well (TW-01) during drilling.

Table 7-4 summarizes the groundwater elevations in the hydrogeological monitoring wells and the discharge from the surface spring sites.

Table 7-4 – Summary of Hydrogeological Wells and Monitoring Sites

Hydrogeological Monitoring Site	Count	Groundwater Elevation (m asl)			Spring Discharge (lpm)		
		Mean	Minimum	Maximum	Mean	Minimum	Maximum
Vibrating wire piezometers	35	1,808	1,431	1,955	-	-	-
Monitoring well	3	1,663	1,593	1,800	-	-	-
Testing well	3	1,812	1,809	1,817	-	-	-
Spring	27	2,051	1,651	2,355	5.41	0.00	37.1
Total	**68**	**1,898**	**1,431**	**2,355**	**5.41**	**0.00**	**37.1**

Hydrogeological Monitoring Site	Count	Groundwater Elevation (ft asl)			Spring Discharge (gpm)		
		Mean	Minimum	Maximum	Mean	Minimum	Maximum
Vibrating wire piezometers	35	5,932	4,694	6,413	-	-	-
Monitoring well	3	5,455	5,228	5,907	-	-	-
Testing well	3	5,944	5,934	5,961	-	-	-
Spring	27	6,728	5,418	7,726	1.43	0.00	9.80
Total	**68**	**6,228**	**4,694**	**7,726**	**1.43**	**0.00**	**9.80**

Aquifer testing in the quarry area at pumping well TW-1 included a 6-day pumping test with an extended (>30 day) recovery period and a 7-day pumping test with 12-day recovery monitoring at pumping well TW-2. Packer testing was completed in two boreholes associated with VWP-6 and VWP-7. The groundwater monitoring locations are shown in Figure 7-4.

Analytical results from the aquifer tests indicated that hydraulic conductivity varied for the five main project stratigraphic units (i.e., Quaternary Alluvium, Fish Lake Valley Assemblage, Cave Spring Formation, Rhyolite Ride Tuff Breccia, and Paleozoic rocks). Specifically, hydraulic conductivity values of the Quaternary Alluvium range from 2.7 x 101 to 3.9 x 101 feet per day (ft/d); values for the Fish Lake Valley Assemblage range from 1.8 x 100 to 2.2 x 100 ft/d values of the Cave Spring Formation range from 8.1 x 10-4 to 8.5 x 100 ft/d; values of the Rhyolite Ridge Tuff Breccia range from 2.4 x 10-3 to 4.7 x 100 ft/d; and values of the Paleozoics range from 1.1 x 10-2 to 2.7 x 10-2 ft/d.

In general, groundwater was present below the greater Project area at depths of approximately 15.2 m to 45.7 m (50 to 150 ft). Groundwater elevations ranged from greater than 2,500 m (8,202 ft) above mean sea level (amsl) in mountain areas to lower than 1,450 m (4,757 ft) amsl in the Fish Lake Valley. Over the period from roughly 1970 to 2000, groundwater elevations decreased by approximately 5 m (16 ft) in Fish Lake Valley, a phenomenon that is likely related to pumping for agricultural use.

Groundwater chemistry from all sampling locations was relatively similar, with similar major ion compositions. Groundwater was generally a sodium-bicarbonate type water with alkaline pH values ranging from 7.8 to 9.2; alkalinity concentrations between 110 and 290 milligrams per liter (mg/L) as $CaCO_3$; and total dissolved solids concentrations between 260 and 580 mg/L. Groundwater generally had a low sulphate content (70 to 110 mg/L), indicating no significant sources of pyrite oxidation are influencing groundwater quality.

All groundwater samples had arsenic concentrations greater than the Nevada reference value of 0.01 mg/L. Dissolved arsenic concentrations ranged from 0.018 to 0.4 mg/L with higher concentrations observed by roughly an order of magnitude in the upgradient well (MW-1) compared to downgradient (MW-2A and 2B). The arsenic concentrations were consistent with short-term and long-term leaching test results from the geochemical characterization program showing elevated arsenic leaching potential.

Other constituents, detected in groundwater samples, with concentrations elevated relative to the Nevada reference values included aluminum, (0.05 to 1.2 mg/L, with concentrations above the 0.2 mg/L Nevada reference value at all sampling locations), antimony (0.004 to 0.4 mg/L, with concentrations above the 0.006 mg/L Nevada reference values at MW-1, TW-1, and SBH-41, and lower, but still above detection, at MW-2A and 2B), and iron (0.025 to 4.3 mg/L, with concentrations above the 0.6 mg/L Nevada reference values at two sampling locations).

There were 28 spring locations within the boundary of the groundwater model (Figure 7-4), with one spring (SP-6) located within the Project area boundary (to the south of the proposed spent ore storage facility locations). Spring discharge rates were relatively low, mostly less than 1 gallon per minute (gpm), with a maximum of 39.2 lpm (9.8 gpm) and a mean of 5.6 lpm (1.4 gpm).

Spring water chemistry showed a wider range of pH values and constituent concentrations compared to project area groundwater samples, as would be expected given the wider geographic distribution of sampling locations and different source waters. The spring water samples were generally sodium-bicarbonate type waters (including SP-6 in the project area boundary), though water types also included sodium-sulphate, sodium-chloride, and calcium-sulphate.

Sodium-bicarbonate water types were typically found closer to the project area, while springs to the south (SP-16, SP-17, SP-18, and SP-19) had calcium-sulphate to calcium-bicarbonate type water.

Spring water pH values ranged from 7.1 to 9.3, with total alkalinity values between 66 and 370 mg/L as $CaCO_3$, with higher alkalinity values associated with the group of springs to the west in Fish Lake Valley.

Constituents, detected in spring samples, with concentrations elevated relative to Nevada reference values included arsenic (0.003 to 0.15 mg/L, with concentrations above the 0.01 mg/L Nevada reference value at nine of the 15 sampling locations), aluminum (0.03 to 20 mg/L, with concentrations above the 0.2 mg/L Nevada reference value at eight of the 15 sampling locations), and iron (0.05 to 15 mg/L, with concentrations above the 0.6 mg/L Nevada reference values at seven of the 15 sampling locations).

Additional exceedances of Nevada reference values detected in spring water samples included antimony (two locations) and manganese (three locations), and exceedances of pH, fluoride, nitrate, and lead at individual locations. However, it should be noted that some of the exceedances, in particular the aluminum and iron concentrations, may be due to the total analysis of metals and metalloids, rather than analysis of the dissolved fraction.

Springs SP-6, SP-7, Dirk Pearson Spring, and Hot Springs Well to the west of the project area in Fish Lake Valley all had higher total dissolved solids concentrations (between 500 and 1,000 mg/L), with a high sodium concentration signature.

Water chemistry at spring sampling location SP-1 is similar to that of the groundwater in the Project area, with a sodium-bicarbonate water type, alkaline pH, similar major ion signature to TW-1 and MW-1, and elevated arsenic.

The Mineral Ridge mine, located along Mineral Ridge just east of the Cave Spring Drainage surface water divide, may have some minimal influence on the mountain groundwater system, particularly east of the divide, based on the Mineral Ridge Mine Cluster amendment EA. However, the limited size of the permitted mine and overall low hydraulic conductivity of bedrock in the Mineral Ridge area suggest that impacts from that operation will not be significant at the Project scale.

7.3.5. QP Statement on Hydrogeology

The QP is not aware of any factors relating to hydrogeological data collection that could materially affect the accuracy and reliability of the results of the hydrogeological analyses.

Laboratory and field techniques used in data collection and evaluation are appropriate for the purposes used in the Report.

The data are well documented via original digital and hard copy records and were collected using industry standard practices. All data were organized into a current and secure spatial relational database.

7.4. Quarry Stability- Geotechnical Drilling and Sampling

7.4.1. Field Investigation

Geotechnical exploration was performed to support the design and construction of the quarry. Geo-Logic Associates, Inc. (GLA) has stability analyses to provide geotechnical quarry slope designs, completed by performing limit equilibrium stability evaluations and kinematic stability evaluations, including structurally controlled failures and toppling evaluations. GLA's comprehensive services also included:

- Collection of geotechnical drilling data and samples from ioneer's drilling program;
- Planning and execution of a geotechnical laboratory testing program;
- Evaluation of geotechnical laboratory test results;
- Compilation of both GLA collected geotechnical drilling data and previously collected cell mapping data and oriented borehole data into stereonets.

In addition to the standard geologic determination of the basin, it is important in geotechnical analyses to further define areas on the basis of strength characteristics. This would generate a stratigraphic understanding based upon geotechnical strength qualities rather than lithology. EnviroMine (2019) provided a basis for the geotechnical strength relationships, which GLA expanded by detailed geotechnical field data collection, sample collection and laboratory testing.

7.4.1.1. Sample Collection

In 2028, sample collection for geotechnical laboratory testing required sample preservation at the drill rig with minor modifications based upon industry guidelines and the team's prior experience at other soft-rock deposits. For work completed in 2018-2019, a wax sealant was utilized, this practice was replaced in 2022-2024 with redundant plastic bags, and moisture barriers or wrapped in cling-wrap type plastic, then placed in a sealed plastic bag and marked with hole number and depth.

7.4.1.2. 2018-2019 Drilling Program

A 2018-2019 core drilling program was designed primarily for ore definition. The core was also logged for geotechnical data by NewFields' geologists who were trained by Danny Sims, EnviroMine.

A total of 39 PQ-sized (3.345-inch-diameter) and two HQ-sized (2.5-inch-diameter) diamond drill core holes were completed by the core drilling contractor (Idea Drilling) over the course of about six months (July 21, 2018 to January 26, 2019), for a total drill length of approximately 28,913 ft.

The majority of holes were PQ-sized, in part to maximize the available sample size for testing and archiving. Two HQ-sized holes (SHB-73 and SBH-79) were also drilled, in order to acquire core samples for geotechnical laboratory testing.

Acoustic downhole logging was performed by Southwest Exploration Services, LLC, on five select boreholes (SBH-43, SBH-52, SBH-60, SBH-66 and SBH-79) in order to acquire geotechnical data from core holes inclined towards the quarry walls and in order to allow for orientation of structures. The locations for oriented boreholes were selected in consideration of the quarry design at the time. The acoustic logs were checked against the core by EnviroMine and NewFields' geologists and only structures that were confirmed to exist in the core were kept in the downhole data set. The structure data are compiled in downhole tadpole plots for each core hole that was surveyed.

7.4.1.3. 2022-2024 Drilling Program

Three geotechnical drilling campaigns from 2022-2024 were conducted by ioneer. These campaigns totaled 54 boreholes. These boreholes were predominately diamond drill core with six reverse circulation holes. Televiewer was completed on 42 of those core boreholes which was performed by International Directional Services (IDS) a Granite Company. Figure 7-5 shows all phases of the quarries including the boreholes with geotechnical laboratory testing and field data. Geotechnical field data and samples were collected by three GLA Geotechnical Staff, including but not limited to: Rock Quality Designation (RQD), core recovery, fracture frequency and joint condition. GLA collected geotechnical samples to test the various lithologic units encountered in the boreholes and enhance the data previously documented in EnviroMine (2019). The intent was to represent potential layers that may cause structural concern (i.e. weak rock or clay seams), support further lab testing on the smectite rich zone of the M5a subunit, and collect a representative spatial and lithologic distribution of samples that would support an understanding of the complex geotechnical strengths within the basin.

Figure 7-6 shows all quarries including the locations of all boreholes.

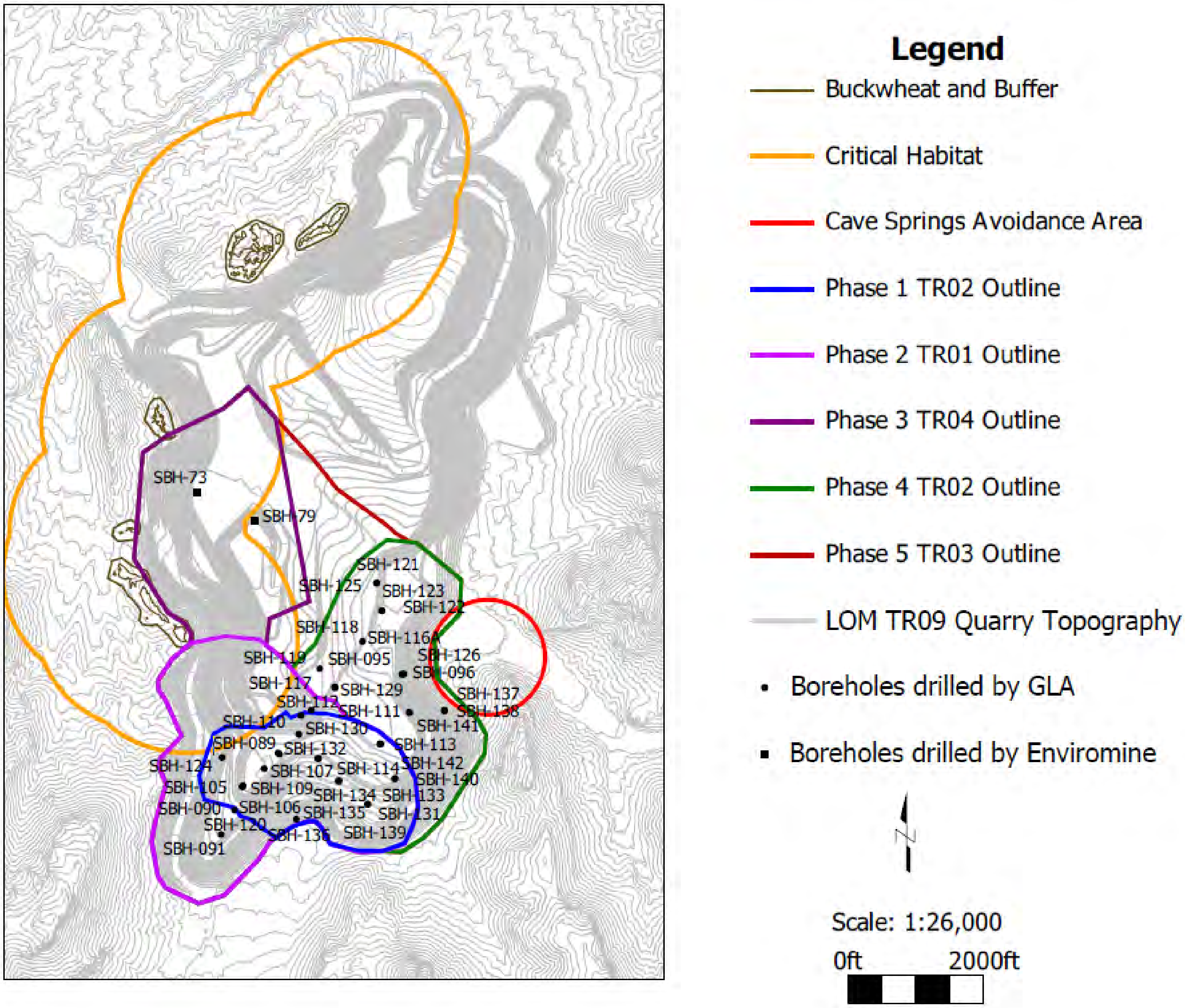


Figure 7-5 - Phase 1-5 and LOM Quarries with Geotechnical Boreholes

Source: GLA, 2025

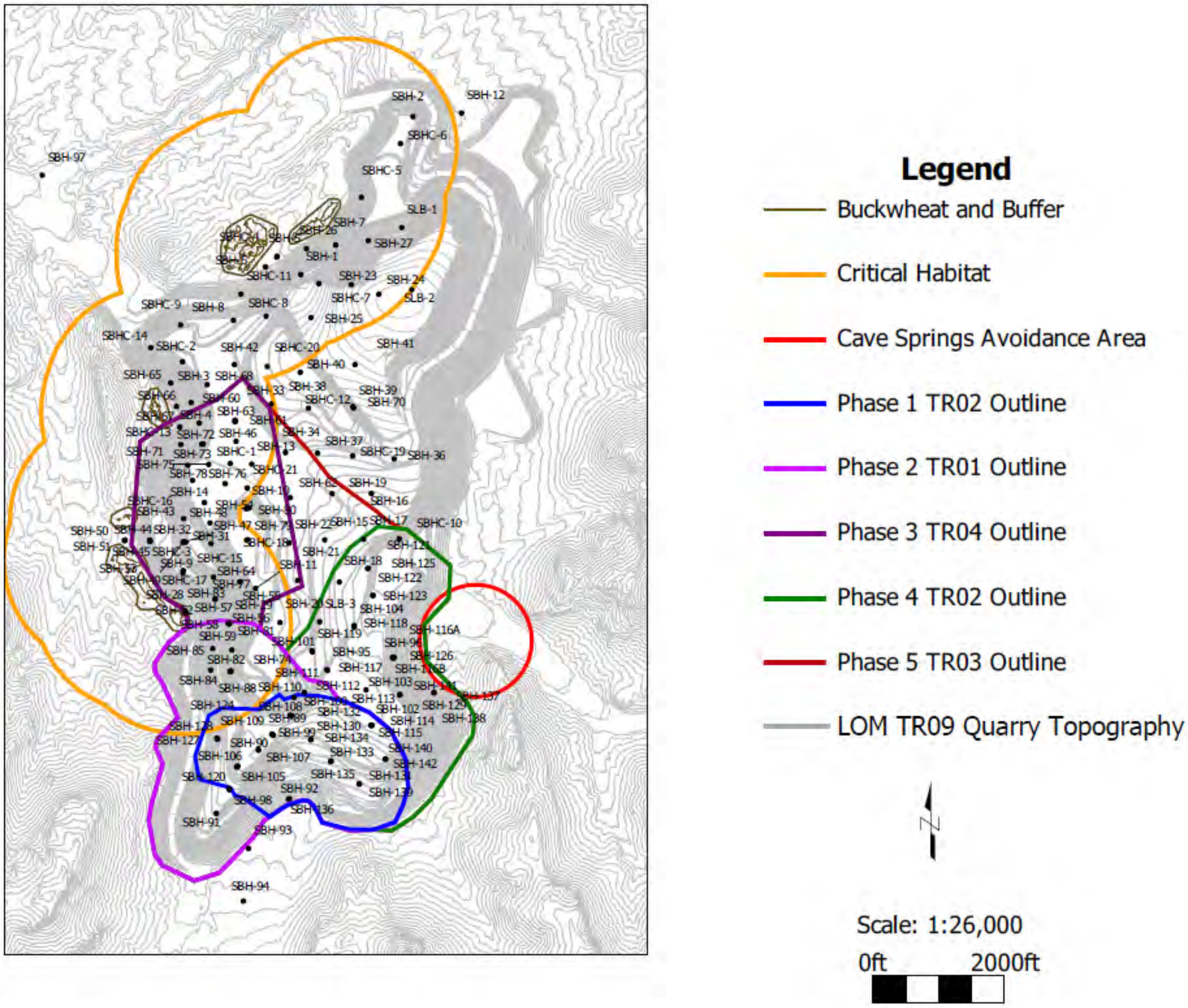


Figure 7-6 - Phase 1-5 and LOM Quarries with All Boreholes

Source: GLA, 2025

7.4.2. Data Verification

The geological data collected for the 125 boreholes located in the footprint of the proposed quarries was reviewed by GSI Environmental and used to develop the geologic model. Geotechnical data from boreholes shown on Figure 7-5 was applied to the geologic units represented in the geologic model to analyze stability of various quarry designs. Geotechnical laboratory testing is sparse within the northern extents of the Phase 3 quarry and there is no laboratory testing within the LOM quarry extents beyond the Phase 5 quarry limits. Although geotechnical laboratory testing is limited within the Phase 3-5 and LOM extents, there are drill holes within these design extents that provide confidence of lithologic units present and their orientations.

7.4.3. Laboratory Testing and Cell Mapping

7.4.3.1. 2018-2019

The following data and discussion from 2018-2019 are from Enviromine (2019) The data obtained from cell mapping is referred to as rock fabric. The structures that are measured have a minimum length of 3 ft; these are too short and too abundant to identify on maps and analyses as unique structures so instead, the data are used statistically for kinematic analysis. Structure types identified in the field include bedding, lithologic contacts, single joints, joint sets, veins and faults. The average orientation (strike and dip) were recorded for each structure or structure set. For open bedding and joint sets, the average spacing distance between structures and the exposed length for the longest structure were recorded. Bedding orientation was also measured in any cell where the orientation was certain, even though there was no parting between beds. In these outcrops where there is no parting on bedding planes there are no spacing or length data that can be recorded for bedding and those fields are left blank. For joint sets, a minimum of three parallel or sub parallel joints with a minimum length of 3 ft must occur in a single counting line in order to be recorded. This eliminates "random structures". For single joints, veins and faults, a minimum length of approximately 10 ft was required. While traversing the surface for cell mapping, significant faults that were interpreted from outcrops were documented. Cell locations are included in Figure 7-7.

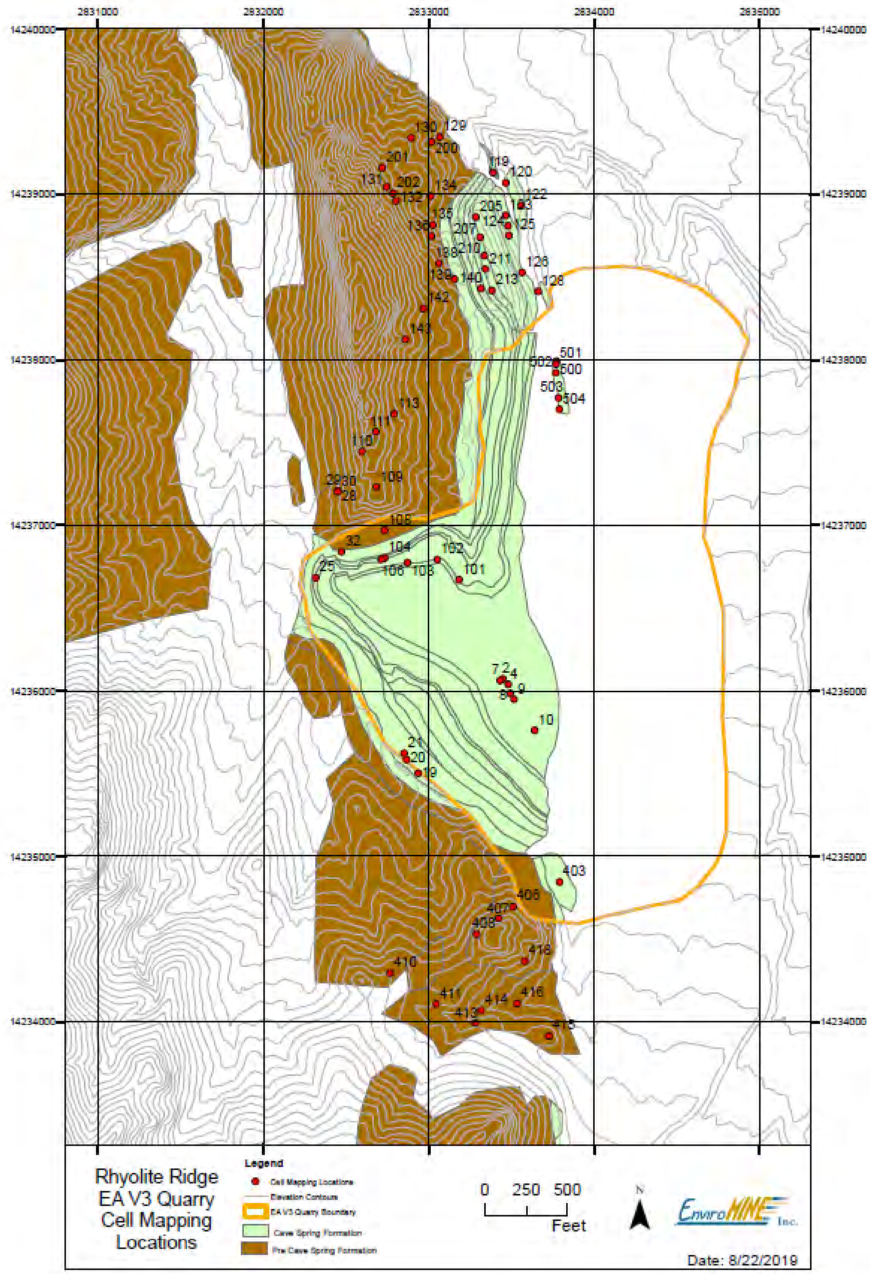


Figure 7-7 - Cell Mapping Locations

Source: EnviroMine, 2019

Laboratory testing was specified with general conformance to ASTM industry standards. Uniaxial compression, triaxial compression, small scale direct shear, disc tension, and density tests were performed on core. A small scale direct shear test was also performed for a remolded sample of clay taken from the top of the M5 unit (M5a clay). All laboratory testing in Table 7-5 was performed by Call & Nicholas, Inc. in Tucson, Arizona.

Table 7-5 - Laboratory Tests Conducted by Engineering Rock Type

Number of Each Test Listed						
Rock Type	**Bulk Density**	**Uniaxial Compression**	**Young's modulus/ Poisson's Ratio**	**Triaxial Compression**	**Indirect Tensile**	**Direct Sheer**
Q1	0	0	0	0	0	0
SW	6	2	2	1	3	5-BD
S3	14	2	1	1	11	5-BD
G4	12	3	1	3	6	0
M4	1	0	0	1	0	1
G5	3	0	0	2	1	0
M5a	0	0	0	0	0	4-BD
M5	3	0	0	3	0	0
B5	11	1	1	3	7	2-BD
S5	10	3	1	2	5	4-BD 2-JT
G6	8	3	1	1	4	0
L6	0	0	0	0	2	5-BD
LSI	0	0	0	0	0	0
G7	13	4	1	3	6	0
TBX	11	1	1	3	7	1-JT
WT	0	0	0	0	0	0
Z	19	4	2	3	12	1-JT
F	0	0	0	0	0	0
Totals	**111**	**23**	**11**	**26**	**64**	**30**

- 23 Unconfined Compressive Strength (UCS) tests were performed, In accordance with ASTM D7012-10.
- 26 triaxial compression tests (TCS) were performed, in accordance with ASTM D2664-95.
- 64 indirect Brazilian disk (tension) tests were performed in accordance with ASTM D3967-05.

7.4.3.2. 2022-2024

New laboratory testing, subsequent to EnviroMine (2019), was performed at the GLA soil testing laboratory located in Grass Valley, CA and at the Montana Tech Soils and Rock Laboratory located in Butte, Montana.

Additional geotechnical laboratory tests completed and considered for the analyses documented herein are listed below:

- Seventy-Eight (78) direct shear tests were performed. Soil-like samples were tested based on ASTM D3080 and rock samples (discontinuity shear tests) were tested based on ASTM D 5607;

- Sixty-Seven (67) Consolidated Undrained (CU) Triaxial tests were performed (ASTM D4767);

- Twenty-One (21) Unconfined Compression Strength (UCS) tests were performed (ASTM D7012) with twenty-three (23) results incorporated from EnviroMine equaling forty-four (44) total UCS test results;

- Six (6) slake durability tests (ASTM D4644);
- Nine (9) fine specific gravity (ASTM D854);
- Seven (7) particle size analysis (ASTM D6913).

Discontinuity mapping is an important component of rock slope engineering design. Although drilling and sampling can provide some information on rock mass structure as well as physical samples for testing, only through mapping of rock exposures can discontinuity length and large-scale roughness characteristics be measured. Discontinuity mapping provides the basis for all of the structurally controlled failure analyses performed in the course of a quarry slope design.

Previous cell mapping data is documented in EnviroMine (2019), including the cell mapping locations for each cell, which are depicted on Figure 7-8 Cell Mapping Locations. Because the quarry outline has changed since EnviroMine (2019) and additional acoustic televiewer data has been collected, GLA has updated the evaluation.

Acoustic televiewer was completed on 42 of the total 54 boreholes drilled from 2022-2024. Review of acoustic televiewer data provides an understanding of the amount and general orientation of discontinuities and assists in creating a more robust structural dataset, however, the data is limited by the scale of the borehole.

Stereonets were compiled from the cell mapping data collected by EnviroMine (Figure 7-8) as well as for the acoustic televiewer data collected in the recent drilling campaigns completed by ioneer (Phases 1, 2 and 3). The description of fracture types is as follows: BD (bedding), CT (contact), FT (fault), JS (joint set), SJ (single joint) and VN (vein). The density concentrations show where the data is concentrated within the stereonet in terms of dip and dip direction. The televiewer data for the individual boreholes was similar enough to be compiled into one representative stereonet. However, the data is heavily biased toward shallowly dipping bedding as seen in Figure 7-9. Heavy bedding data bias is not unusual for televiewer data, but it weights the stereonet poles so heavily that any other pole concentrations that may be present appear to be nonexistent. To solve this, the compiled stereonet was filtered by dip ranges greater than or equal to 30° to show where pole concentrations occurred at steeper dips less influenced by bedding (Figure 7-10).The filtered stereonet, along with the complete compiled stereonet were used within the kinematic analyses and a combination of pole concentrations from both the cell mapping data and televiewer data were used together to develop geologic sets. These stereonets are used to determine geologic set numbers necessary for the kinematic and backbreak analyses.

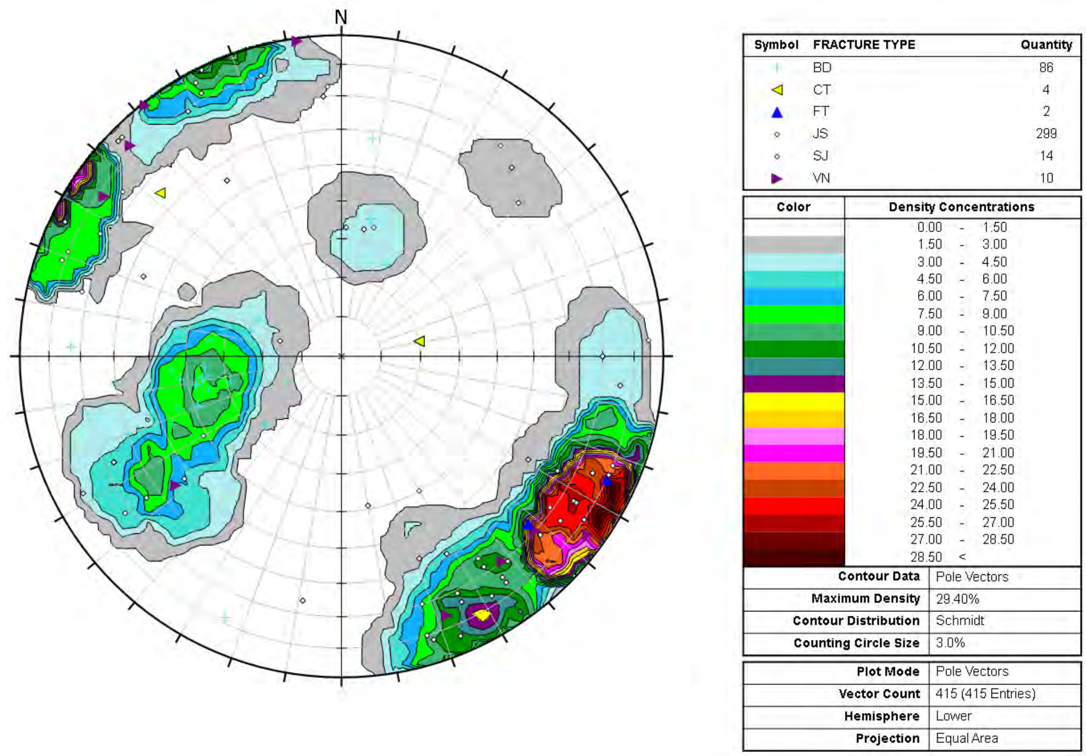


Figure 7-8 – Stereonet: Combined Cell Mapping Data

Source: GLA, 2025

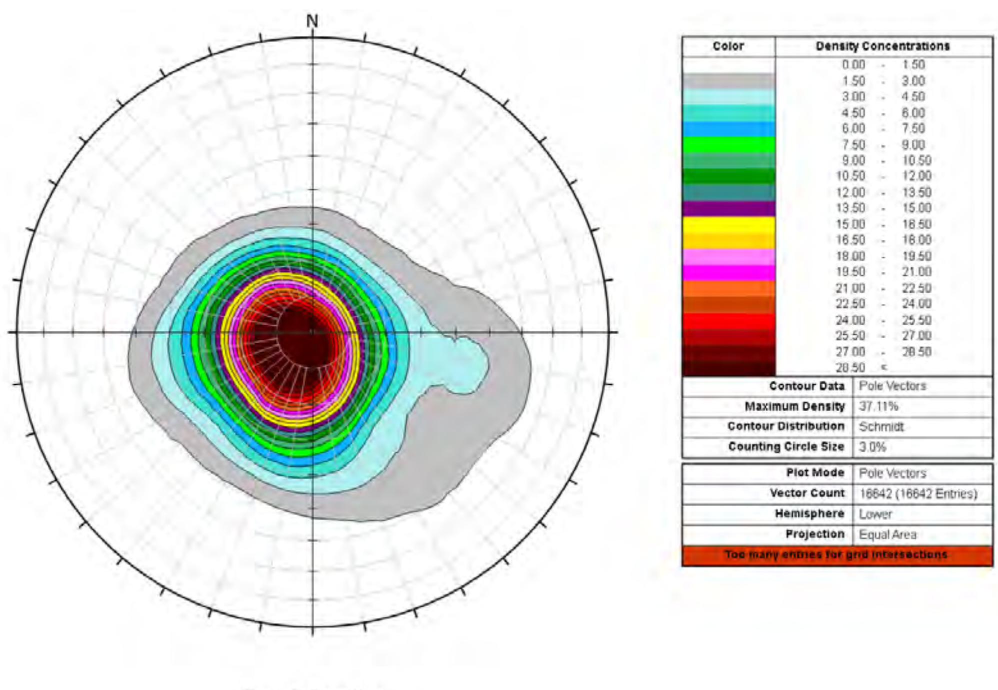


Figure 7-9 - Stereonet: Combined Televiewer Data

Source: GLA, 2025

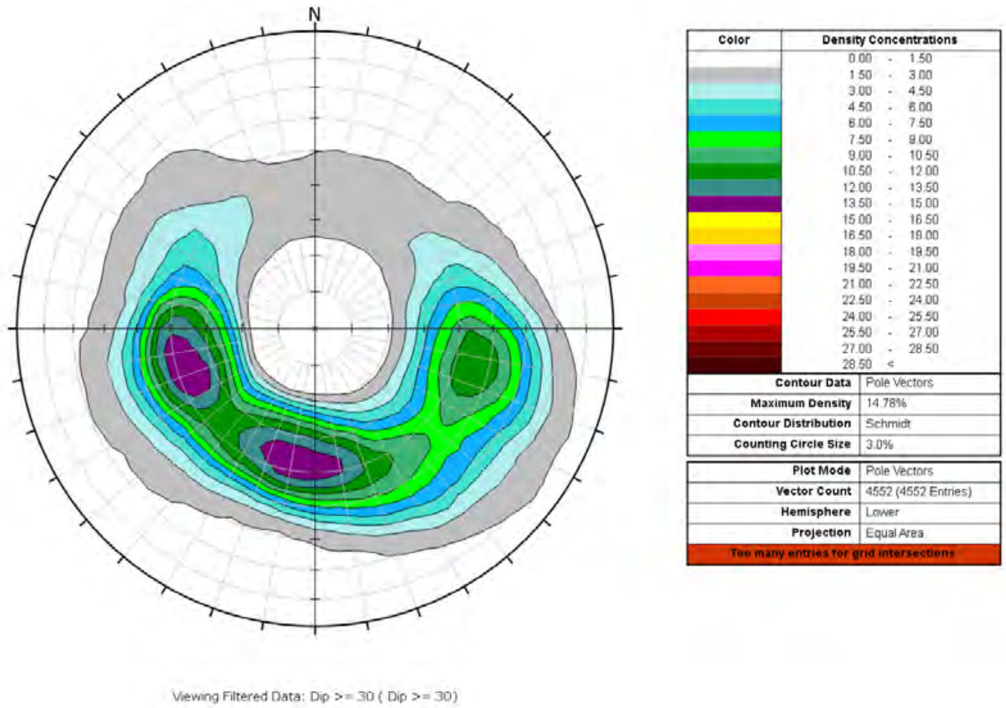


Figure 7-10 - Stereonet: Combined Televiewer Data, Dip >= 30 degrees

Source: GLA, 2025

7.4.4. Statement on Geotechnical

The QP is not aware of any drilling, sampling, or recovery factors that could materially affect the accuracy and reliability of the results of the geotechnical drilling data used to support the quarry design and construction parameters.

Laboratory and field techniques used in data collection and evaluation are appropriate for the purposes used in the Report.

The data are well documented via original digital and hard copy records and were collected using industry standard practices at the time of collection. It is the QP’s opinion that the geotechnical data regarding the characterization and material properties of the highwall stability are adequately characterized, however additional exploration drilling/trenching and quarry excavation, sampling, and testing will help refine and improve understanding of the geotechnical characteristics of the quarry area providing greater confidence in the ability to protect the critical areas and facilities proposed to be developed at Rhyolite Ridge.

7.5. Infrastructure - Geotechnical Drilling and Sampling

7.5.1. Sampling Methods and Laboratory Determinations

Geotechnical exploration was performed to support the design and construction of the spent ore storage facility, overburden storage facilities, and the process facilities areas. The objectives of the spent ore storage and process facility geotechnical study included:

- Characterizing soil, rock, and near surface groundwater conditions;

- Identifying subsurface hazards that may influence site development of the spent ore storage facility and process facilities areas;
- Identifying potential borrow sources for construction materials.

NewFields performed a field investigation in 2018 which involved logging and sampling geotechnical holes and test pits. Eleven geotechnical holes were drilled in the Project area (Table 7-6 and Figure 7-11).

Respec completed another investigation in 2022 that focused on the South overburden storage area (Figure 7-12).

Table 7-6 – Summary of Geotechnical Exploration Locations

Facility Area	Type	Total	Linear Footage (m)
Process	Drill hole	6	89.6
Spent ore storage facility	Drill hole	5	98.3
South OSF	Drill Hole	2	61.6
North OSF	Drill Hole	2	27.4
	Total	**15**	**276.9**
Facility Area	**Type**	**Total**	**Mean Depth (m)**
Process	Test pit	8	5.5
Process access road	Test pit	3	4.7
Spent ore storage facility	Test pit	11	4.6
Spent ore storage facility access road	Test pit	2	3.8
	Test Pit Total	**24**	**4.8**

Facility Area	Type	Total	Linear Footage (ft)
Process	Drill hole	6	294.0
Spent ore storage facility	Drill hole	5	322.5
South OSF	Drill Hole	2	202
North OSF	Drill Hole	2	90
	Total	**15**	**908.5**
Facility Area	**Type**	**Total**	**Mean Depth (ft)**
Process	Test pit	8	18.2
Process access road	Test pit	3	15.5
Spent ore storage facility	Test pit	11	15.0
Spent ore storage facility access road	Test pit	2	12.5
	Test Pit Total	**24**	**15.9**

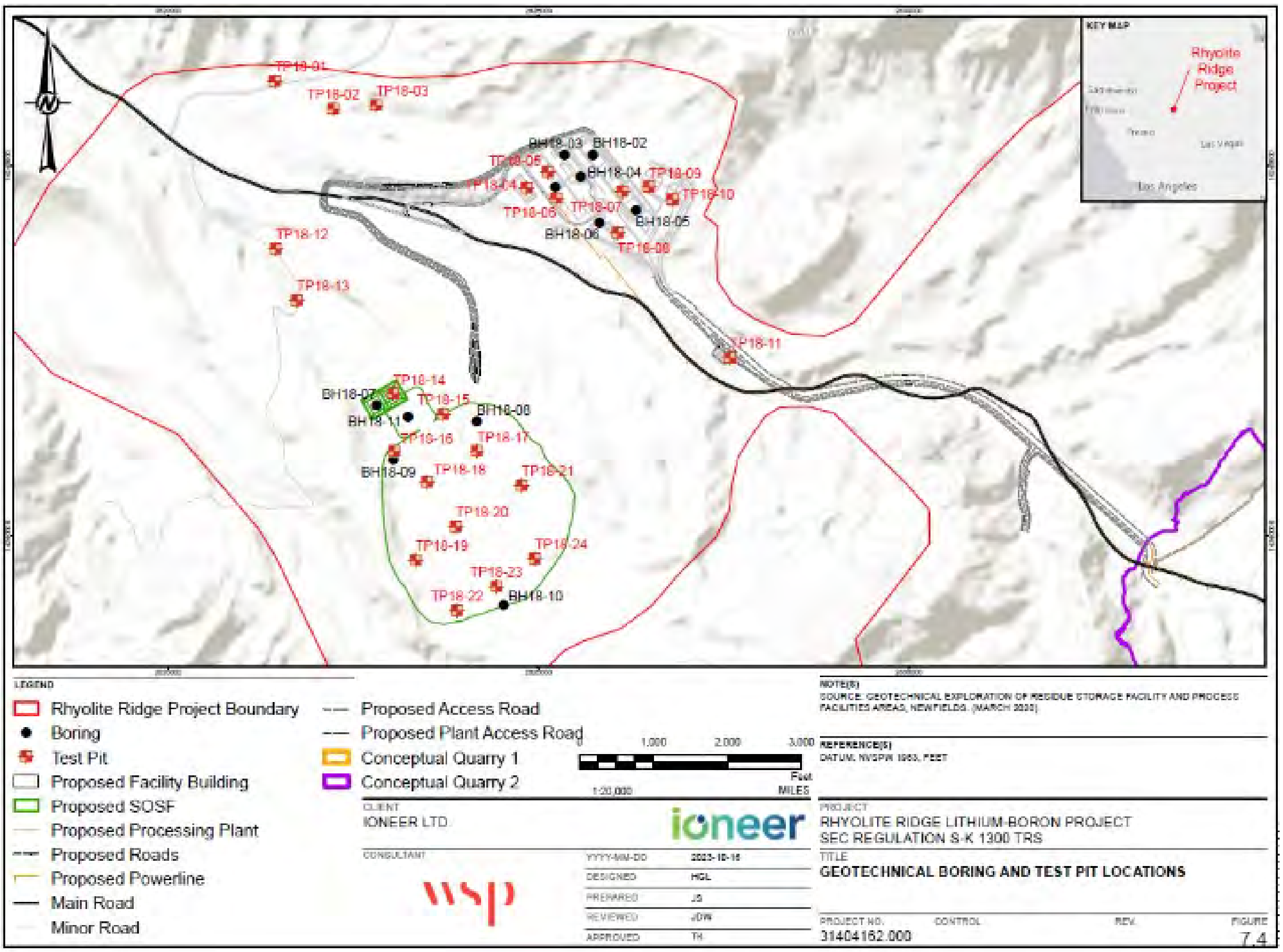


Figure 7-11 – Geotechnical Boring and Test Pit Locations for Plant Site and Spent Ore Storage Facility

Source: ioneer, 2023

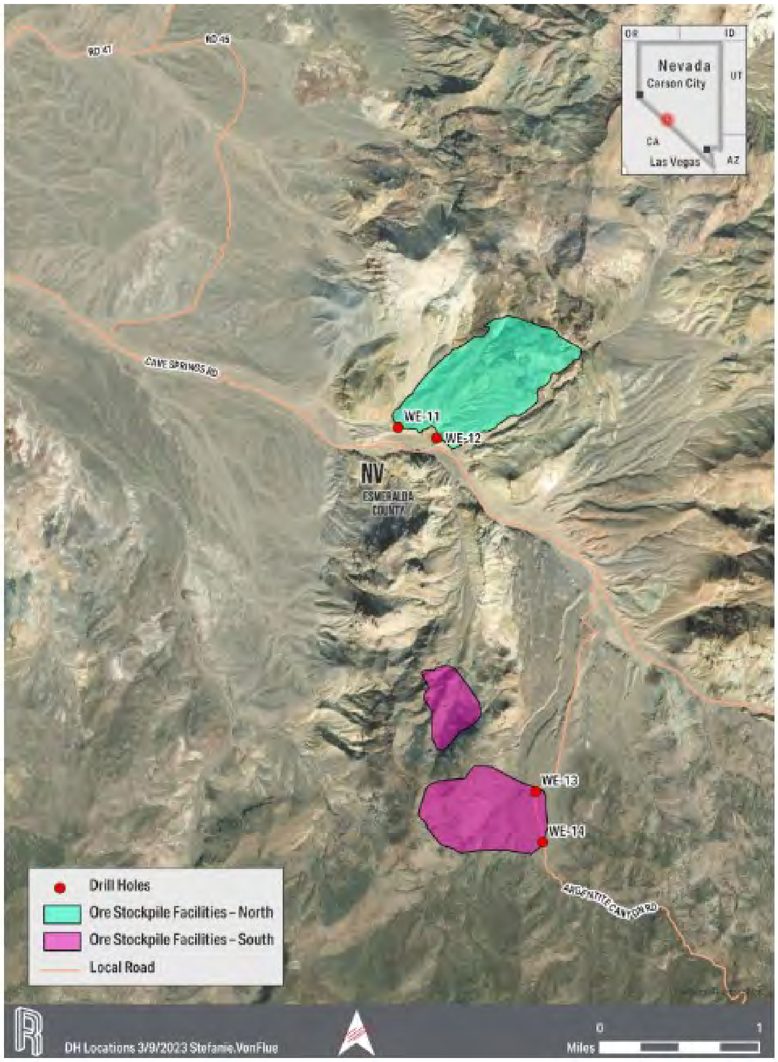


Figure 7-12 – Geotechnical Boring for Overburden Storage Facility

Source: ioneer, 2023

For the spent ore storage facility and process facility areas, a combined field investigation was completed. Six drill holes were drilled to total depths ranging from 8.1 to 30.9 m (26.5 to 101.5 ft) below ground surface (bgs) in the proposed process facilities area while 5 holes were drilled to total depths of 12.3 and 30.6 m (40.5 and 100.5 ft) bgs in the proposed spent ore storage facility location. An additional four drill holes were advanced to 31 m (101 ft) bgs for the overburden storage facilities areas. Soil samples were collected in the upper 10 ft portion of the drill hole at 0.75 m (2.5 ft) intervals and at a 1.5 m (5 ft) interval below this depth.

For the overburden storage facilities, four sonic drills holes were completed that extended to depths from 4.6 to 30.5 m (15 to 100 ft) bgs, Drill activities included completion of Standard Penetration Resting and collection of sample for subsequent laboratory characterization.

Twenty-four test pits were excavated in the Project area (Table 7-6 and Figure 7-11). Eleven test pits were excavated to depths of 2.7 to 5.8 m (9 to 19 ft) bgs in the proposed process facilities area and along the proposed process facility access road. A total of 13 test pits were excavated to depths of 2.1 to 5.6 m (7 to 18.5 ft) bgs in the planned spent ore storage facility location and along the proposed access road to the spent ore storage facility. Bulk samples were collected in the test pits where changes in stratigraphy were observed.

Sampling methods in support of siting of surface infrastructure included drill holes and test pits. Bulk samples were collected using a standard penetration test (SPT) split spoon (3.5 cm [1.38-inch] inside diameter; ASTM D 1586) and Modified California (Mod-Cal) sampler (6.35 cm [2.5-inch] inside diameter; ASTM D 3550), alternating at 0.76 m (2.5 ft) intervals in the upper 3 m (10 ft) and at 1.5 m (5 ft) intervals below. Split spoon samplers were driven using a 64 kg (140 lb) hammer with an approximate drop of 0.76 m (30 inches) until a maximum penetration of 0.5 m (18 inches) was achieved, when possible. The number of blows required to drive the sampler the final 12 inches of the 18-inch drive were recorded on the field logs. Table 7-7 following summarizes the major findings and aspects of the geotechnical exploration.

Table 7-7 - Geotechnical Program Results

Parameter	Area	Notes and Findings
Subsurface condition	Proposed process facility area	Subsurface is poorly stratified and consist of intermixed alluvium deposits of sand and gravel with trace to some silt. Granular surface soils are loose to a depth of 1 to 2 ft; medium dense to dense from 2 to 12 ft bgs; and becoming very dense with depth. No bedrock encountered.
	Planned spent ore storage facility area	Subsurface is sorted to poorly sorted and moderately stratified. Deposits consist of sand and gravel with trace to some silt. Granular surface soils are loose to a depth of 1 to 2 ft; dense to very dense from 2 to 6 ft bgs; becoming very dense with depth. No bedrock encountered.
Groundwater	Proposed process facility and planned spent ore storage facility areas	Free water or indications of past groundwater conditions were not encountered. Groundwater is not anticipated to influence construction activities or operation of the facilities.
Resistivity testing		Subgrade soils have a severe corrosion potential when in contact with metallic objects and varied between 200 to 1,530 ohm-centimeters (Ω-cm)
Chemical testing		The soluble sulphate content of seven soils samples ranged from 19.3 ppm to 918.2 ppm. One soil sample has a Class 0 severity of potential exposure or a negligible exposure potential; the other six samples are classified as Class I severity of potential exposure.
	Proposed process facility area	Soil conditions are potentially corrosive (i.e., soil might contain chemical components that can react with construction materials, such as concrete and metals, that may damage foundations and buried pipelines)

7.5.2. Data Verification

The geotechnical database containing the results of the 2018/2019 site investigation campaigns has been reviewed as well as the strength properties of the various geological units as determined from the analysis of the available laboratory test results. The strength properties were incorporated into the geological model, and multiple quarry designs were examined. The geotechnical sampling and testing data were sufficient for design of the spent ore storage facility and development of geotechnical recommendations for the process facilities.

7.5.3. Testwork In Support of Spent Ore Storage and Process Facility Locations

Geotechnical data were collected in the field by NewFields and Respec personnel, who are independent of ioneer. NewFields and Respec logged lithologies, material characteristics, and other pertinent field observations and collected geotechnical soil samples. Soils were classified in general accordance with the Unified Soil Classification System (USCS) as described in ASTM D2487 and D2488.

Soil samples were sent to either the NewFields AASHTO-accredited geotechnical laboratory in Elko, Nevada or the Wood Rogers laboratory in Reno, Nevada. The samples were tested to characterize moisture content, grain size, and plasticity. The testing laboratories are independent of ioneer.

Chemical testing was performed by Sunland Analytical in Rancho Cordova, California to evaluate the corrosion potential of the soil samples. The Sunland Analytical laboratory is a California State accredited environmental laboratory and is independent of ioneer.

7.5.4. QP Statement on Geotechnical

The QP is not aware of any drilling, sampling, or recovery factors that could materially affect the accuracy and reliability of the results of the geotechnical drilling data used to support the spent ore storage facility and process plant facility foundations.

Laboratory and field techniques used in data collection and evaluation are appropriate for the purposes used in the Report.

The data are well documented via original digital and hard copy records and were collected using industry standard practices at the time of collection. All data were organized into a current and secure spatial relational database. It is the QP’s opinion that the geotechnical data regarding the characterization and material properties of the spent ore and associated waste materials to be stored in the spent ore storage facility are not adequately characterized, and additional investigation will be necessary to better understand long-term performance of these materials.

8. SAMPLE PREPARATION, ANALYSES, AND SECURITY

8.1. Field Sampling Techniques

Several different sampling techniques have been used on the Project since 2010. The nature and quality of the sampling from the various sampling programs is summarized in the following sub-sections.

8.1.1. RC Drilling

A chip sample was collected every 1.52 m (5 ft) from a 12.7 cm (5-inch) diameter drill hole and split using a rig-mounted rotary splitter. Samples, with a mean weight of 4.8 kg (10.5 lbs) were submitted to ALS Minerals laboratory in Reno, NV (ALS Reno), where they were processed for assay. RC samples represent 50% of the total intervals sampled to date.

Due to the nature of RC samples, lithological boundaries are not easily honored; therefore, continuous 5-foot sample intervals were taken to ensure as representative a sample as possible. Lithological boundaries were adjusted, as needed, by the senior ioneer geologist once the assay results were received.

For the pre-2017 RC, two samples were collected for every interval (one main sample and one duplicate). Only the main sample was submitted for analysis. Starting in 2017, only one RC chip sample, an approximately 10 kg (22 lbs) sample, was collected every 1.52 m (5 ft) depth interval and all samples were submitted for analysis.

8.1.2. Core Drilling

Core samples were collected from HQ and PQ size drill core, on a mean interval of 1.52 m (5 ft), and cut using a water-cooled diamond blade core saw (2018 onward), or a manual core splitter (pre-2018). Samples, with a mean weight of 1.8 kg (4 lbs), were submitted to ALS where they were processed for assay.

Sample intervals were selected to reflect visually identifiable lithological boundaries wherever possible, to ensure sample representativeness. Determination of the mineralization included visual identification of mineralized intervals using lithological characteristics including clay and carbonate content, grain size and the presence of key minerals such as searlesite and ulexite. A visual distinction between some units, particularly where geological contacts were gradational was initially made. Final unit contacts were then determined once assay data were available.

The QP was not directly involved during the exploration drilling programs; however, the visual identification of mineralized zones and the process for updating unit and mineralized contacts was reviewed with the ioneer senior geologist during the site visit. The QP evaluated the identified mineralized intervals against the analytical results and agrees with the methodology used by ioneer to determine material mineralization.

Prior to 2018, core samples were collected on a mean 1.52 m (5 ft) downhole interval and cut in two halves using a manual core splitter. The entire sample was submitted for analysis with no sub-sampling prior to submittal. During the 2018-2019 drilling program, core samples were collected for every 1.52 m (5 ft) down hole interval and cut using a water-cooled diamond blade core saw using the following methodology for the two target units and all other samples. The 2018-2019 sampling methodology is illustrated in Figure 8-1.

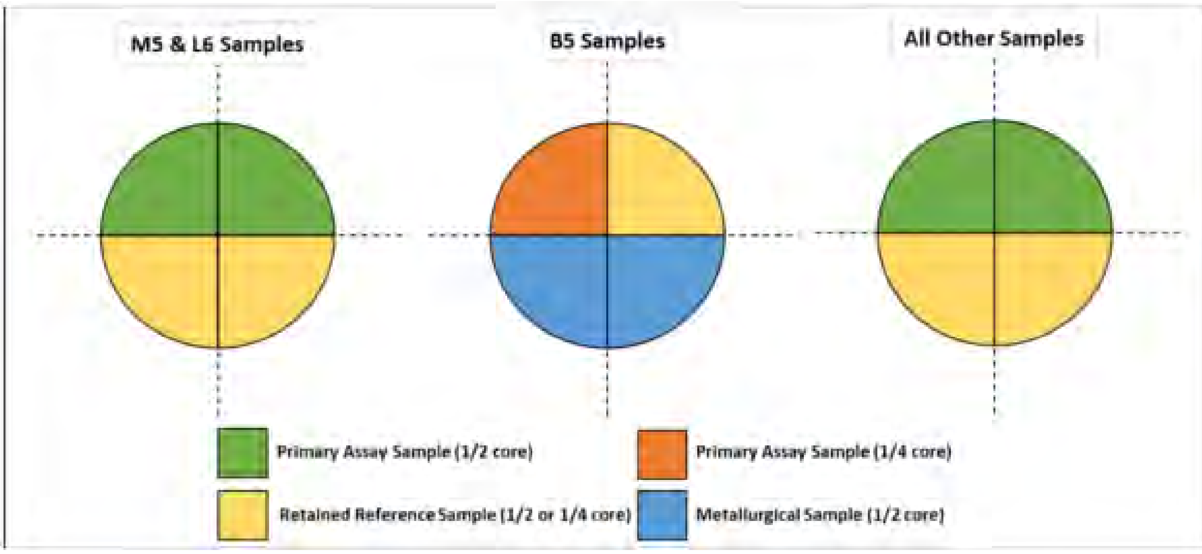


Figure 8-1- Example Diagram of Sampling Protocol

Source: ioneer, 2020

For the 2022 through 2024 drilling programs, a mix of PQ and HQ core holes were drilled. For HQ holes, core was cut and ½ of the sample was selected for analysis. For PQ holes, core was cut and ¼ of the sample was selected for assay analyses.

Once cut, the ½ core (M5, L6, and others) or ¼ core (B5) samples selected for analyses were placed in poly-woven sample bags for submission to the laboratory. A pre-form sample tag that included a sample number and bar code was affixed to the sample bag and the drill hole and sample interval depths were recorded on the sample bag. The samples were then packaged for transport to ALS Reno.

8.2. Sample Results

To date there has been a total of 13,481 samples collected on the Project of which 6,861 samples are from the cored drill holes and 6,620 samples are from the RC drill holes. Not included in this total are 1,579 quality assurance and quality control (QA/QC) samples. A summary of the sampling results by drilling program and drill type is presented in Table 8-1.

Table 8-1 - Sampling Summary by Drilling Program and Drill Type

Drill Type	Year	Sample Count	Mean Sample Length (m)	Min. Sample Length (m)	Max. Sample Length (m)
RC Drill Holes	2010-2012	2,399	1.52	1.52	1.52
	2016-2017	3,465	1.52	1.52	1.52
	2018-2019	26	1.52	1.52	1.52
	2023 (Phase 2)	730	1.52	1.52	3.05
Core Drill Holes	2010-2012	3,053	1.58	0.30	3.05
	2016-2017	437	1.95	0.43	3.05
	2018-2019	1,633	1.46	0.24	1.83
	2022 (Phase 1)	423	1.46	0.61	2.13
	2023 (Phase 2)	587	1.46	0.46	2.65
	2023-2024 (Phase 3)	728	1.43	0.46	3.35

Drill Type	Year	Sample Count	Mean Sample Length (ft)	Min. Sample Length (ft)	Max. Sample Length (ft)
	Total:	**13,481**	**1.52**	**0.79**	**2.43**
Drill Type	**Year**	**Sample Count**	**Mean Sample Length (ft)**	**Min. Sample Length (ft)**	**Max. Sample Length (ft)**
RC Drill Holes	2010-2012	2,399	5.0	5.0	5.0
	2016-2017	3,465	5.0	5.0	5.0
	2018-2019	26	5.0	5.0	5.0
	2023 (Phase 2)	730	5.0	5.0	10.0
Core Drill Holes	2010-2012	3,053	5.2	1.0	10.0
	2016-2017	437	6.4	1.4	10.0
	2018-2019	1,633	4.8	0.8	6.0
	2022 (Phase 1)	423	4.8	2.0	7.0
	2023 (Phase 2)	587	4.8	1.5	8.7
	2023-2024 (Phase 3)	728	4.7	1.5	11.0
	Total:	**13,481**	**5.0**	**2.6**	**8.0**

8.3. Sample Audits and Reviews

The QP reviewed the core and sampling techniques during a site visit in August 2023. The QP found that the sampling techniques were appropriate for collecting data for the purpose of preparing geological models and Mineral Resource estimates.

There were no audits performed on the RC sampling or for the pre-2018 drilling programs.

8.4. Analytical and Test Laboratories

ALS Minerals (formerly ALS Chemex) facilities in Reno, Nevada, USA and Vancouver, BC, Canada (ALS Vancouver) were used for the preparation and analysis of the samples, respectively. ALS Mineral is independent of ioneer.

ALS Minerals implements a global quality management system that meets all requirements of International Standards ISO/IEC 17025:2017 and ISO 9001:2015. All ALS Minerals' geochemical hub laboratories, including ALS Reno, are accredited to ISO/IEC 17025:2017 for specific analytical procedures.

8.5. Sample Security

Prior to 2018, samples were securely stored on site and then collected from site by ALS Reno staff and transported to the laboratory by truck. ALS Minerals maintained all chain of custody forms. For the 2018-2019 drill holes, core was transported daily by ioneer and/or NewFields personnel from the drill site to the ioneer secure core shed (core storage) facility in Tonopah. In 2022-2024, core was transported daily by ioneer or WSP personnel from the drill site to the ioneer core facility. Core awaiting logging was stored in the core shed until it was logged and sampled, at which time, it was stored in secured sea cans inside a fenced and locked core storage facility on site.

Samples were sealed in poly-woven sample bags, labelled with a pre-form numbered and barcoded sample tag, and securely stored until shipped to or dropped off at ALS Reno by NewFields personnel. Chain of custody forms were maintained by NewFields and ALS Reno. ALS Minerals maintains a globally recognized internal sample security protocol. All samples submitted to the laboratory are assigned a unique barcode and entered into the ALS Minerals global laboratory information management system for tracking throughout the stages of laboratory analysis from preparation to final certificate issue.

8.6. Sample Preparation

All RC and core samples were processed, crushed, split, and then a sub-sample was pulverized by ALS Reno. Analysis was performed at ALS Vancouver and samples were shipped directly between the preparatory laboratory in Reno and the analysis laboratory in Vancouver. Samples were stored in a secure manner and sample chain of custody followed internal ALS Minerals' protocols once the samples were received from ioneer.

8.7. Analytical Method

ALS Vancouver performed the following tests on the RC and core samples.

- Sample preparation (PREP-31y): crusher/rotary splitter combination; crush to 70% less than 2 mm, rotary split off 250 g, pulverize split to better than 85% passing 75 µm.
- Multi-element analysis (ME-MS41): evaluation by aqua regia with inductively coupled plasma mass spectrometry (ICP-MS) finish for 51 elements, including lithium and boron.
- Boron (B-ICP82a): high-grade boron samples (>10,000 ppm boron), were further analyzed by NaOH fusion/ICP high-grade analysis.
- Inorganic carbon (C-GAS05): 95% of the 2018-2019 samples were analyzed for inorganic carbon by $HClO_4$ digestion and CO_2 coulometer.
- Fluorine (F-ELE81a): 30% of the 2018-2019 and selective samples since 2022 were analyzed for fluorine by KOH fusion and ion selective electrode.

8.8. Quality Control and Quality Assurance Programs

Several variations of QA/QC procedures were implemented on the Project for the various drilling programs. The QA/QC procedures for each program are as follows:

- 2010-2011 program: one of five different standard reference material (SRM) samples and a small number of field blanks were inserted regularly into the sample sequence.
- 2016-2017 program: a duplicate sample was collected every 20th primary sample. Field blanks and SRMs were also inserted approximately every 25 samples to assess QA/QC.
- 2018-2019 program: QA/QC samples comprising 1 field blank and 1 SRM were inserted into each sample batch every 25 samples. Submission of field duplicates, laboratory coarse/pulp replicates and umpire assays were submitted in later stages of the 2018-2019 drilling program.
- 2022-2024 program: QA/QC samples comprising of 1 SRM and 1 field blank were inserted into each sample batch approximately every 25 samples. Submission of field duplicates were taken either at time of original split or later on in the sampling process. Check assays for 2022-2024 were submitted post drilling.

Table 8-2 summarizes the QA/QC sample counts by drilling program and type, as well as the percentage of the total assay samples submitted by program.

Table 8-2 - Summary of QA/QC Samples by Drilling Program and Type

Drill Program	Total Assay Samples	QA/QC Samples				
		SRM	Blank	Duplicate	Total QA/QC Samples	Percentage of Total Samples
2010-2012	6,071	556	44	-	600	10%
2016-2017	4,388	221	161	161	543	12%
2018-2019	1,475	67	70	70	207	14%
2022- 2024	1,547	132	95	103	330	21%
Total:	**13,481**	**976**	**370**	**334**	**1,680**	**12%**

8.9. Verification of Sampling and Assaying

The results of the verification of sampling and assaying are presented in Chapter 9 of the Report.

8.10. QP's Opinion Regarding Sample Preparation, Security, and Analytical Procedures

It is the QP's opinion that the sample preparation, security, and analytical procedures applied by ioneer and its predecessor ALM were appropriate and fit for the purpose of establishing an analytical database for use in grade modeling and preparation of Mineral Resource estimates, as summarized in the Report.

ioneer has implemented procedural changes to the QA/QC protocol that were recommended by a previous QP. These recommendations were:

- QA/QC protocol has recently been revised to include field duplicates, laboratory replicates (coarse and pulp replicates) and check assay analyses at a second independent commercial laboratory, assure this practice is followed for future programs.
- Discontinue use of Standard 10.14 and Standard 10.12. Implement use of new mid-range standards to compliment grade coverage of remaining standards 10.11, 10.13 and 10.15. This will be in place for the next round of drilling.
- Complete the fusion assay for boron over limits on QA/QC assays.
- Compile all the QA/QC data for the project into one set of files.

9. DATA VERIFICATION

9.1. Exploration Data Compilation

All available ioneer and American Lithium Minerals Inc (ALM) exploration drilling data, including survey information, downhole geological units, sample intervals and analytical results, were compiled by ioneer and provided to Independent Mining Consultants, Inc. (IMC) in the form of a Microsoft (MS) Access database file and Excel files.

The compiled drilling data for the South Basin of Rhyolite Ridge comprised of 166 drill holes totaling 33,519 m (109,969 ft) of drilling. Of the 166 drill holes, all have down hole geologic data (33,519 m or 109,969 ft) and 160 holes have assay data (20,869 m or 68,469 ft in 13,481 intervals). Compiled supporting documentation for the ioneer and ALM drilling data included laboratory certificates, descriptive logs, core and chip photos, collar survey reports, geological maps, and internal report documents.

Collar survey and downhole geological unit intervals, sample intervals and analytical results were imported into the IMC software drill hole database manager to facilitate statistical comparisons, plots of sections, and level plans of the data.

IMC received the geologic interpretation of the South Basin geology as surface files of the roof and floor of the various seams and surface of the underlying bedrock formation. During the 2024 update of the geology interpretation, a fault block model was developed which offset the seams. The fault blocks were provided to IMC as a set of solids. Both the seam data and fault block data were incorporated into a regularized block model by IMC for use as a basis for the Mineral Resource estimate. The geologic interpretation used for the June 2025 mineral resource estimate is current as of July 2024. A memo from GSI Environmental (dated August 8, 2024) describes the work completed to develop the current seam and fault blocks in a 3D Leapfrog Model using information through the Phase 3 drill program.

The South Basin topographic data was provided to IMC by ioneer as a dxf file showing 9.14m (30 ft) contours.

9.2. Data Verification by Qualified Person

For the pre-2018 drilling, all drill hole logs were recorded by logging geologists on formatted paper sheets, and then transcribed into MS Excel. For the 2018-2019 drilling program, drill hole data and observations by the logging geologists were recorded using formatted logging sheets in MS Excel. Data and observations entered into the logging sheets were reviewed for transcription or keying errors or omissions by senior ioneer staff and NewField's geologists prior to importing the data into the MS Access drill hole database.

The QP performed data validation on the drill hole database records using available underlying data and documentation including, but not limited to, original drill hole descriptive logs, core photos, and laboratory assay certificates. Drill hole recovery data and QA/QC results were also reviewed. The QP completed a site visit to review the Project site, geology, current exploration methods, and results and identify any concerns and provide recommendations for consideration by ioneer.

During the site visit, the QP visited the ioneer core shed in Tonopah NV, and the South Basin area. The QP observed the active drilling, logging, sampling process, and interviewed site personnel regarding exploration drilling, logging, sampling, and chain of custody procedures. The site visit helped the QP to develop an understanding of the general geology of the Project. The QP was also able to visually confirm the presence of a selection of monumented drill holes and reviewed documentation for the logging, sampling, and chain of custody protocols from the previous drilling programs.

For validation of the data used by IMC for the development of the Mineral Resource, IMC completed the following checks:

- Drill hole collar elevations versus topography;
- Comparison of the drill hole geologic logging with the block model geology;
- Checks of database assays with original lab certificates;
- Review of the QA/QC data including assays of standards, duplicates and blanks;
- Review of the density data.

9.2.1. Drill Hole Collar Checks

The drill hole collar elevations were compared to a surface file of the topography and the differences were noted. For the 166 holes in the database, 74% of the collars were within ±0.6 m (±2 ft) of the topography surface and when the limit was expanded to ±1.52 m (±5 ft), 93% of the collars were within this tolerance. The differences can be attributed to the smoothing of topography when creating the surface file for the comparison or the preparation of the drill pad surfaces to form a flat surface for the drilling equipment.

9.2.2. Comparison of Geologic Logging to Block Model Geology

The block model geology is based on a set of roof and floor seam surface files and solids of the fault blocks. The seams and fault blocks are assigned to the block model (7.62 x 7.62 x 1.52 m or 25 x 25 ft in plan and 5 ft high) on a whole block assignment. No partial block percentage or sub-blocks are used in the model. A variable in the assay database was assigned the seam and fault block from the model block which contained the midpoint of the assay interval. The seam assignment from the block model was compared to the logged seam in the assay file. The exact match between the logged seam in the assay file with the modelled seam was 90% and was a 96% match when expanded to the seams above and below in the block model. This comparison had the same results for the seams estimated with grades (seams G5 to Lsi). Sections and level plans along with drillhole print outs were reviewed to confirm the comparisons. In areas where a logged seam fell within the seam above or below in the block model, most of the differences were plus or minus one assay interval of ±1.52 m. In areas of larger differences, the drill holes were near fault block boundaries or in the case of a few holes, the holes were angle holes with no downhole survey and the block model seams were based on adjacent and vertical drill holes.

9.2.3. Certificate Checks

IMC requested copies of the original certificate of assay for 12 holes primarily focused on the drilling in 2020 – 2024 (10 holes) and 2 holes from earlier drilling. The pre-2020 drilling was included in the 2020 Resource Estimate for which WSP (Golder) had done a complete check of the drill hole data to certificates of assay. IMC entered the certificate of assay values into an Excel database and used that to check against the database originally provided by ioneer. The assay data was checked for the elements of boron, lithium, sodium, potassium, manganese, calcium, aluminum and iron. The 12 holes represent 8.4% of the drillholes with assay data received by IMC and the 10 holes of the 2020-2024 drilling represent 29% of the holes with assay data. The 734 assay intervals were checked for the elements out of a database with 12,372 assayed intervals (5.9%) and 4 transcription errors were found.

The database for the June 2025 mineral resource included 12 additional drill holes and additional assays for some holes which were not totally assayed for the April 2024 mineral resource estimate. An additional 1,109 assay intervals were added to the database. Three holes were selected for certificate checks (SHB-129, SBH-134 and SBH-140) with 110 intervals being checked (10%) with one interval having a transcription error.

9.2.4. Check of Standards, Blanks and Duplicates

As noted in Section 8 of the Report, ioneer routinely inserted standards, duplicates, and blanks into the samples sent to ALS for assaying. This check data was provided to IMC as part of the total database information. IMC has reviewed the standards, duplicates, and blanks and concluded that the results are within acceptable ranges for providing support to the assay database used for the development of the mineral resource estimate.

9.2.4.1. Standards

Ioneer uses 5 certified standards that are inserted into the sample stream for assaying. Table 9-1 includes the certified values for the standards, the number of each standard used, and the results of the assaying of the standard samples. Figure 9-1 and Figure 9-2 show the result of the assays of the standards compared to the certified values. In some cases, the over limit fusion assay was not done for the high-grade boron standard, and these are shown on the graph at 10,000 ppm. For lithium, it appears that a couple of the Standard 15 samples may have been mislabeled as Standard 12. In addition, Standard 12 has been discontinued from use due to its consistent failure rate on boron grades. For drilling programs after 2016, the pass rate for standards is 96% for both lithium and boron. For boron standards above 10,000 ppm, 50% were not submitted for overlimit assaying; those that were submitted show a good correlation with the standard value except for Standard 12. It has been discussed that standards be selected which match the grade of the material so assaying methodology requirements match the standards selected. During discussions with ioneer, the QP has recommended that a couple mid-range certified standards be included in the sample stream; one close to 5,000 ppm and another one between 5,000 and 10,000 ppm. This will provide a better range of standards to be inserted in the sample stream being assayed. New standards have been obtained and will be included in the next drilling campaign.

Table 9-1 - Certified Values and Assay Results for the Standards

Standard	Number	Standard Li, ppm	Avg. Value Li, ppm	Standard B, ppm	Number Assayed for over limit	Avg. Value for over limit, B, ppm
11	40	723.1	761	15,000	20	15279
12	42	1171.8	1273	14,090	21	17224
13	41	1180.0	1287	17,390	20	17432
14	57	814.0	774	1,740		
15	37	1606.4	1716	16,000	20	16320

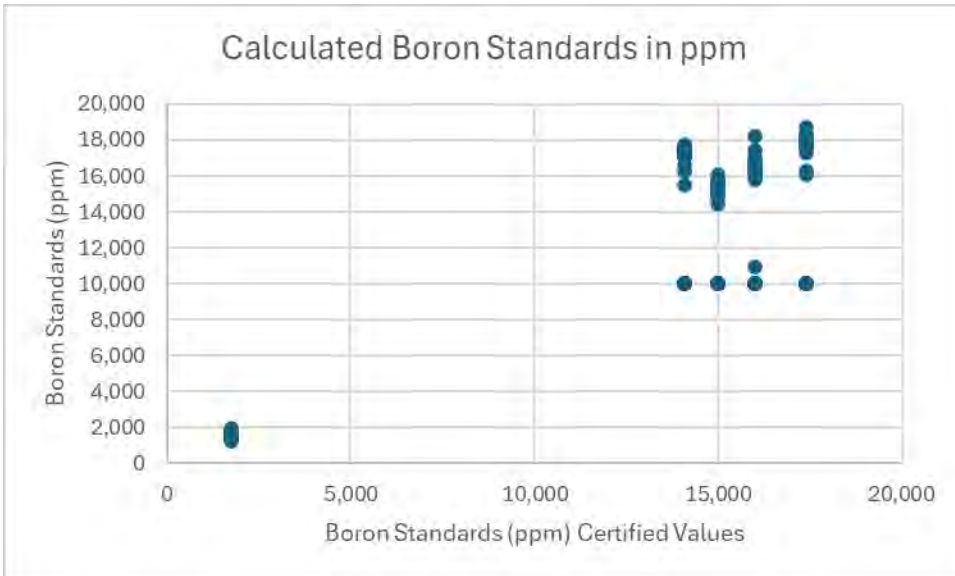


Figure 9-1 - Assayed Boron Standards Versus Certified Values

Source: ioneer, 2024

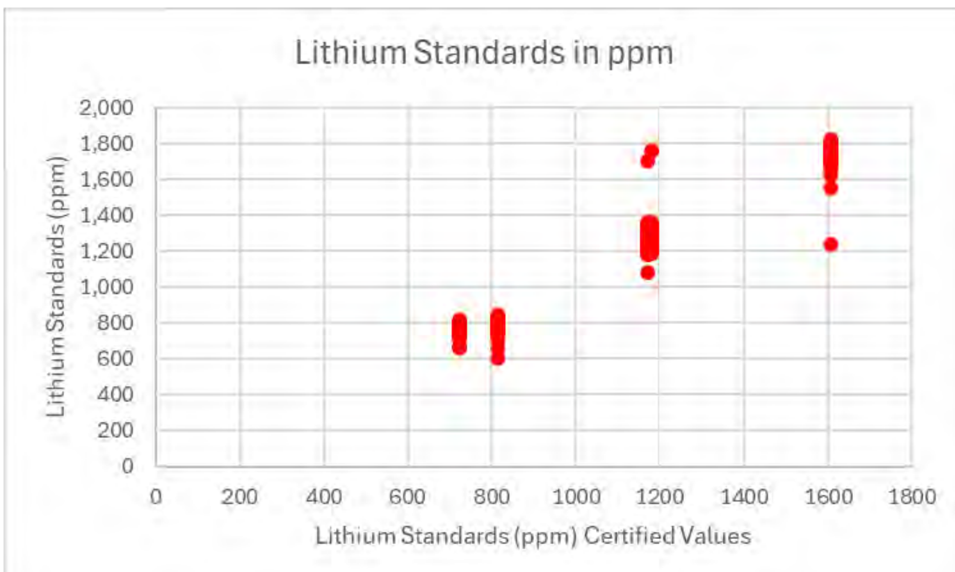


Figure 9-2 - Assayed Lithium Standards Versus Certified Values

Source: ioneer, 2024

9.2.4.2. Blanks

Blank samples have been routinely inserted into the sample stream to check on contamination from one sample to another. The majority of the samples have come back with zero or almost zero values for both boron and lithium. There were a few samples with elevated values which may have indicated contamination between samples when a blank was inserted into a zone of high-grade mineralization. Table 9-2 shows the average grade, maximum and minimum values for the inserted blanks by seam. Overall, historical boron blanks have a 90% pass rate and a 99% pass rate during Phase 1 - Phase 3 drilling programs, as depicted in Figure 9-3. For lithium, blanks have a 98% pass rate historically and 99% pass rate during Phase 1 - Phase 3 drilling programs, as depicted in Figure 9-4. ioneer is continuing to research possibilities of the sources of contamination as shown in boron grades.

Table 9-2 - Assay Results for Blanks by Seam

Seam	# of Blanks	Boron			Lithium		
		Average, ppm	Minimum, ppm	Maximum, ppm	Average, ppm	Minimum, ppm	Maximum, ppm
Q1	5	10.0	10.0	10.0	5.1	0.6	9.5
S3	47	22.8	10.0	350.0	11.8	0.8	269.0
G4	7	11.4	10.0	20.0	5.2	0.8	11.3
M4	14	11.3	10.0	30.0	8.3	2.6	24.3
G5	2	10.0	10.0	10.0	9.0	3.8	14.2
M5	55	47.8	10.0	170.0	21.7	3.7	185.0
B5	55	137.8	10.0	1030.0	18.1	3.9	77.9
S5	26	30.7	10.0	250.0	9.3	1.6	19.8
G6	8	16.3	10.0	30.0	7.3	1.3	11.3
L6	44	40.7	10.0	330.0	10.7	2.3	56.5
Lsi	5	30.0	10.0	80.0	4.4	3.0	5.9
G7	6	13.3	10.0	20.0	9.4	0.9	34.4
Tlv	2	10.0	10.0	10.0	1.1	1.1	1.2
Tbx	5	10.0	10.0	10.0	2.7	0.9	6.8

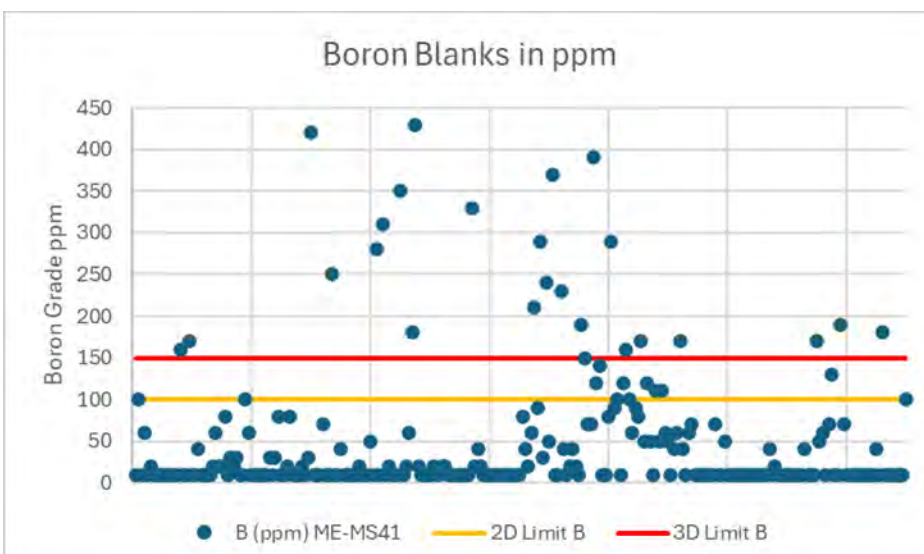


Figure 9-3 - Assay Boron Blanks

Source: ioneer, 2024

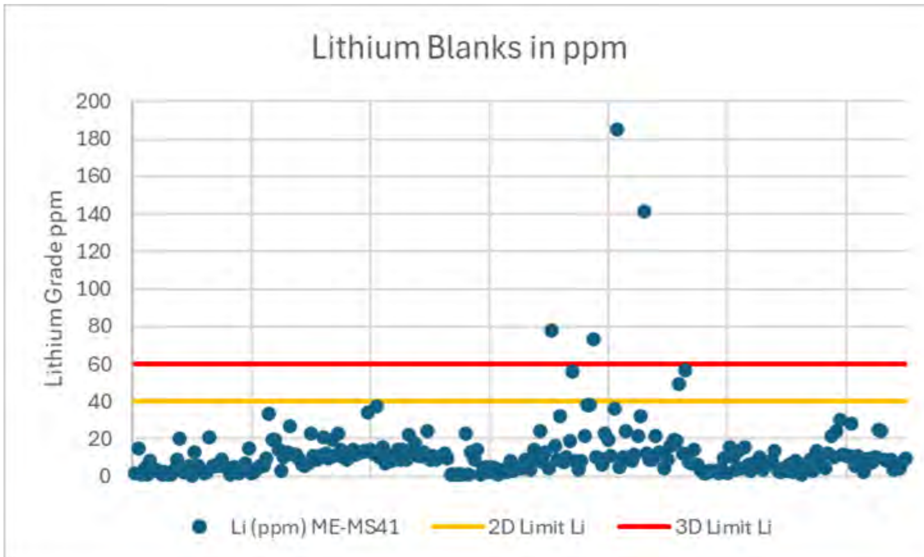


Figure 9-4 - Assay Lithium Blanks

Source: ioneer, 2024

9.2.4.3. Field Duplicates

Duplicate samples have been made at site by ioneer personnel for insertion into the assay sample stream. The duplicate samples have a unique sample number linked to the original sample in the ioneer database and were prepared based on sample type or core size. For RC samples, a duplicate from the drill rig was taken every 200' of the hole. The PQ core was cut in half and the other half was quartered. The original sample was one of the quarter samples and the other quarter was the duplicate sample. For the HQ core, sample intervals for duplication were cut in half, one half for the original sample, and the other half for the duplicate sample. Table 9-3 shows the number of duplicate samples and the average grades of the original and duplicate samples by seam. Figure 9-5 and Figure 9-6 display the results of the duplicate sample program for boron and lithium, respectively. The R2 value shows very good correlations between the original assays and the duplicates with values of 0.9947 for boron and 0.9959 for lithium.

Table 9-3 - Original and Field Duplicate Assays by Seam

Seam	# of Duplicates	Boron			Lithium		
		Original Assay, Average ppm	Duplicate Assay, Average ppm	R2 value	Original Assay, Average ppm	Duplicate Assay, Average ppm	R2 value
Q1	1	25	20		41	46	
S3	67	97	96	0.9828	286	296	0.9939
G4	8	72	70	0.9842	215	210	0.9830
M4	23	64	61	0.9364	1194	1163	0.9938
G5	6	95	102	0.9442	1056	1075	0.9923
M5	45	1695	1654	0.9913	2504	2503	0.9993
B5	48	14474	14379	0.9970	1961	1955	0.9966
S5	45	1317	1159	0.9373	1151	1090	0.9837
G6	13	103	105	0.9831	254	254	0.9992
L6	43	3684	3665	0.9989	1141	1129	0.9958
Lsi	5	617	596	0.9977	769	773	0.9995
G7	5	86	86	0.9991	85	89	0.9911

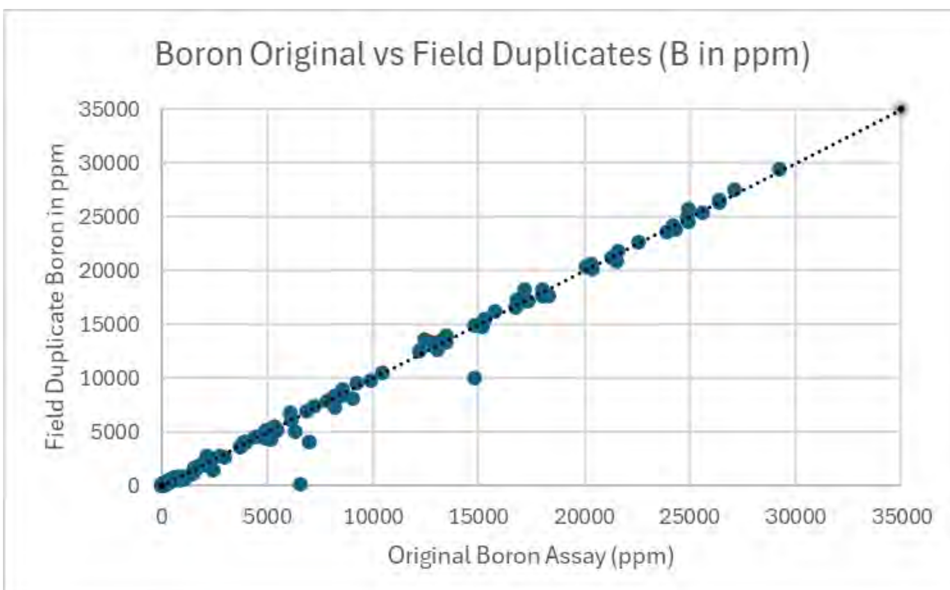


Figure 9-5 - Boron Field Duplicate Results

Source: ioneer, 2024

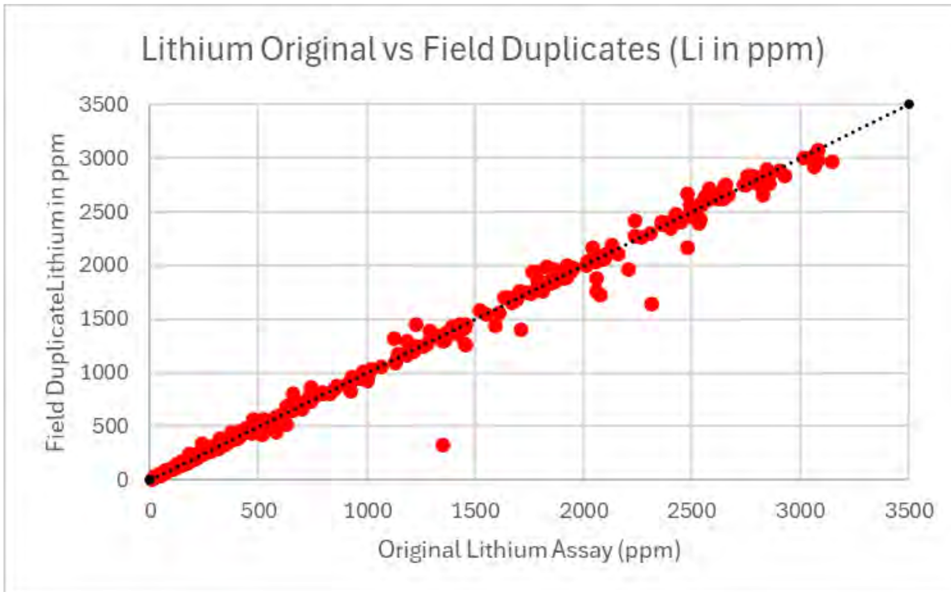


Figure 9-6 - Lithium Field Duplicate Results

Source: ioneer, 2024

9.2.5. Density Data

The density values used to convert volumes to tonnages were assigned on a by-geological unit basis using mean values calculated from 145 density samples collected from drill core during the 2018 to 2019 and Phase 1 – Phase 2 drilling programs. The density analysis was performed using the water displacement method with samples being first coated with wax for density determination. The density measurements were done by Call & Nicholas and the values were reported on a dry basis. The density data collected during the 2010-2011 drilling programs were used for the 2020 resource estimate, but not used for this Report as the methodology used for the density measurements could not be confirmed. Further discussion of the density data is found in chapter 11.8.

9.3. Qualified Person's Opinion on Data Adequacy

The QP has validated the data disclosed, including collar survey, down hole geological data and observations, sampling, analytical, and other test data underlying the information or opinions contained in the written disclosure presented in the Report. It is the QP's opinion that the review of the data and assaying checks validates the data available for use in estimating the mineral resource.

The QP, by way of the data verification process described in this chapter of the Report, has used only those data that were deemed to have been generated with proper industry standard procedures, were accurately transcribed from the original source, and were suitable to be used for the purpose of preparing geological models and Mineral Resource estimates.

Data that could not be verified to this standard were not used in the development of the geological models or Mineral Resource estimates presented in this Report.

10. MINERAL PROCESSING AND METALLURGICAL TESTING

Two major mineralization types are considered within the Cave Spring Formation:

- HiB-Li (stream 1): occurs primarily within the B5 mineralized unit, with additional occurrences in the M5, S5 and L6 units;
- LoB-Li (stream 2 & 3): occurs primarily within the L6 mineralized unit, with additional occurrences in the B5, M5 and S5 units.

The four key mineralized units of the Cave Spring Formation are:

- M5: high-grade lithium, low- to moderate-grade boron bearing carbonate-clay rich marl;
- B5: high-grade boron, moderate-grade lithium marl;
- S5: moderate-grade lithium, low-grade boron;
- L6: low- to high-grade lithium and boron.

During the 2020 feasibility study, only the HiB-Li mineralization was estimated as mineral resources and reserves. Testwork and process development up to that point focused predominantly on processing the B5 HiB-Li mineralization. However, the mineral resource and mineral reserve estimates can currently include both the HiB-Li and LoB-Li mineralization types if appropriate limitations required for blending are considered. It is noted that the blending of low boron with high boron mineralization types can significantly lower boric acid production due to the lower grade and lower extraction in the stream 2 mineralization. This has been adequately captured in the resulting boric acid production forecast. Testing and development work on stream 2 samples has been performed to determine metallurgical performance.

The following sub-section (10.1) describes the metallurgical testwork programs completed up to Q4 of 2023. Additional testwork, conducted between Q4 2024 and Q2 2025, is described in Section 10.3.

10.1. Mineral Processing and Metallurgical Testing (Pre-2024)

10.1.1. Stream 1

10.1.1.1. Feasibility Study Testwork

During the feasibility study, testwork programs were completed both for individual segments of the flowsheet and by way of a semi-integrated pilot plant to cover the entire flowsheet.

Additional unit operations were introduced after the pilot plant operation to resolve identified process issues, particularly the introduction of pregnant leach solution (PLS) impurity removal (IR1) for the precipitation of aluminum and removal of free acid from the PLS evaporation feed. This step reduced lithium losses through the improvement of crystal formation and dewatering.

The pilot plant testing consisted of an initial shake-out run followed by a main pilot run. Significant challenges had been encountered and resolved during testwork, including the following:

- Difficult crystal/liquor separation characteristics of crystal slurries generated in PLS evaporation and sulfate crystallization;
- Excessive losses of lithium due to high liquor entrainment in sulfate salts due to crystal fines;

- Formation of undesirable lithium double salts;
- Unrepresentative boric acid flotation behavior resulting from fine-grained crystals generated in PLS evaporation and sulfate crystallization.

These challenges were resolved through the implementation of the PLS impurity removal unit operation to remove aluminum and excess free acid. The system was first proved at bench scale, and then re-piloted to confirm. This testwork is described in detail in Section 10.1.1.2.

The main testwork campaigns completed during the feasibility study, and their results, are summarized in Table 10-1.

Table 10-1 - Rhyolite Ridge Feasibility Study Testwork Summary

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
2017	Exploratory metallurgical testing of lithium-boron ores	Exploratory leach extraction to confirm impact of pH, temperature and time	- Confirmed necessary pH condition to recover lithium (≤ pH 0) and boron (≤ pH 3); - Showed limited influence by temperature; - Confirmed leaching time for lithium and boron extraction is fast (< 90 mins) for a near complete extraction when processing 6 mesh material; - Confirmed gangue extraction and acid consumption.	- Head samples analyzed by XRF whole rock analysis; - Aqueous cations by ICP (method not specified).	Leach	SGS Lakefield
2018	Brine evaporation testwork	Exploratory brine evaporation to confirm lithium recovery	- Measured solubilities of key cations and anions; - Measured crystallization products and speciation; - Determined maximum lithium concentration through evaporation; - Determined cation deportment through salt crystallization.	- Metal analysis by Atomic Absorption spectrometry (AAS); - Cl- by the argentometric method; - SO4 by gravimetry with residue drying; - Boron by acid-base titration; - Fluorine by ion-selective electrode (ISE); - Sold salt speciation determined through XRD and mass balance; - Solution activity by Novasina water activity (AW) device; - Density measured using DMA densitometer.	CRZ1 EVP1 CRZ2	Centro de Investigación Científico Tecnológico para la Minería (CICTEM) Chile (Scientific and Technological Research Center for Mining)
2018	Lithium boron ore leaching	Sulfuric acid leach tests	- Further developed sulfuric acid leaching flowsheet; - Tested column leaching arrangement	- Metals by atomic adsorption spectrometry (AAS); - Boron by modified mannitol acid-base titration;	Leach	Hazen, Denver

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
			- Tested counter current arrangement; - Tested counter current batch cycle arrangement; - Refine acid addition requirements; - Confirmed extraction and kinetics; - Confirmed PLS grade; - Measured dewatering properties.	- Boron solids by fusion-inductively coupled plasma (ICP); - Free acid by titration; - Fluoride by sodium peroxide fusion and ion selective electrode (ISE); - Total sulfur by LECO combustion method.		
2018	Mineralization	Identify mineral species through speciation by size fraction	- Identified major and minor mineral species in ores.	- Mineral analysis by x-ray diffraction (XRD) and electron microprobe analyses (EMP).	-	Hazen, Denver
2018	Brine purification through neutralization	Scoping test for brine cleaning by reagent addition and pH change.	- Confirmed metal deportment vs pH; - Confirmed residence time required for metal deportment.	- Metals by atomic adsorption spectrometry (AAS); - Boron by modified mannitol acid-base titration, boron solids by fusion-inductively coupled plasma (ICP); - Free acid by titration; - Fluoride by sodium peroxide fusion and ion selective electrode (ISE); - Total sulfur by LECO combustion method.	Leach	Hazen, Denver
2018	Processing and evaporation of lithium containing brines	Measure metal deportment by oxidation and neutralization Confirm boric acid recovery	- Confirmed metal deportment in neutralization stage; - Confirmed boric acid solubility and recovery; - Confirmed solubilities in evaporation system; - Confirmed solids deportment and solids speciation in evaporation system;	- Methods not reported.	CRZ1 EVP1 CRZ2	IBZ, Germany

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
		Confirm brine evaporation, metal deportment by crystallization, lithium concentration by evaporative and cooling crystallization	- Confirmed lithium concentrating potential, and final brine composition.			
2018	Ore CERCHAR abrasivity testing	Confirm ore abrasivity properties	- Measured CERCHAR index for different ore types from different strata.	- ASTM D7625.	Crushing	KCA
2018	Column leach (BH-01)	Scoping heap leaching test (gravity) to determine leach duration and acid strength	- Performed size / sieve analysis of head and tails; - Performed extraction by fraction; - Measured pay and gangue metal extraction; - Measured acid consumption; - Measured wash recovery.	- Size analysis by physical screens; - Solids digestion by 4 acid; - Metals analysis by ICP-OES; - Whole rock analysis by lithium metaborate fusion followed by ICAPOES analysis; - Solution analysis by flame atomic absorption spectrophotometric (FAAS) or ICP methods; - Carbon analyses by LECO.	Leaching	KCA
2018	Column leach (BH-02)	Simulate heap leaching method (gravity) over 85 days on 150mm material	- Performed size / sieve analysis of head and tails; - Performed extraction by fraction; - Measured pay and gangue metal extraction; - Measured acid consumption; - Measured wash recovery.	- Size analysis by physical screens; - Solids digestion by 4 acid; - Metals analysis by ICP-OES; - Whole rock analysis by lithium metaborate fusion followed by ICAPOES analysis; - Solution analysis by flame atomic absorption spectrophotometric (FAAS) or ICP methods;	Leaching	KCA

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
				- Carbon analyses by LECO.		
2018	Vat leach (BH-03)	Simulate vat leaching method	- Performed size / sieve analysis of head and tails; - Performed extraction by fraction; - Measured pay and gangue metal extraction; - Measured acid consumption; - Measured wash recovery.	- Size analysis by physical screens; - Solids digestion by 4 acid; - Metals analysis by ICP-OES; - Whole rock analysis by lithium metaborate fusion followed by ICAPOES analysis; - Solution analysis by flame atomic absorption spectrophotometric (FAAS) or ICP methods; - Carbon analyses by LECO.	Leaching	KCA
2018	Column leach (BH-04)	Simulate heap leach condition with different ore types, different crush size and residence time	- Performed size / sieve analysis of head and tails; - Performed extraction by fraction; - Measured pay and gangue metal extraction; - Measured acid consumption; - Measured wash recovery.	- Size analysis by physical screens; - Solids digestion by 4 acid; - Metals analysis by ICP-OES; - Whole rock analysis by lithium metaborate fusion followed by ICAPOES analysis; - Solution analysis by flame atomic absorption spectrophotometric (FAAS) or ICP methods; - Carbon analyses by LECO.	Leaching	KCA
2018	Leachate processing	Simulate lithium and boron recovery from leach solution	- Measured boric acid solubility and yield; - Measured solubilities in evaporation and crystallization circuits; - Measured concentrated lithium brine composition; - Completed brine cleaning unit operation; - Completed lithium carbonate precipitation;	- Methods not described.	CRZ1 EVP1 CRZ2 IR2 Lithium precipitation	Suez

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
2019	Vat leach (BH-05)	Simulate counter current vat leach circuit including neutralization	- Performed size / sieve analysis of head and tails; - Performed extraction by fraction; - Measured pay and gangue metal extraction; - Measured acid consumption; - Measured wash recovery; - Measure permeability and percolation rates.	- Size analysis by physical screens; - Solids digestion by 4 acid; - Metals analysis by ICP-OES; - Whole rock analysis by lithium metaborate fusion followed by ICAPOES analysis; - Solution analysis by flame atomic absorption spectrophotometric (FAAS) or ICP methods; - Carbon analyses by LECO.	Leaching	KCA
2019	Boric acid recovery and evaporation simulation	Simulate boric acid recovery and evaporation with revised PLS composition	- Measured boric acid solubility and yield; - Measured solubilities in evaporation and crystallization circuits; - Measured concentrated lithium brine composition; - Completed brine cleaning unit operation; - Completed lithium carbonate precipitation.	- Metals analysis by analyzed by ICP; - Cl- by colorimetric method; - SO4 by gravimetric methods, - Fluoride by IC and ion specific electrode (ISE); - Crystalline solids by XRD.	CRZ1 EVP1 CRZ2 IR2 Lithium precipitation	Kemetco
Q1 2019	Bench scale flowsheet simulation	Confirm solubility and physical properties throughout the planned flowsheet	- Confirmed solubility data for all unit operations and validated process design parameters; - Collected engineering and physical property data for all unit operations.	- Metals analysed by inductively coupled plasma optical emission spectroscopy (ICP-OES) or atomic absorption spectroscopy (AAS); - pH measured by glass combination electrode; - Density determined by digital balance and volumetric flask; - Viscosity determined by Brookfield viscometer;	CRZ1, CRZ3, EVP1, CRZ2, EVP2	Veolia

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
				- Chloride content determined by titration with silver nitrate; - Crystal morphology photos were taken by polarized light microscope.		
Q1 2019	Physical characterization ore, byproducts and products	Comminution and physical properties characterization for crushers, chutes and material handling design	- Confirmed physical and mechanical properties of ore, spent ore, byproduct salts, and final lithium and boron products for engineering and equipment design. Comminution, chute design, stockpile design and material handling unit operations.	Material flowability testing, including: - Particle breakage tests by manual hammering; - Particle size analysis by dry sieving method and laser diffraction method using a Malvern Mastersizer 2000 with a Scirocco dry dispersion feed unit; - Cohesive strength tests; - Density tests by liquid displacement method in water; - Permeability tests; - Chute angle tests; - Wall friction tests; - Angle of repose and drawdown angle test; - Belt surcharge angle test; - Maximum belt inclination angle test.	Crushing and Leaching	Jenike and Johansen
Q2 2019	Bench-scale lithium circuit optimization	Optimize lithium brine cleaning	- Removal of magnesium from lithium brine (CRZ2 product liquor) using lime precipitation was successful; - Removal of calcium ahead of lithium precipitation by addition of sodium carbonate was successful.	- Metal analysis was done using ICP-OES; - Fluoride analysis was done potentiometrically using an ion-selective electrode (ISE) with a buffer to reduce interference.	IR2	Kemetco

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
Q3 2019, Q1 2020	Sizer crushing tests	Confirm that size reduction requirements could be met in two stages of crushing	- Crusher index and unconfined compressive strength (UCS) confirmed; - Closing gap between sizer teeth in secondary sizers provided desired outcome.	- A combination of vibratory and hand screening was used to separate crushed material into different size fractions, creating particle size distribution (PSD) profiles; - X-ray fluorescence (XRF) was used to determine the sample chemistry.	Crushing	FLSmidth
Q2 2019	Mineralogy and geochemical characterization	Characterization of clay minerals in steam 1 and stream 3 zones	- Successful characterization of the mineralogy of the stream 1 (B5) and stream 3 (M5 zones); - Successful characterization of the mineralization in the small fraction <2 µm, including clay type.	- Metals analysis by ICP-OES and ICP-MS; - Mineral analysis by X-ray powder diffraction (XRPD), SEM-EDS and electron microscopy.	Mineralization characterization	Hutton Institute
Q2-Q3 2019	Semi-integrated pilot plant	Integrate the unit operations, identifying any differing results from when the unit operations were individually tested	- Lithium carbonate and boric acid were successfully produced; - Composition of PLS produced from vat leach differed from what is expected during commercial operations (addressed in bench-scale evaporation optimization testing); - Boric acid flotation from EVP1 and CRZ2 salts was proven to be readily achieved; - Phase chemistry of lithium sodium, potassium, and magnesium overlaid with test results identified desirable operational parameters; - Root cause analysis performed to identify reasons for poor	- Metal analysis was done using ICP-OES; - Lithium samples were assayed with AAS when results were needed quickly for process control and were submitted for ICP analysis to confirm the results and to obtain full metal scans; - Fluoride analysis was done potentiometrically using an ISE with a buffer to reduce interference; - Chloride analysis was completed using a colorimetric method; - Sulfate analysis was completed using a turbidimetric method;	Vat leach, CRZ1, IR1, EVP1, CRZ2, Boric acid flotation, CRZ3, IR2, Lithium precipitation, EVP2	Kemetco

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
			crystal/liquor separation – these were resolved in ensuing bench-scale evaporation optimization testing and were as follows: - Crystals from PLS evaporation and sulfate crystallization had poor crystal/liquor separation characteristics, resulting in high moisture levels and lithium losses; - Lithium saturation occurred at below target concentrations, resulting in lithium salt formation and high lithium losses; - Lithium brine cleaning using a lime and soda ash carbonate precipitation system was successfully implemented on the CRZ2 mother liquor ahead of the lithium carbonate precipitation.	- Free acid was determined using two validated titrimetric methods; - Water insoluble matter was measured by dissolving sample in a known volume, filtering it, then washing, drying, and weighing the residual solids; - Moisture content was only determined for the crude boric acid and high purity wet boric acid. Drying the boric acid led to an overestimation of moisture content since it can dehydrate to metaboric acid (HBO_2); - Boric acid assays were completed using a titrimetric method as described in the Analar® Standards for Laboratory Chemicals.		
Q3-Q4 2019	Leaching (pilot- and bench-scale)	Evaluate the leach response to deposit variability and full vat height	- Lithium and boron extraction was consistently high with varying head grades; - Acid concentration must be controlled to avoid permeability issues caused by fines; - Acid addition at the beginning of the leach cycle is critical to maintain good leach conditions and lithium and boric acid recovery;	Head sampling: - A LECO CS 230 unit was used for carbon analyses; - Metals analysis was completed by ICP-OES, using two- or four-acid digestion and peroxide fusion methods for solids; - Duplicate samples were sent to ALS for lithium, boron and sometimes fluoride content validation.	Vat leach	Kappes, Cassiday & Associates (KCA)

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
			- Optimized leaching period to be three days, with a total cycle duration of seven days including loading, neutralization, washing and unloading.	Solutions sampling: - Continuous monitoring for pH, oxidation reduction potential (ORP), specific gravity, free acid; - Sampled periodically for a multi-element suite (ICP-OES). Vat tailings: - Weighed before and after drying for moisture content; - PSD was determined by screening and weighing each fraction; - Assays were done on the size fractions and combined composite; - Duplicate samples were sent to ALS for lithium, boron and sometimes fluoride content validation.		
Q4 2019	Bench-scale evaporation optimization	Optimize PLS evaporation and sulfate salt crystallization at bench scale	- Feed liquor adjusted to represent expected composition during commercial operations; - Crystals from both EVP1 & CRZ2 exhibited good crystal/liquor separation with low residual moisture, lending to low lithium losses; - Defined optimum target lithium end concentrations for both EVP1 & CRZ2;	- Metals analyzed by ICP-OES; - pH measured by glass combination electrode; - Density determined by digital balance and volumetric flask; - Viscosity determined by Brookfield viscometer; - Chloride content determined by titration with silver nitrate; - Total organic carbon (TOC) determined by combustion followed by infrared detection;	IR1, EVP1, CRZ2	Kemetco, Veolia

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
			- Lithium double salt formation avoided by operating in the correct area of the phase diagram in EVP1, and by the removal of aluminum, iron, and fluoride by lime precipitation ahead of bench scale evaporation/crystallization: - Optimal boil down conditions for evaporation achieved in EVP1; - Two stages of cooling implemented in CRZ2; - Optimized conditions for EVP1 & CRZ2 established for implementation at pilot-scale; - Evaporation optimization program was successful.	- Crystal habit photos were taken by polarized light microscope and/or stereo microscope.		

Q4 2019-Q2 2020	Bench-scale PLS impurity removal	Proof of concept and optimization testing of PLS impurity removal at bench scale	- Removal of aluminum and fluorine by an alternate process to form a crystalline sulfate of aluminum and potassium was tested. The process was successful, achieving:
			  - High levels of aluminum and fluorine removal to produce a feed suitable for the EVP1 and CRZ2 circuits;
			  - Low lithium and boron losses;
			- Good filtration & washing characteristics.
				- Multi-elemental analysis by two- and four-acid digestion and peroxide fusion methods, followed by ICP-OES using certified standards;
				- Solutions were diluted as required and analyzed by flame atomic absorption spectrophotometry (FAAS) or ICP. ISE was used to determine fluoride and chloride content;
				- Free acid was determined through titration to pH 3 of a solution sample. Titrations were conducted in a methanol solution with sodium hydroxide. The methanol
					IR1	KCA, Kemetco

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
				solution contained 0.5 molar $MgCl_2$ to reduce the effects of hydrolysable cations such as Fe^{3+}, Al^{3+} and Cu^{2+}; - Solutions and dried solids were also submitted to ALS to perform check assays.		
Q1 2020	Blend series leach testing	Vat leach testing purpose was to determine fines generation, acid consumption, metal extraction, and solution permeability as a function of leach conditions and sample blend	- Lithium extractions ranged from 80% to 94% during leaching and 76% to 89% after washing; - Boron extractions ranged from 80% to 97% during leaching and 56% to 83% after washing.	- Acid digestion and / or peroxide fusion methods were used. The resulting solution was then assayed semi-quantitatively by means of a Perkin-Elmer 2000 DV ICAP-OES. Certified standards were utilized for the analyses; - Solution samples were analyzed through flame atomic absorption spectrophotometric (FAAS) or ICP methods; - Free acid was determined through titration to pH 3 of a solution sample.	Vat leach	KCA
Q1 2020	Pilot-scale evaporation and crystallization optimization	Optimize pilot PLS evaporation and sulfate salt crystallization in the pilot plant operations	- Bulk impurity removal of aluminum, iron, and fluoride by lime precipitation before pilot-scale evaporation/ crystallization (Li/B losses unacceptably high, resolved in bench scale impurity removal as explained above); - Implementation of bench-scale evaporation & optimization parameters;	- After coning and quartering the resulting cakes, a small portion of the sample was re-dissolved in water for submission to metals analysis by ICP-OES. Some samples were also submitted for anion analysis; - Lithium analysis was conducted by AAS when quick assay result turnaround	IR1, EPV1, CRZ2	Kemetco, Veolia

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
			- Crystals produced from EVP1 & CRZ2 exhibited good crystal/liquor separation and low residual moisture contents; - Achieved target lithium concentrations in EVP1 & CRZ2; - Low lithium losses achieved in EVP1 & CRZ2; - Results achieved were in alignment with phase diagram expectations.	was required for process control; - Fluoride analysis was conducted potentiometrically using an ISE; - Chloride analysis was conducted using a colorimetric method. In addition to blanks and standards, at least one sample per day was also spiked with chlorine and the spike recovery was calculated.		
Q1 2020	Bench scale EVP1 and CRZ2 optimization	Confirmation of solubility and physical properties	- Confirmed solubility data for all unit operations and validated process design parameters; - Collected engineering and physical property data for all unit operations.	- Metals analyzed by ICP-OES or AAS; - pH measured by glass combination electrode; - Density determined by digital balance and volumetric flask; - Viscosity determined by Brookfield viscometer; - Chloride content determined by titration with silver nitrate; - Crystal morphology photos were taken by polarized light microscope.	CRZ1, CRZ3, EVP1, CRZ2, EVP2	Veolia
Q1 2020	Pilot-scale crystal/liquor centrifuge separation	Vendor bench-scale centrifuge tests for de-brining of sulfate crystals, such that scale-up to industrial sizing can be achieved	- Operated simultaneously as part of pilot-scale evaporation optimization work; - Vendor centrifuges used for industrial sizing of equipment in crystal/liquor separation & wash tests; - Centrifuges achieved high levels of separation, low-liquor	- The centrifuge feed was assayed using the same methods mentioned above in the pilot-scale evaporation and crystallization optimization section; - Pulp density and specific gravity were measured for the feed slurry.	EVP1, CRZ2	Kemetco, Veolia, TEMA, Ferrum

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
			contents, and reasonable wash efficiencies; - Overall lithium losses were minimized.			

Q1 2020	Bench-scale flotation optimization	Optimize boric acid flotation at bench scale	- Bench-scale flotation of boric acid from pilot-scale evaporation optimization achieved:
			  - Good recovery but low grade of boric acid from EVP1 (3rd and 4th effect evaporators);
			  - Good recovery but low grade of boric acid from CRZ2 (2nd and 4th stage crystallizer);
			- Bench scale vacuum dewatering testwork completed to gather engineering data.
				- All samples (head, concentrate, and tails) were assayed by ICP only, which included a full suite of metals and other cations as well as sulfur;
				- Crystal morphology and habit was determined by microscopy;
				- Moisture content calculated using ICP-OES;
				- Density determined by digital balance and volumetric flask.
					EVP1, CRZ2	Kemetco

10.1.1.2. Post-Feasibility Study Testwork (Pre-2024)

Since the conclusion of the feasibility study, additional testwork has been conducted during the detailed engineering design phase (prior to 2024) to further refine and reduce risk of specific areas in the stream 1 process flowsheet. These major additional testwork campaigns are outlined in Table 10-2.

Table 10-2 - Post Feasibility Study Testwork Summary (Pre-2024)

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
Q1 2021	Neutralization kinetics	Understand the rate and extent of acid consumption occurring during the neutralization stage.	- Acid consumption and free acid profiles were generated for feeds with varying acidity.	- Free acid was determined through titration to pH 3 of a solution sample. Titrations were conducted in a methanol solution with sodium hydroxide. The methanol solution contained 0.5 molar $MgCl_2$ to reduce the effects of hydrolysable cations such as Fe^{3+}, Al^{3+} and Cu^{2+}.	Leaching	KCA
Q1-Q2 2021	Bench-scale flotation circuit optimization	Confirm achievable boric acid recovery and grade. Update flotation process parameters, flowsheet requirements and technical readiness.	- Rougher-scavenger circuit arrangement confirmed based on the best results toward achieving target boric acid grade and recovery; - Flowsheet modified to incorporate the direct flotation of fresh boric acid crystals in native brine to prevent excessive co-precipitation and boric acid grade reduction.	- Metal analysis completed using ICP-OES; - Lithium analysis completed by AAS when results were needed quickly for process control and were submitted for ICP analysis to confirm the results and to obtain full metal scans; - Chloride was added to the feed solution to provide a second tracer for lithium saturation during evaporation. Chloride analysis was then completed by a colorimetric method using thiocyanate; - All samples were high in sulfate so total S results from ICP-OES were converted to sulfate for expedience.	Boric acid flotation	Woodgrove, Kemetco
Q1 2021	IR1 filtration testing	Determine filtration and washing characteristics to inform equipment selection and the design criteria for the circuit.	- Process parameters updated; - Reagent selection validated; - Flowsheet confirmed; - Data required to inform equipment selection obtained.	- PSD determined using laser diffraction particle size analyzer and mechanical sieving; - Metal analysis completed using ICP-OES; - Lithium analysis completed by AAS when results were needed quickly for process control and were submitted for ICP analysis to confirm the results and to obtain full metal scans.	IR1	RMS, Kemetco

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
Q1 2021	IR1, EVP1 and CRZ2 circuit optimizations	Reduce lithium losses in evaporation and crystallization circuits, improve understanding of the EVP1 and CRZ2 crystal species, and obtain preliminary crystal dewatering characteristics.	- Improved performance in EVP1 and CRZ2 with IR1 optimizations; - Evaporation and crystallization conditions optimized to reduce lithium co-crystallization; - Determined the impact of impurities on process and dewatering efficiencies.	- Metal analysis completed using ICP-OES (with digestion prior for solids); - Lithium analysis completed by AAS when results were needed quickly for process control and were submitted for ICP analysis to confirm the results and to obtain full metal scans.	EVP1, CRZ2	Kemetco
Q2 2021	Materials of construction - leach and IR1 area corrosion study	Determine the corrosivity risks associated with the vat leaching and impurity removal process conditions.	- The vat leaching conditions were shown to be very corrosive on the tested materials; - The impurity removal conditions did not result in any significant corrosion.	- U-bend corrosion coupons were weighed before and after trials (after being washed and dried) to determine the mass loss; - Microscope imaging was used for a qualitative assessment of the corrosion.	Leaching, IR1	Acuren

Q3 2023	B5 leaching characteristics – mine plan (2024)
	
	Small-sized column testing
		Determined the ore in the southern part of the South Basin, now where mining will start according to the updated mine plan, has similar leaching characteristics to ore in the northern and western parts of the Basin, which most of the DFS testwork was conducted upon.	- High lithium extractions achieved;
			- High boron extractions achieved;
			- Acid consumption was comparable;
			- Greater presence of fines, resulting in a turbid PLS;
			- More swelling observed than in previous testwork.
				- Carbon and sulfur analyses were completed using a LECO CS 230 unit:
				  - No pretreatment for total carbon/sulfur;
				  - Acid or roast pretreatment for carbon/sulfur speciation;
				- Digestion by nitric acid, 2-acid, 4-acid, peroxide fusion, or lithium metaborate fusion (whole rock analyses) methods completed for a series of individual elements;
				- Solution analyses by ICAP-OES, FAAS or ISE;
				- Free acid determined through titration to pH 3 of a solution sample, in a methanol solution with sodium
					Leaching	KCA

Report Date	Test Program	Purpose	Results	Analytical Methods	Unit Operations	Lab/Testing Facility
				hydroxide. The methanol contained 0.5 molar magnesium chloride to reduce the effects of hydrolysable cations such as Fe^{3+}, Al^{3+} and Cu^{2+}.		

Q4 2023	B5 leaching characteristics – mine plan (2024)
	
	Medium-sized column testing
		Determined that the ore in the southern part of the South Basin, now where mining will start according to the updated mine plan, has similar leaching characteristics to ore in the northern and western parts of the Basin, which most of the DFS testwork was conducted upon
		
		Completed leach testing in medium-sized columns to determine permeability and swelling characteristics
			- High lithium extractions achieved;
			- High boron extractions achieved;
			- Acid consumption was comparable;
			- Greater presence of fines, resulting in a turbid PLS;
			- Permeability characteristics comparable to previous testwork.
				- Carbon and sulfur analyses were completed using a LECO CS 230 unit:
				  - No pretreatment for total carbon/sulfur;
				  - Acid or roast pretreatment for carbon/sulfur speciation;
				- Digestion by nitric acid, 2-acid, 4-acid, peroxide fusion, or lithium metaborate fusion (whole rock analyses) methods for a series of individual elements;
				- Solution analyses by ICAP-OES, FAAS or ISE;
				- Free acid determined through titration to pH 3 of a solution sample, in a methanol solution with sodium hydroxide. The methanol contained 0.5 molar magnesium chloride to reduce the effects of hydrolysable cations such as Fe^{3+}, Al^{3+} and Cu^{2+}.
					Leaching	KCA

Q4 2023	Thesis – Mineralization and geochemical characteriza-tion	Mineralogy and Geochemistry of a Lithium and Boron Enriched Stratiform Ore Zone in the Cave Spring Formation	- Geochemical and mineralogical characterization of the lithium bearing clays and boron bearing mineral; - Investigation into the basin formation and digenic alternation.	- Metals analysis by ICP-MS and ICP-OES; - Mineral analysis by XRD, petrographic microscopy and scanning electron microscope (electron dispersive xray spectroscopy).	Resource Characteri-zation	UNR USGS

10.1.2. Stream 2 & 3

In parallel with conducting testwork and designing a flowsheet for processing stream 1 ore, ioneer conducted metallurgical test programs and investigations for the other low boron mineralization types (stream 2 & 3). These mineralization types were not originally considered as standalone feed for the stream 1 processing facility but represented potential process feed by blending with stream 1 ore. Accordingly, the mine plan calls for blending stream 2 and 3 with stream 1 material over the life of the mine. Stream 1, 2 & 3 ore will be mined and blended as needed to: (i) maximize lithium carbonate yield, that is, tons of lithium carbonate produced per ton of acid consumed; and (ii) consume all available acid produced by varying the ore feed rate based on the acid consumption characteristics of the ore.

Pre-2024 leaching testwork on stream 2 material demonstrated comparable lithium extractions when using the vat leaching method. Boron extractions during leaching were observed to be lower in stream 2 material which was attributed to the lower boron head grade, indicating that the blending of stream 2 material will not materially impact the boron extraction in stream 1 or 3. Leaching testwork on stream 3 material, conducted prior to 2024, demonstrated comparable lithium extractions when blended with stream 1 material up to 10%. No limitations on blending stream 2 material into the leach were observed. The overall lithium recovery is not predicted to be impacted by the introduction of stream 2 or 3 material, provided that blending limitations for stream 3 are followed. Boron recovery from the leach will be adjusted to reflect the lower boron extraction from stream 2 material during the leaching process. Boron recovery from the processing facility (downstream of the leach) is not expected to be impacted by the blending of stream 2 & 3 material.

ioneer has conducted metallurgical testwork on the LoB-Li mineralization between 2016 and 2023, which was built upon testwork completed in 2010-2011 by American Lithium Mineral Inc. (ALM). After the 2020 FS and prior to 2024, ioneer performed additional exploratory metallurgical investigations for processing LoB-Li mineralization with a second process stream. The results from these investigations indicated a reasonable process and expectation for economic extraction of the LoB-Li material from the S5, M5, B5 and L6 units, using some limited blending of stream 2 & 3 with stream 1 ore, albeit with a lower boron recovery. The testwork confirming this scheme had been performed using, at the time, current processing and recovery methods for producing boric acid and lithium carbonate products.

The results of the additional pre-2024 metallurgical testing of the low boron content in the M5, S5, and L6 units indicated a reasonable prospect of recovering lithium and boron from these units by blending, sufficient to include HiB-Li (stream 1), LoB-Li (stream 2) and LoB-Li High Clay (stream 3) process streams when considering factors supporting the reasonable prospects for mineral resources.

Prior to and during the feasibility study, most of the stream 2 & 3 testwork was conducted on a blend or composite in conjunction with the core testwork performed on stream 1. Some leaching testwork was completed on the M5 mineralization alone, which showed general incompatibility with column, vat and heap leaching due to high clay content, which resulted in a propensity to swell and produce fines, limiting the permeability and acid contact. When blending with stream 1 was considered, it was determined that up to 10% of stream 3 material could be blended with stream 1 without deleterious impacts to overall lithium and boron extraction, permeability and washability.

Following the feasibility study and prior to 2024, ioneer conducted a growth study specifically focused on determining the requirements and viable processing options for stream 2 & 3 ore, with a particular focus on leaching methods. A summary of the bench-scale testwork conducted during the growth study by mineralized unit is provided in Table 10-3. Tests for the S5, M5, and L6 units were completed separately but have been summarized together due to similar overall test results.

Table 10-3 - Stream 2 & 3 Testwork Summary (Pre-2024)

Ore Type	Testwork Scope	Results	Lab/Testing Facility
M5	Mineralogy and geochemical characterization	- Mineralogy and geochemical characterization of M5 mineralized zone.	Hazen and SGS
	Mineralogy and geochemical characterization	- Successful characterization of the mineralogy of the stream 1 (B5) and stream 3 (M5); - Successful characterization of the mineralization in the small fraction <2 µm, including clay type.	Hutton Institute
	Air classification/beneficiation	- Material separated well but no lithium enrichment or carbonate rejection was observed, indicating that air beneficiation was ineffective for gangue rejection.	Prater
	Agitated leaching	- Particle size had minimal impact on the leaching efficiency; - Acid concentration had a greater impact on leaching efficiency but only to an extent, after which it plateaued; - Gangue extraction was high, impacting acid consumption; - Two stages of washing with excessive volumes of wash water were required to recover the PLS, and the filter cakes had high residual moisture.	Kemetco and SGS
	Roast-water leaching	- Lithium extraction was higher with a gypsum-sodium sulfate mix than sodium sulfate alone; - Boron extractions were very low; - Sodium and potassium were the highest extracted impurities.	KCA and SGS
	Pressure leaching	- Sodium sulfate and sodium hydroxide were tested as lixiviants. Lithium extractions were low for both, and boron extractions were moderate; - Higher extractions were seen of select gangue minerals; - Sodium carbonate was also tested as a lixiviant, but no lithium was extracted so further testing was not pursued.	KCA and Kemetco
S5/L6	Bottle roll leaching	- Demonstrated leachability qualitatively, translating to compatibility with heap or vat leaching.	KCA
	Column leaching	- High lithium extractions were observed but lower boron extractions, which could potentially be explained by the lower relative head grade or the presence of refractory boron material; - Though gangue extraction was high, the lower gangue head grades and less aggressive leaching conditions resulted in relatively low acid consumption compared to the B5 base case; - Residual tails moisture was moderate, and some minor swelling was observed; - Results demonstrated that both ores could be amenable to heap leaching.	KCA
	Vat leaching	- Results were similar to column leaching; - Acid consumption was higher than column leaching due to higher gangue head grades; - Significant swelling was observed for S5 and moderate for L6, but there was no apparent impact on lithium extraction; - Results demonstrated that both mineralization types could be amenable to vat leaching;	KCA

Ore Type	Testwork Scope	Results	Lab/Testing Facility
		- Collection of kinetic data to determine impact of reduced leaching time.	
	Agitated leaching	- Lithium and boron extractions were high for S5. Boron extraction was lower for L6; - Gangue head grades and extractions were high, making up the majority of acid consumption; - Results demonstrated that both mineralization types could be amenable to agitated leaching.	Kemetco

Analytical methods for each of the tests are shown in Table 10-4.

Table 10-4 - Testing and Analytical Procedures for Stream 2 & 3 Testwork (Pre-2024)

Test Program	Analytical Procedures
Mineral and geochemical characterization	- Metals analysis by ICP-MS; - Mineral analysis by QEMSCAN, XRD.
Mineral and geochemical characterization	- Metals analysis by ICP-OES and ICP-MS; - Mineral analysis by XRPD, SEM-EDS and electron microscopy.
Agitated leaching (and pressure leaching for M5)	- Aqua regia digestion was used for solids; - ICP-OES was used for metals analysis; - X-ray diffraction (XRD) was used for the determination of mineralogical speciation; - Whole rock analysis was conducted; - ISE was used for fluoride content determination.

Bottle roll, column, and vat leaching	- Carbon and sulfur analyses were completed using a LECO CS 230 unit:
	  - No pretreatment was used for total carbon/sulfur content determination;
	  - Acid or roast pretreatments were used for carbon/sulfur speciation determination;
	- Solids digestion by nitric acid, 2-acid, 4-acid, peroxide fusion, or lithium metaborate fusion (whole rock analyses) methods were used, followed by ICP analysis for a series of individual elements;
	- Solutions were analyzed by ICAP-OES, FAAS and/or ISE;
	- Free acid content was determined through titration to pH 3 of a solution sample, in a methanol solution with sodium hydroxide. The methanol contained 0.5 molar magnesium chloride to reduce the effects of hydrolysable cations such as Fe^{3+}, Al^{3+} and Cu^{2+}.

Roast-water leaching	- Same as bottle, column and vat leaching; - Quantitative X-ray diffraction (QXRD) was used for specification determination (by FLSmidth).

The results of the metallurgical testing on the low boron M5, S5, and L6 units completed prior to 2024 indicated a reasonable prospect of extracting lithium and boron, sufficient to include these units in mineral resource reporting. Additional testwork to confirm leaching, evaporation and crystallization operating parameters using samples with varying stream 1 and 2 blending ratios has been conducted and is discussed in Section 10.3.

10.2. Laboratories Used for Metallurgical Testing (Pre-2024)

A list of laboratories and testing facilities that have conducted testwork for ioneer prior to 2024, along with the scope of their services, is provided in Table 10-5.

Table 10-5 – Scope of Pre-2024 Testwork by Laboratory or Testing Facility

Laboratory or Testing Facility	Location	Scope	Certifications	Relationship to ioneer
SGS	Lakefield, CA	Mineralogy and geochemical characterization, leaching, benefaction, flotation and roasting.	ISO 17025	Independent
Hazen	Golden, CO	Mineralogy and geochemical characterization, leaching, benefaction and flotation.	ISO 17025	Independent
Hutton Institute	Craigiebuckler, Aberdeen, Scotland	Mineralogy and characterization.	ISO 17025 UKAS 7541	Independent
Jenike and Johansen	San Luis Obispo, CA	Characterization of physical properties and measurement of engineering parameters required for equipment design. Example, density, angle of repose etc. of feed ore, spent ore, lithium and boron products, and process byproducts.		Independent
Kemetco	Richmond, BC, Canada	Hosted and operated the semi-integrated pilot plant. Oversaw and conducted metallurgical testwork relating to bench-scale lithium circuit optimization, PLS evaporation and crystallization, PLS impurity removal, boric acid flotation, IR1 filtration, and stream 2 leaching.	ISO 17025	Independent
Bureau Veritas	Vancouver, BC, Canada	Analytical laboratory used to verify results during testing campaigns.	ISO 17025	Independent
ALS	Reno, NV, Burnaby, CA	Analytical laboratory used to verify results during testing campaigns.	ISO 17025	Independent
KCA	Reno, NV	Conducted leaching testwork at bench- and pilot-scale, and testwork relating to neutralization kinetics, bench-scale PLS impurity removal, and stream 2 leaching.	ISO 17025	Independent
Veolia	Plainfield, IL	Conducted bench- and pilot-scale PLS evaporation and crystallization testwork.	ISO 9001	Intended vendor
FLSmidth	Bethlehem, PA	Conducted testwork on the comminution circuit.	ISO 9001	Intended vendor
Acuren	Richmond, BC, Canada	Conducted leaching and IR1 corrosion analysis. Material of construction recommendations	ISO 17025 ISO 9001	Independent
Prater	Bolingbrook, IL	Conducted air classification/beneficiation testwork on M5 mineralization.	[1]	Independent
Woodgrove	At Kemetco Facility	Conducted boric acid flotation testwork.	[1]	Independent

Laboratory or Testing Facility	Location	Scope	Certifications	Relationship to ioneer
	Richmond, BC, Canada			
RMS	At Kemetco Facility Richmond, BC, Canada	Conducted IR1 filtration testwork. Gathered engineering parameters to allow sizing and process guarantees for filter press'.	1	Independent

Note:

1. Analytical service provided by certified lab – Kemetco, ALS or KCA. Equipment supplier provided test equipment and expertise specific to equipment setup, testing methods and results interpretation.

10.3. Additional Metallurgical Testwork (Post-2024)

Additional testwork has been conducted post-2024 to further optimize and address remaining processing risks related to the Rhyolite Ridge process flowsheet. The laboratories and testing facilities involved in these testwork programs, along with the scope of their services, are listed in Table 10-6. The testwork programs are further described in the sub-sections that follow.

Table 10-6 – Scope of Post-2024 Testwork by Laboratory or Testing Facility

Laboratory or Testing Facility	Location	Scope	Certifications	Relationship to ioneer
Kemetco	Richmond, BC, Canada	Oversaw and conducted lab scale metallurgical test work relating to boric acid crystallization, PLS impurity removal and filtration, PLS evaporation and crystallization. Representative of stream 1,2 and 3 blended scenarios.	ISO 17025	Independent
KCA	Reno, NV	Conducted leaching testwork at bench-relating to stream 1, 2 and 3 leaching, leach kinetics and dewatering.	ISO 17025	Independent
FLS	Salt Lake City, UT	Comminution test work – Stream 2 L6	ISO 9001	Intended vendor

10.3.1. Leaching System Optimization

A metallurgical optimization program was conducted by Kappes, Cassiday & Associates (KCA) in Reno, NV, between Q4 2024 and Q1 2025. The purpose of this testwork was to evaluate leach kinetics and determine the optimal leaching cycle to maximize lithium and boric acid yields (kg produced per metric ton of acid consumed). Vat leaching tests were conducted on both stream 1 and 2 ores, with samples originating from the B5, S5 and L6 units. The program concluded that a reduction in leach cycle duration resulted in an increase of both lithium and boron yields, attributed to the lower acid consumption at shorter leach time, which limited the extent of unwanted gangue leaching and non-productive acid consumption.

The following head analyses were conducted on portions of the samples used for vat leach testing by KCA:

- Multi element analysis with ICAP-OES using a combinations of two-acid and four-acid digestions;

- Carbon and sulfur analyses by LECO analyzer;
- Boron analyses using peroxide fusion with an ICP finish;
- Whole rock analysis using lithium metaborate fusion followed by ICAP.

In addition to the analyses above, a portion of pulverized material from each sample used for vat leach testing was submitted to FLSmidth in Salt Lake City, UT, for Quantitative X-ray Diffraction (QXRD) analysis and to ALS for chlorine analysis.

Ambient vat leach testing was conducted on crushed samples with a p_{80} of 19mm, using a 6''x5' column and sulfuric acid at a fixed high concentration. Compressive permeability testing was also performed on the leached vat samples containing the residual solids, under a constant load equivalent to 7m high column.

Testwork has determined that the leaching cycle can be reduced by up to 1.5 days, leading to improved acid utilization and increased lithium and boric acid yields. The optimum operating point will be determined based on the water and energy balance. The reduction in leaching time would also allow for an increased plant throughput due to presence of additional available acid and vat capacity.

10.3.2. Low Boron Flowsheet Simulation

A test program was conducted between Q1 2025 and Q2 2025 by Kemetco Research in Richmond, Canada. The purpose of this testwork was to simulate the CRZ1, IR1, EVP1 and CRZ2 unit operations using lower boron and sodium feedstock to address the risks related to the processing of lower boron feedstock through the Rhyolite Ridge high boron plant and collect data for the flowsheet development of a standalone low boron production facility. The feed solutions used for this test program were representative of processing scenarios involving stream 1, a blend of stream 1 and 2 and stream 2 only. The solutions were sourced from previous KCA leach test programs, which considered ores from the B5 and S5 ore zones. However, the elemental ratios in the leach solution were representative of those produced from leaching the M5, S5 and L6 ore zones.

Assay work performed in this program include:

- Multi element analysis with ICP-OES;
- Chloride analysis by colorimetric method;
- Fluoride analysis with ISE;
- Free acid analysis by titration;
- Cesium and Rubidium analyses with AA.

The main outcome of this test program was that the designed Rhyolite Ridge facility can suitably process lower boron feedstocks. The testwork successfully collected valuable phase chemistry, solubility, reaction chemistry and engineering information to validate the current flowsheet design and confirm that the mitigations in place to address process and production risks are still relevant and effective across all blends of feed material, including lower boron feedstock.

10.4. Representativeness of Metallurgical Testing

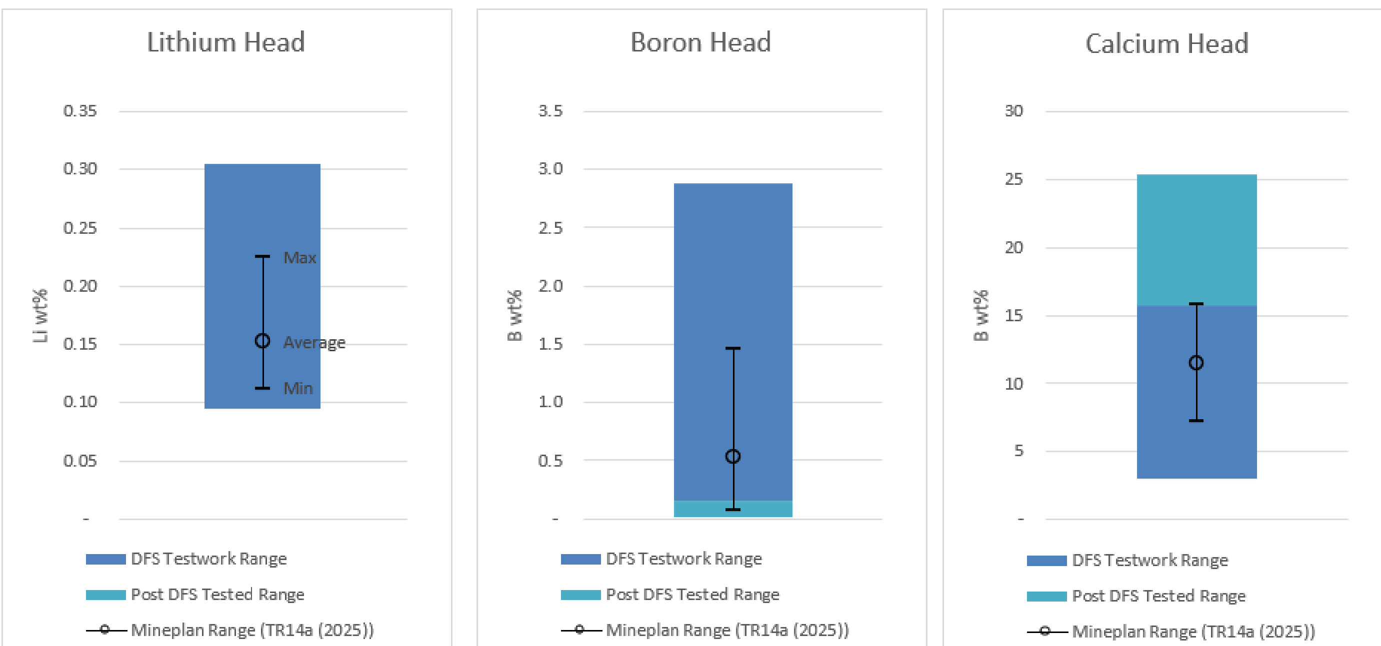
This Section discusses the representativeness of the mineralized zones and the sample selection used for the metallurgical test programs completed up to the date of this Report. As the mine plan has matured with advancements in the Project and Resource definition, drilling results, regulatory approval process and project optimizations, new metallurgical test work was completed in step to quantify and inform the impact on recovery and plant performance. Effects of grade variations in lithium, boron and gangue metal, and the differences in the geological and metallurgical assaying methods, are discussed below.

The samples used for the initial comminution and leach testwork programs (prior to 2020) were representative of the South Basin deposit mineralization, with a focus on ore from the first 5 to 10 years of the mine plan. Testwork primarily focused on stream 1 but included variability and blending programs with stream 2 and 3 material. Between 2020 and 2024 the mine plans considered processing greater portions of stream 2 material blended with stream 1. Test work programs were conducted to determine the impacts of different blend ratios. Finally, the current mine plan (2025) is a further iteration considering more optimum leaching conditions, with supporting testwork which considered feedstock from stream 1, 2 and 3, ranging from 100% stream 1, a blend of stream 1, 2 and 3 to 100% stream 2, to cover the full range of blend possibilities.

10.4.1. Metallurgical Testwork Samples

The Rhyolite Ridge deposit is sedimentary in nature and the mine plan is dominated by a single geological domain for the first 25 years of operation, the B5 upper searlesite zone. Mineralization characterization testing for sizing/crushing was completed on a range of B5 material, which was found to be not particularly hard or abrasive. Similar characterization testing for sizing/crushing was completed for the L6 stratigraphy in 2025 with similar results.

The ranges of metal grades, based on the 2025 mine plan and latest testwork data, are shown in Figure 10-1.



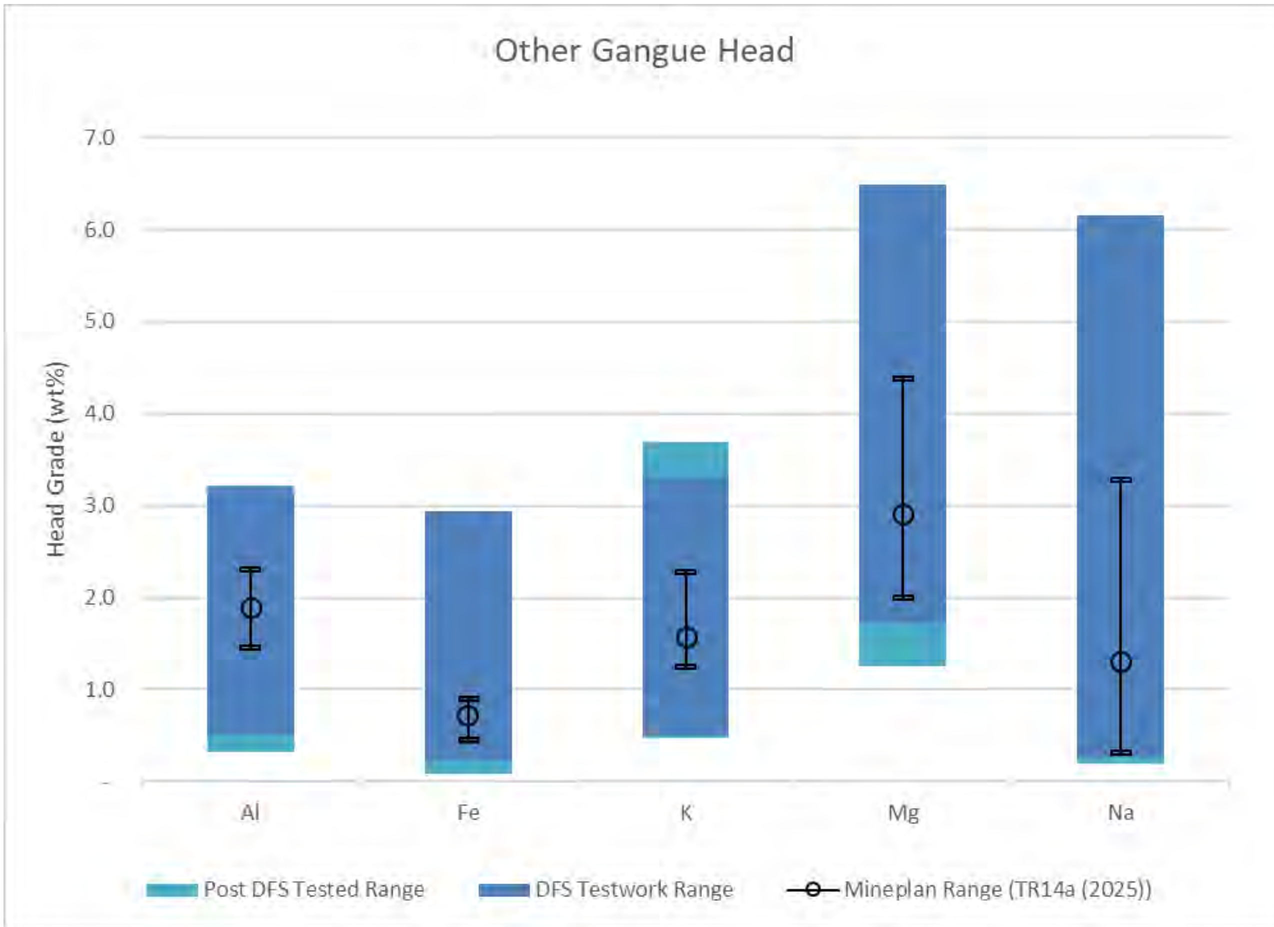


Figure 10-1 – Lithium, Boron and Gangue Metals Grade Ranges based on Testwork and Mine Plan

Source: ioneer, 2025

The forecasted average annual composition of lithium from the 2025 mine plan is similar to the forecasted average from the 2020 FS, whilst the boron grades are much lower in comparison. The lithium and boron grades expected over the 82-year mine plan are shown in Figure 10-2.

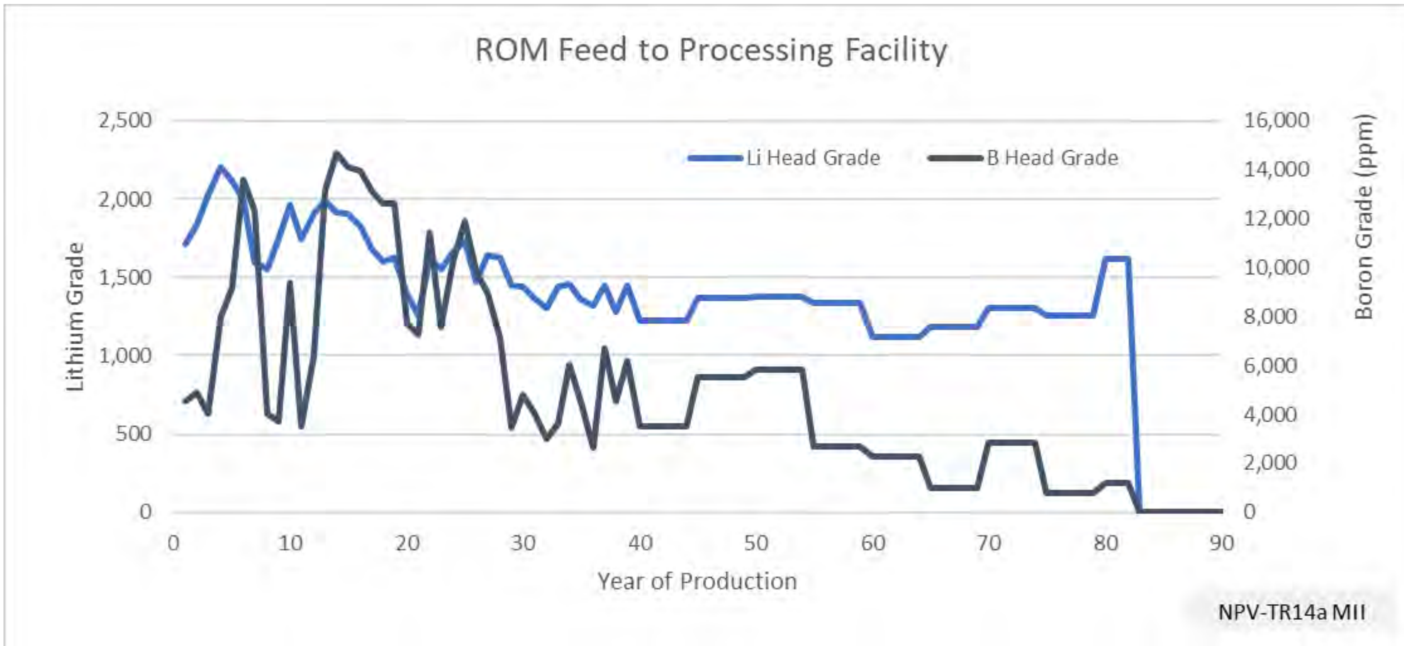


Figure 10-2 – 2025 Mine Plan Lithium and Boron Grades

Source: ioneer, 2025

The locations of samples used for metallurgical testing are provided in Figure 10-3.

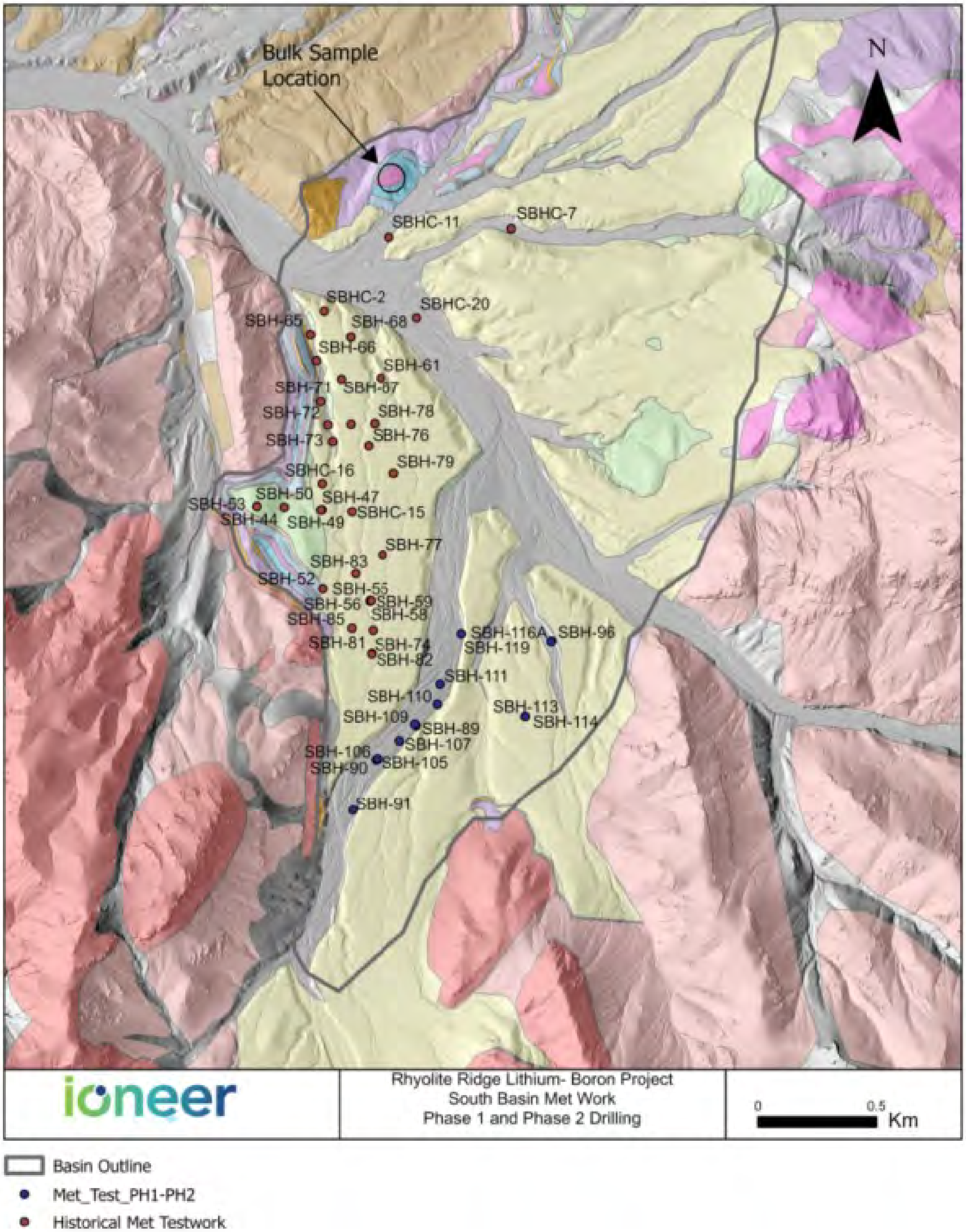


Figure 10-3 – Locations of Samples Used for Metallurgical Testwork

Source: ioneer, 2024

10.4.2. Aqueous Phase Samples

Since a large proportion of the Rhyolite Ridge flowsheet is based on solution processing operations, which are dependent on phase chemistry, specifically the ratio between different elements, the approach to solution sample representativeness is important.

To ensure solution processing testwork representativeness, especially with respect to solution phase chemistry, the following approach was taken across different project stages:

- PFS & Early FS testwork: Feed solutions were taken as is from leaching test work to ascertain baseline phase chemistry and solubility data;
- FS testwork and Pilot Plant: Feed solutions were adjusted with various synthetic salts to approximate the expected five-year average composition of the 2020 FS mine plan. This data forms the basis of engineering design;
- Post FS testwork: Feed solutions from stream 1 and 2 blends, and stream 2 leach testwork, was subject to the design operating conditions to ascertain differences in solubility and other key parameters with varying ROM compositional blends. This program confirmed the operating envelope of the processing facility.

The key compositional ratios of feed solutions are compared in Table 10-7.

Table 10-7 – Key Compositional Ratios in Advancing PLS

Element	Unit	**Mine Plan (14a) Average** (Year 1-25)	**Design** (Based on KCA and Kemetco Pilot programs)	**2025 Phase Chemistry Program** (Supports larger operating envelope
Li	ppm	1,750	2,100	1,690 - 2,165
B	ppm	9,400	14,600	4,400 – 11,400
Mg:Li	% w/w	19.5	18.0	18.6 – 21.8
Mg:Na	% w/w	2.5	1.3	1.4 – 5.9
Mg:K	% w/w	3.7	3.7	5.0 – 6.3
Al:K	% w/w	0.9	1.0	0.6 - 0.8
Al:F	% w/w	1.0	1.3	0.6 – 1.0

10.5. Recovery Estimates

The underlying basis of recovery for lithium and boron was determined through extensive analysis of testwork data collected during the FS. Where losses could not be directly measured from the testwork data, the main design performance criteria from the unit operations were determined through reasonable industrial experience. These performance criteria formed the basis of the integrated heat and mass balance, which accounted for the internal recycle streams designed to increase overall recovery and reduce reagent consumption. The heat and mass balance considered, firstly, the extent of extraction achieved in the leach process, and then, the subsequent sources of pay metal loss throughout the system, to determine the overall recovery.

10.5.1. Boron Recovery

The boron recovery is based on a combination of bench and pilot scale metallurgical testwork. For the vat leach stage, boron recovery estimates are based on both column and vat leaching testwork, conducted at both bench-scale and full-height vat leach, along with analysis of partially leached leach residue. This testwork confirmed that a boron loss of about 15.5% is to be expected during the leach stage due to dissolution and washing. For the balance of the flowsheet, boron losses in the IR1 filter cake, due to co-precipitation and washing, the EVP1, EVP2 & CRZ2 sulfate salts and the lithium circuit chloride bleed are expected to total to about 6.2%. These losses were confirmed by bench-scale and pilot-scale testing, measured displacement washing performance, centrifuge performance pilot testing, integration of these results in the heat and mass balance and lithium brine cleaning testing. Thus, the overall recovery of boron is expected to be about 78.3%, a decrease to the 78.6% recovery reported in the 2020 feasibility study. This is primarily driven by higher losses associated with the shorter leach time. However, since the FS, the process plant recoveries have improved, notably through reduced co-precipitation and soluble losses in dewatering equipment, following pilot-scale testwork.

10.5.2. Lithium Recovery

The lithium recovery is based on a combination of bench and pilot scale metallurgical testwork. For the vat leach stage, lithium recovery estimates are based on both column and vat leaching testwork, conducted at both bench-scale and full-height vat leach, along with analysis of partially leached leach residue. This testwork confirmed that a lithium loss of about 9.2% is to be expected during the leach stage due to dissolution and washing. For the balance of the flowsheet, lithium losses in the IR1 filter cake, due to co-precipitation and washing, the EVP1, EVP2 & CRZ2 sulfate salts and the lithium circuit chloride bleed are expected to total to about 5.6%. These losses were confirmed by bench-scale and pilot-scale testing, measured displacement washing performance, centrifuge performance pilot testing, integration of these results in the heat and mass balance and lithium brine cleaning testing. Thus, the overall recovery of lithium is expected to be about 85.2%, an improvement over the 84.6% recovery reported in the 2020 feasibility study, following pilot-scale testwork and flowsheet optimization, notably for the vat leach stage.

10.5.3. Key Factors Influencing Boron and Lithium Recovery in Leaching Processes

Recovery of boron and lithium is primary influenced by the ore head grade and the operating pH of the leach system. Testwork has shown that a pH of 0 is required to effectively extract boron and lithium from clay minerals. During leaching, the system typically operates with 100-400 g/L of free acid while, during loading and neutralization stages, the acidity ranges from 1-20 g/L. Only under upset conditions or after extended shutdowns does the pH rise above 2.

Gangue minerals, such as carbonates and clays, do not prevent boron and lithium dissolution, but variability in calcite and dolomite grade significantly affects free acid availability due to their high acid consumption. Calcium and magnesium, which leach faster than most gangue elements, are primarily extracted during the loading and neutralization stages. This allows for effective boron and lithium extraction during leach stages 1, 2 and 3. Iron, potassium and aluminum exhibit slower leach kinetics. Iron is often present as pyrite, which leaches poorly under the low oxidizing conditions in vats, while aluminum and potassium are typically found in potassium feldspar, which is resistant to sulfuric acid leaching. These elements, even when present in higher concentrations, do not significantly impact acid consumption or boron and lithium recovery.

Sodium, associated with searlesite (a borosilicate) mineral, is partially leached during the early stages due to its faster kinetics in sulfuric acid. Fluorine is not an acid-consuming element and is released into solution once the clay matrix is broken down.

Lithium recovery can be affected by co-precipitation with aluminum or ferric hydroxides if the pH rises above 3-4. Under normal conditions, the pH remains between0 and1, minimizing this risk. Acid consumption must be adjusted based on gangue mineral content to ensure complete utilization and avoid negative impacts on recovery.

Feed permeability and competency after leaching are high, making vat leaching feasible for the Rhyolite Ridge Project. Clay content is a critical parameter, influencing permeability, washability and, overall recovery. This limits blending of high clay stream ore (M5) to 10%, while higher blending ratios are possible for S5 and L6 ores.

Boron losses due to co-precipitation, forming of calcium and sodium borates, were observed during IR1 Alunite testwork campaigns. Lithium losses were linked to pH excursions and adsorption onto aluminum precipitates. These losses were mitigated at pilot scale by optimizing seed recycle rates, stabilizing pH through controlled reagent addition and maintaining temperatures above 80°C (176°F).

Soluble boron and lithium losses during the IR1 filter cake washing step were influenced by wash efficiency, flow rate and temperature. Additional losses during sulfate salt dewatering in evaporation and crystallization units were also tied to wash efficiency. These were reduced through repulping and implementing a second washing and dewatering stage. Gangue mineral variability did not significantly affect wash efficiency or residual moisture content.

10.6. QP's Opinion

10.6.1. Adequacy of Testwork Data and Analytical Methods

The metallurgical testwork conducted and the analytical procedures used follow conventional industrial practice and are considered adequate for the purposes of this technical report summary. The stream 1 testwork completed during the FS strengthened the process maturity of the Rhyolite Ridge Project and was further improved upon with the additional testwork completed thereafter. Testwork programs conducted for stream 2 prior to 2024 showed that it could be subjected to the same recovery processes as stream 1.

Additional metallurgical testwork undertaken after 2024 focused on optimizing leach residence time and evaluating the processing of stream 2 feedstock. These investigations were aligned with established industrial practices and provided further insights into the treatment and recovery potential of low-grade materials. These findings contribute to a better understanding of process performance under varying feed conditions and support future efforts to improve operational efficiency.

10.6.2. Boric Acid Flotation Testwork Observation

While good recoveries were achieved in the boric acid flotation testwork, difficulties were encountered in achieving the original target concentrate grade of 85%. This was due to several lab operational issues including unsaturated brines, poor temperature control, cementation/aggregation of sulfates to boric acid crystals, and the mixture of different temperature crystals. A thorough analysis was completed by ioneer to address these challenges, from which three major improvements were recommended: (1) segregating the EVP1 and CRZ2 flotation circuits, (2) performing flotation prior to crystal dewatering, and (3) lowering the target concentrate grade to 50% boric acid. A subsequent flotation testwork program, carried out at Kemetco in July 2021, demonstrated that boric acid can be selectively floated from crystals slurries in all stages. It should be noted that boric acid recovered from flotation is recycled, redissolved and recrystallized so operating flexibility exists in the grade to optimize recovery.

Opportunities for improving boric acid extraction and concentration were evaluated. Tests were done on the flotation of crystals in the mother liquor to show that the precipitation of sulfates on boric acid crystals and fines production could be avoided. In addition to this flowsheet alteration, a design back-up and process guarantee from the flotation vendor serves as a technical and commercial mechanism to increase overall boric acid recovery should the industrial results lag the lab work.

It is the QP's opinion that the initial challenges have been addressed and that flotation is considered an appropriate processing method to produce boric acid. However, it is recommended that more tests be conducted to fully optimize the circuit to achieve its full potential.

10.6.3. PLS Impurity Removal (IR1)

Initially, evidence of channeling, bypassing and generally poor filtration with bench scale testing led to uncertainty around the effectiveness of the wash step to prevent entrainment of lithium-containing liquor within the filter cake. When testing was conducted at pilot level and healthy seed populations were established, a marked improvement in filtration performance and co-precipitation losses was observed. The subsequent additional testing, conducted after the completion of the DFS, in collaboration with specialist filtration equipment vendors, verified this improvement.

11. MINERAL RESOURCE ESTIMATES

The October 2023 mineral resource is updated to the August 2025 mineral resource with the inclusion of changes to the resource block model, the plant processing approach and cost changes. These changes are discussed in Section 11.10.

11.1. Geological Modeling Methodology and Assumptions

The QP assumed that the mineralized zones are continuous between drill holes based on review of the drill hole data and previous reports. The seam continuity has been offset by faulting, but the grade continuity can be seen across the fault offsets in cross sections. It was assumed that grades vary between drill holes based on a distance-weighted interpolator. This assumption of the geology was used directly in guiding and controlling the mineral resource estimation. The mineralized zones were modeled as stratigraphically controlled lithium-boron deposits. The primary directions of continuity for the mineralization are horizontal and parallel to the seam floor (as influenced by faulting), within the geological units of G5, M5, B5, G6, L6, and Lsi for which grades were estimated.

The geological model was updated to incorporate additional ioneer geological mapping, geophysical data, and new drill hole information along the eastern side of the basin. This update provided additional geological constraint on the basin stratigraphy's geometry east of the limits of drill hole data in support of geotechnical modeling and analysis in progress on the Project. In addition, this update expands the definition of mineralization in the southeast area of the basin.

The incorporation of this additional mapping changed the interpretation of the eastern portion of the basin-scale syncline from a simple monoclinal eastern limb to a more complex eastern limb, with bed geometry and thickness modified by a series of basin-scale folds and faults. Additional bookcase style faulting associated with larger fault structures in the basin were added along the central fault and edge fault based on Phase 2 and Phase 3 drilling (2023-2024) and lithology logs.

The primary factor affecting the continuity of both geology and grade is the lithology of the geological units. HiB-Li mineralization is favorably concentrated in marl-claystone of the B5, and L6 units, with minor concentration in the M5 unit. Similarly, the LoB-Li mineralization is favorably concentrated in the M5, S5, and L6 units. Mineralogy of the units has a direct effect on the continuity of the mineralization, with elevated boron grades in the B5 and M5 units associated with a distinct reduction in carbonate and clay content in the units, while higher lithium values tend to be associated with elevated clay and carbonate, and occasionally increase in K-feldspar content in these units. Additional factors affecting the continuity of geology and grade include the spatial distribution and thickness of the host rocks, which have been impacted by both syn-depositional and post-depositional geological processes (i.e., localized faulting, erosion).

11.2. Geological Modeling Database

All available ioneer, Global Geoscience (now ioneer) and ALM exploration drilling data, including survey information, downhole geological units, sample intervals and analytical results, were compiled by ioneer personnel. Most of the exploration data used by IMC was extracted from a series of Excel documents provided by ioneer to IMC personnel. All geologic and assay data was compiled by ioneer into a Hexagon Torque database in 2024 and provided to IMC. GSI Environmental (GSI), under the direction of ioneer, updated the geologic model of the Cave Springs seams along with the overburden and basement rock types. A fault block model consisting of 30 fault blocks was developed based on the drill hole data, geophysical data and surface mapping. The seam and fault block models were provided to IMC as surface and solids models. IMC incorporated these models into a block model of 7.62 x 7.62 x 1.52 m (25 x 25 x 5 ft) blocks using a nearest whole block assignment method. This block model was re-blocked into a model with 7.62 x 7.62 x 9.14 m (25 x 25 x 30 ft) blocks for the tabulation of the mineral resources and mineral reserves.

Validated drilling data for the South Basin of Rhyolite Ridge comprised 166 drill holes (51 RC and 115 core drill holes) totaling 33,519 m (109,969 ft) of drilling and containing 13,481 analytical sample intervals within 20,868 m (68,464 ft) of drilling in 160 holes. The drill hole data used for the October 2021 resource was comprised of 112 drill holes (46 RC and 66 core holes) totaling 24,336 m (79,840 ft) and containing 11,934 analytical samples.

Compiled supporting documentation for the drill data included laboratory certificates, descriptive logs, core and chip photos, collar survey reports, geological maps and internal report documents. The drill hole data was provided to IMC in the form of exported Excel files from Hexagon Torque database. IMC loaded the data into its IMC proprietary geologic modeling software. The seams of economic interest have a higher percentage of footage assayed, with both M5 and B5 having greater than 90% of the seam intervals assayed and S5 and L6 closer to 70% assayed. Table 11-1 documents the number of drill hole intervals and assayed intervals by seams and rock types used for the current mineral resource.

Table 11-1 - Summary of Drill Hole Database Intervals by Seam

Seam Code	Seam Name	Drill Database Intervals		Database Intervals Assayed			
		Number	Length (m)	Number	Drilled Length (m)	Avg. Length (m)	% of length assayed
1	Qal	775	4,376.56	648	1,391.6	2.15	31.80%
3	S3	2,9	8,442.17	2,849	4,490.2	1.58	53.22%
4	G4	397	899.10	328	3,550.7	1.53	56.08%
5	M4	749	1,594.8	660	987.1	1.50	61.87%
6	G5	231	382.31	164	245.3	1.50	64.17%
7	M5	1,421	2,032.25	1326	1,957.4	1.48	96.69%
8	B5	2,098	3,046.23	1980	2,966.8	1.50	97.19%
9	S5	1,375	2,603.45	1256	1,893.6	1.51	72.62%
10	G6	570	1,218.19	509	747.2	1.52	64.07%
11	L6	2,348	4,194.93	2220	3,317.0	1.49	78.93%
12	Lsi	679	1,407.75	641	972.3	1.52	69.07%
14	G7	445	791.27	414	625.3	1.43	79.02%
15	Tlv	89	918.48	51	77.0	1.51	8.33%
16	Tbx	428	966.08	396	609.4	1.54	63.08%
18	Z	44	181.97	41	61.6	1.50	33.84

Seam Code	Seam Name	Drill Database Intervals		Database Intervals Assayed			
		Number	Length (ft)	Number	Drilled Length (ft)	Avg. Length (ft)	% of footage assayed
1	Qal	775	14,358.8	648	4,565.6	7.05	31.80%
3	S3	2,9	27,697.4	2,849	14,731.7	5.17	53.22%
4	G4	397	2,949.80	328	11,649.2	5.03	56.08%
5	M4	749	5,232.30	660	3,238.6	4.91	61.87%
6	G5	231	1,254.30	164	804.9	4.91	64.17%
7	M5	1,421	6,667.50	1326	6,422	4.84	96.69%
8	B5	2,098	9,994.20	1980	9,733.5	4.91	97.19%
9	S5	1,375	8,541.50	1256	6,212.5	4.95	72.62%
10	G6	570	3,966.70	509	2541.5	4.99	64.07%
11	L6	2,348	13,762.90	2220	10882.7	4.9	78.93%
12	Lsi	679	4,618.60	641	3190.10	4.98	69.07%
14	G7	445	2,596.03	414	2051.5	4.96	79.02%
15	Tlv	89	3,013.40	51	252.5	4.95	8.33%
16	Tbx	428	3,169.54	396	1999.5	5.05	63.08%
18	Z	44	597.01	41	202.00	4.93	33.84

11.3. Exploratory Data Analysis

Exploratory data analysis (EDA) on the geological model database was completed prior to developing the resource block model. The EDA involved statistical and geostatistical analysis of the verified data to allow for evaluation of the statistical and spatial variability of the model data.

The EDA aided in defining the geological domains used in modeling by identifying statistical and spatial trends in the data. The EDA process also aided in the development of interpolation parameters and in the establishment of mineral resource categorization parameters.

11.3.1. Statistical Analysis

Descriptive statistics, histograms, box plots, probability plots, and cross plots were used to evaluate the geological and grade data as part of both the data validation and modeling process. Key findings from the statistical analyses are as follows:

- Lithium and boron grade values are highly variable in units other than the targeted mineralized units (B5, M5, S5, and L6) particularly in S3.

- All units other than B5, M5, and L6 show very low boron grades except for isolated high outliers. The impact of high outlier sample values for boron is particularly pronounced in the S3 and S5 siltstone-claystone units that occur above and below the mineralized sequence, respectively. All units show wider lithium grade ranges; as expected B5, M5, and L6 show the highest-grade populations; however, there is more pronounced overlap with ranges for many of the other units as compared to the boron values. This is attributed to the presence of isolated horizons of LoB-Li mineralization in some of the other units.

- The B5 unit shows near normal distributions for both lithium and boron, with minimal outlier values. This tighter distribution of values is expected based on the high boron cut-off grade of 5,000 ppm that is used as one of the defining parameters for the unit by segregating only the HiB-Li mineralization (excluding the LoB-Li mineralization where possible).

- The B5 probability plots show a small population of very low-grade lithium and boron samples, with less than 18% of the samples below 5,000 ppm boron and 3% below 1,000 ppm lithium.

- The M5 unit shows a different distribution, with the boron population skewed strongly towards the low values (90% < 5,000 ppm) and the lithium population skewed towards the higher values (97% > 1,000 ppm). The high outlier boron values and low outlier lithium values observed are a result of the presence of the transitional zone near the base of the M5 unit, where the mineralization transitions from LoB-Li mineralization to HiB-Li mineralization in the underlying B5 unit.

- Both lithium and boron probability plots show the presence of more than one population of values, indicated by changes in slope in the probability plots.

- The S5 unit has a large percentage of lower values for both boron and lithium with 95% of the boron assays are less than 5,000 ppm and 67% of the lithium assays less than 1,000 ppm. The L6 unit shows similar distributions to M5 with the boron population having 25% of the assays greater than 5,000 ppm and the lithium population having 60% of the assays greater than 1,000 ppm. The patterns are attributed to the likely presence of both LoB-Li and HiB-Li mineralization throughout the unit.

- The G6 unit is shown on the accompanying cumulative frequency plots to present the distribution of the central seams from M5 to L6. G6 is low grade with less than 1% of the boron assays greater than 5,000 ppm and only 5% of the lithium grades greater than 1,000 ppm. G6 is not part of the mineral resource and thus grades are not estimated into this seam.

- Figure 11-1 shows the cumulative frequence of boron assays in the central seams and Figure 11-2 shows the cumulative frequence of the lithium assays. The central seams from top down are G5 (dark blue), M5 (light blue), B5 (red), S5 (orange), G6 (black), L6 (green) and Lsi (brown). The seven central seams received grade estimates.

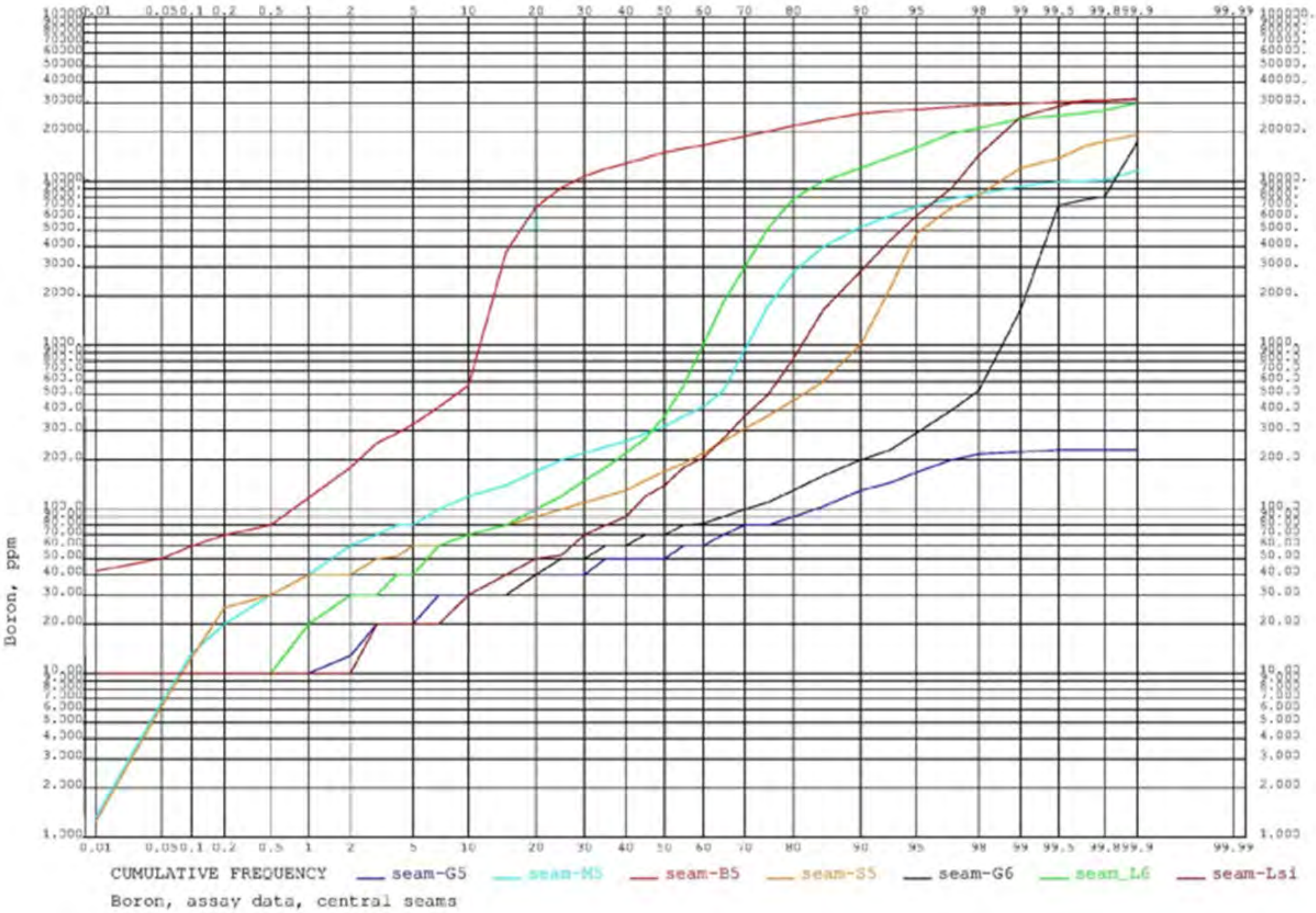


Figure 11-1 – Cumulative Frequency Plot for Boron

Source: ioneer, 2025

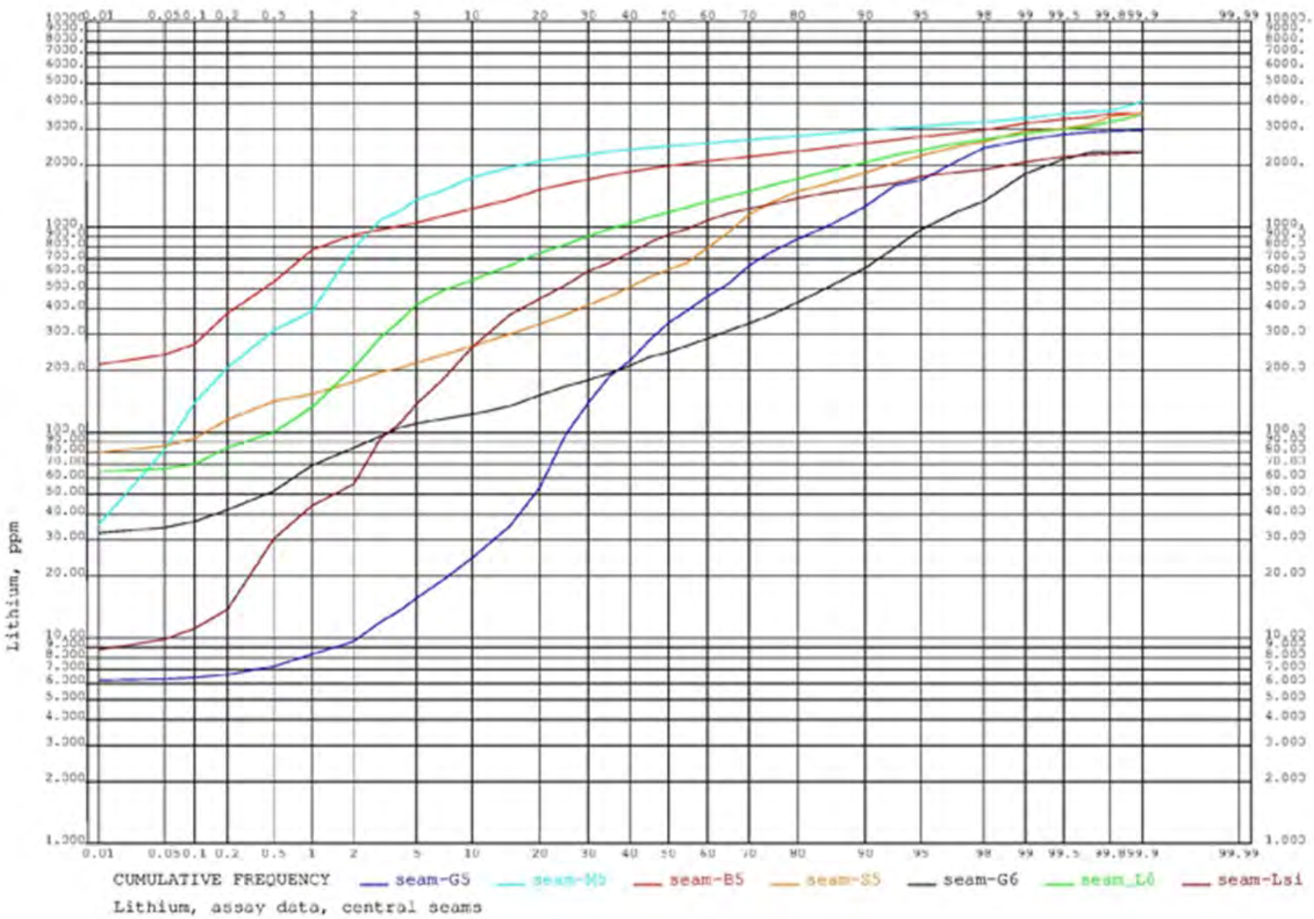


Figure 11-2 - Cumulative Frequency Plot for Lithium

Source: ioneer, 2025

11.3.2. Geostatistical Analysis

The assaying of the drill hole data was done predominantly on 1.52 m (5 ft) lengths with 88.5% of the intervals being 1.52 m as shown on Table 11-2. The grades of the sample lengths greater than 1.52 m are on average lower grades and some very short intervals (less than 0.76 m) can have higher than average grades. To remove any bias, the assay data was composited into uniform 1.52 m intervals which respected the seam boundaries (total length of a drill hole within each seam divided into equal lengths as close to 1.52 m). Table 11-3 shows the comparison of the assay database and the 1.52 m composites respecting the seam boundaries database. The impact to the seams of interest (G5 to Lsi) is slightly fewer composites (more of the shorter assay intervals being combined) with less than one percent change in the average grades.

Table 11-2 - Lengths of Assay Intervals

Length (m)	Length (ft)	Number of Sample Lengths	Average Boron Grade, ppm	Average Lithium Grade, ppm	Average Length, meters	Total Length, meters	% of Sample Length
0.00 - 0.762	0.00 - 2.50	83	3,767	1,503	0.582	48.25	0.23%
0.765 - 1.521	2.51 - 4.99	792	2,344	1,603	1.192	944.37	4.53%
= 1.524	5.00	12,114	3,161	971	1.524	18,461.96	88.47%
1.527 - 2.283	5.01 - 7.49	256	1,669	1,515	1.725	441.87	2.12%
2.286 - 3.045	7.50 - 9.99	63	283	561	2.765	174.07	0.83%
>= 3.048	>= 10.00	173	423	291	4.612	798.07	3.82%
Total		13,481	3,040	1,011		20,868.59	

Table 11-3 - Comparison of Assay Database and Composite Database

Seam		Assay Database			1.52 m (5 ft) Composites, Respecting Seams		
		Number	Average Boron, ppm	Average Lithium, ppm	Number	Average Boron, ppm	Average Lithium, ppm
1	Qal	648	35	40	918	31	34
3	S3	2,849	235	310	2,952	251	316
4	G4	329	58	162	333	58	163
5	M4	660	65	1,111	660	64	1,111
6	G5	164	68	530	162	69	537
7	M5	1,331	1,486	2,391	1,310	1,500	2,389
8	B5	1,977	14,349	1,940	1,968	14,346	1,940
9	S5	1,254	770	882	1,250	763	878
10	G6	509	202	341	509	202	341
11	L6	2,217	3,578	1,251	2,192	3,615	1,253
12	Lsi	641	1,280	926	640	1,277	925
14	G7	414	45	295	412	45	294
15	Tlv	51	26	269	51	26	268
16	Tbx	396	60	108	401	60	107
18	Z	41	31	85	41	30	85
Total		13,481	3,040	1,011	13,799	2,963	984

Gamma (h) from modified covariance variograms (variograms) were generated to evaluate the spatial continuity of key grade parameters for the G5, M5, B5, S5, G6, L6, and Lsi units using the 1.52 m composite database. Variogram analysis focused on evaluating the spatial continuity of lithium and boron within the mineralized units and to guide the search distances for grade estimation.

Directional variograms were generated by seams on 22.5-degree azimuth increments and some additional azimuths to evaluate potential directional anisotropy for the grade parameters in each of the seams. The experimental variograms were generated using lag distances (the separation distance between members of a sample pairing used to generate the experimental variogram) of 91.4 m (300 ft); this allowed for enough sample pairs to generate moderate to well defined variograms.

In units M5, B5 and L6 units, boron showed relatively consistent variogram ranges (the distance at which the variogram reaches the sill and levels off) typically in excess of 610 m (2,000 ft) north-south and 580 m (1,900 ft) east-west and ranges for lithium are above 610 m (2,000 ft) for M5 and B5, with L6 closer to 275 m (900 ft). The variogram range distance is the distance beyond which there is no spatial correlation between members of a sample pairing. The variogram range is an important parameter in evaluating interpolation parameters as well as Mineral Resource categorization parameters as it represents the spatial confidence of continuity of the grade parameters.

The experimental variograms were fitted using a one-structure spherical variogram model. Examples of boron and lithium variograms are presented for units B5 and L6 in Figure 11-3.

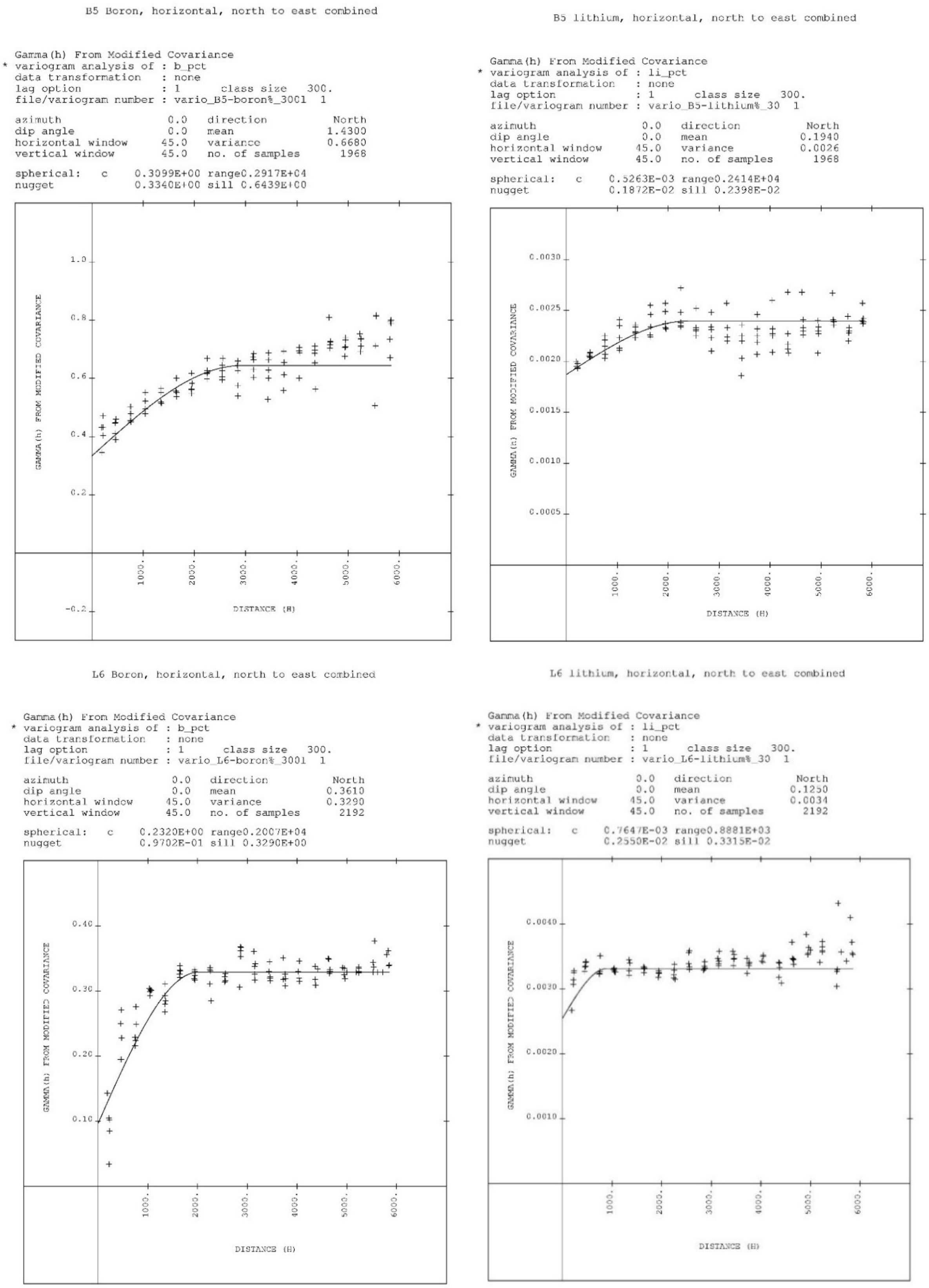


Figure 11-3 - Example Variogram for B5 and L6 – Boron (left) and Lithium (right)

Source: ioneer, 2025

11.4. Geological Modeling

The mineral resource estimation for the Project was performed under the supervision of the QP. The geological model was developed as a stratigraphically constrained grade block model using IMC modeling proprietary software which encompasses computer-assisted geological grade modeling and estimation software applications. The stratigraphic and fault block models were developed by GSI under the direction of ioneer and provided to IMC for the basis of grade estimation for the development of the mineral resource.

IMC reviewed the stratigraphic and fault block models in cross section compared to the drill hole data of the seam assignments and accepts the current interpretation for developing the mineral resource. The geological interpretation was used to control the mineral resource estimate by developing a contiguous stratigraphic model (all units in the sequence were modeled) of the host rock units deposited within the basin, roof, and floor contacts of which then served as hard contacts for constraining the grade interpolation.

The mineral resource block model covers 6,096 m (20,000 ft) in the north-south direction and 3,962 m (13,000 ft) east-west within the South Basin of Rhyolite Ridge. The mineral resource estimation area within the block model as defined by the spatial extent of the B5 unit Inferred Mineral Resource classification limits, are approximately 3,658 m (12,000 ft) north-south by 1,675 m (5,500 ft) east-west. The upper and lower limits of the mineral resource span from surface at 1946 m (6,385 ft) elevation, where the mineralized unit M5 outcrop locally, through to a maximum depth at 1,470 m (4,825 ft) for the base of the lower mineralized zone (L6 unit), spanning a vertical distance of 475 m (1,560 ft). The model extent is shown in Figure 11-4.

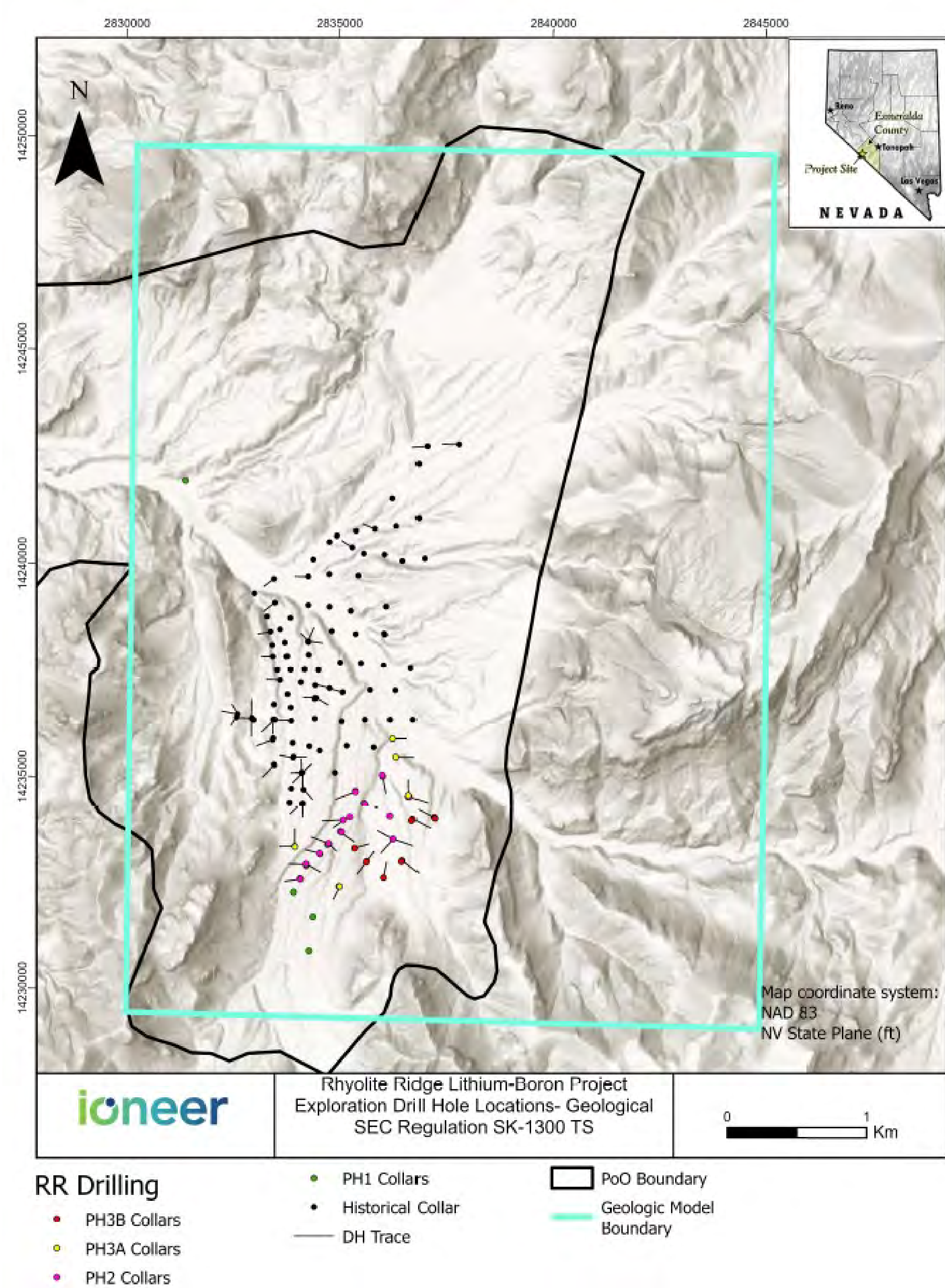


Figure 11-4 - Model Extents

Source: ioneer, 2025

11.4.1. Topographic Model

The topographic model for the Project was provided by ioneer to IMC in a dxf file format. 3D contours with a resolution of 50 cm (1.64 ft) were exported from the PhotoSat satellite topographic data set and converted from NAD83 to NVSPW 1983 projections by NewFields. The contours were visually inspected by IMC to ensure the data covered the area of interest and that it was free of obvious errors, or omissions.

The contour data was then interpolated across a regularized grid by triangulation; the grid cell size for the model was 7.62 by 7.62 m (25 by 25 ft). As a validation of the modeled topographic surface, collar elevations from the DGPS surveyed drill hole were compared against the collar elevations from the topographic model; the mean difference between collar elevation and topographic model elevation was ±0.35 m (1.15 ft) (range of 0 to 2.8 m [8 ft], with 93% being within 1.52 m [5 ft]). The differences are due to the smoothing of the topographic grid in triangulation and Earth movement during the preparation of drill pads.

11.4.2. Stratigraphic Model

The seams or units within the Cave Springs Formation (CSF) have been modeled and provided to IMC as surfaces of the floor and ceiling of each seam. All seams with the CSF have been modeled along with the alluvial overburden and volcanics which form the basement and boundaries of the CSF. The seams have been offset by concurrent and post depositional faulting.

Variability of the mineral resource is associated primarily with the petrophysical and geochemical properties of the individual geological units (seams) in the Cave Spring Formation. These properties played a key role in determining units that were favorable for hosting lithium-boron mineralization versus those that were not. On a basin scale, proximity or distance relative to the interpreted source pathways for the mineralizing fluids is a key component in grade distribution and variability across the deposit; lithium and boron grades appear highest in the southwest portion of the South Basin, proximal to the western bounding fault of the basin.

Geological domaining in the model was constrained by the roof and floor surfaces of the geological units and the offsets at the fault block boundaries. The unit boundaries were modeled as hard boundaries, with samples interpolated only within the unit in which they occur but can use composite samples within the unit across fault boundaries. The geological units modeled are summarized in Table 11-4. The maximum and minimum elevations of the seams is distorted by the fault offsets as seen in Figure 11-5 (east-west sections at N14,234,000, N14,236,000, N14,240,000 looking north) and Figure 11-6 (north-south sections at E2,836,000 E2,837,000, looking west).

Table 11-4 - Summary of Geological Units in 1.52 m Block Height Model

Seam Unit & Model Code	Mean Thickness (m)	Minimum Thickness (m)	Maximum Thickness (m)	Minimum Elevation (m)	Maximum Elevation (m)
Q1 (1)	26.2	1.5	68.6	1762	2118
S3 (3)	82.6	1.5	260.6	1617	2068
G4 (4)	9.8	1.5	33.5	1606	2047
M4 (5)	11.0	1.5	61.0	1596	1951
G5 (6)	5.8	1.5	32.0	1594	1948
M5 (7)	13.4	1.5	51.8	1582	1966
B5 (8)	16.2	1.5	86.9	1561	1954
S5 (9)	16.2	1.5	80.8	1543	1932
G6 (10)	10.7	1.5	36.6	1521	1943
L6 (11)	56.7	1.5	217.9	1471	2057
Lsi (12)	27.7	1.5	65.5	1446	1881
G7 (14)	11.9	1.5	100.6	1430	2076

Seam Unit & Model Code	Mean Thickness (ft)	Minimum Thickness (ft)	Maximum Thickness (ft)	Minimum Elevation (ft)	Maximum Elevation (ft)
Q1 (1)	86	5	225	5785	6960
S3 (3)	271	5	855	5295	6775
G4 (4)	32	5	110	5275	6690
M4 (5)	36	5	200	5235	6480
G5 (6)	19	5	105	5230	6480
M5 (7)	44	5	170	5190	6495
B5 (8)	53	5	285	5125	6500
S5 (9)	53	5	265	5060	6530
G6 (10)	35	5	120	4985	6585
L6 (11)	186	5	715	4830	6685
Lsi (12)	91	5	215	4735	6115
G7 (14)	39	5	330	4685	6635

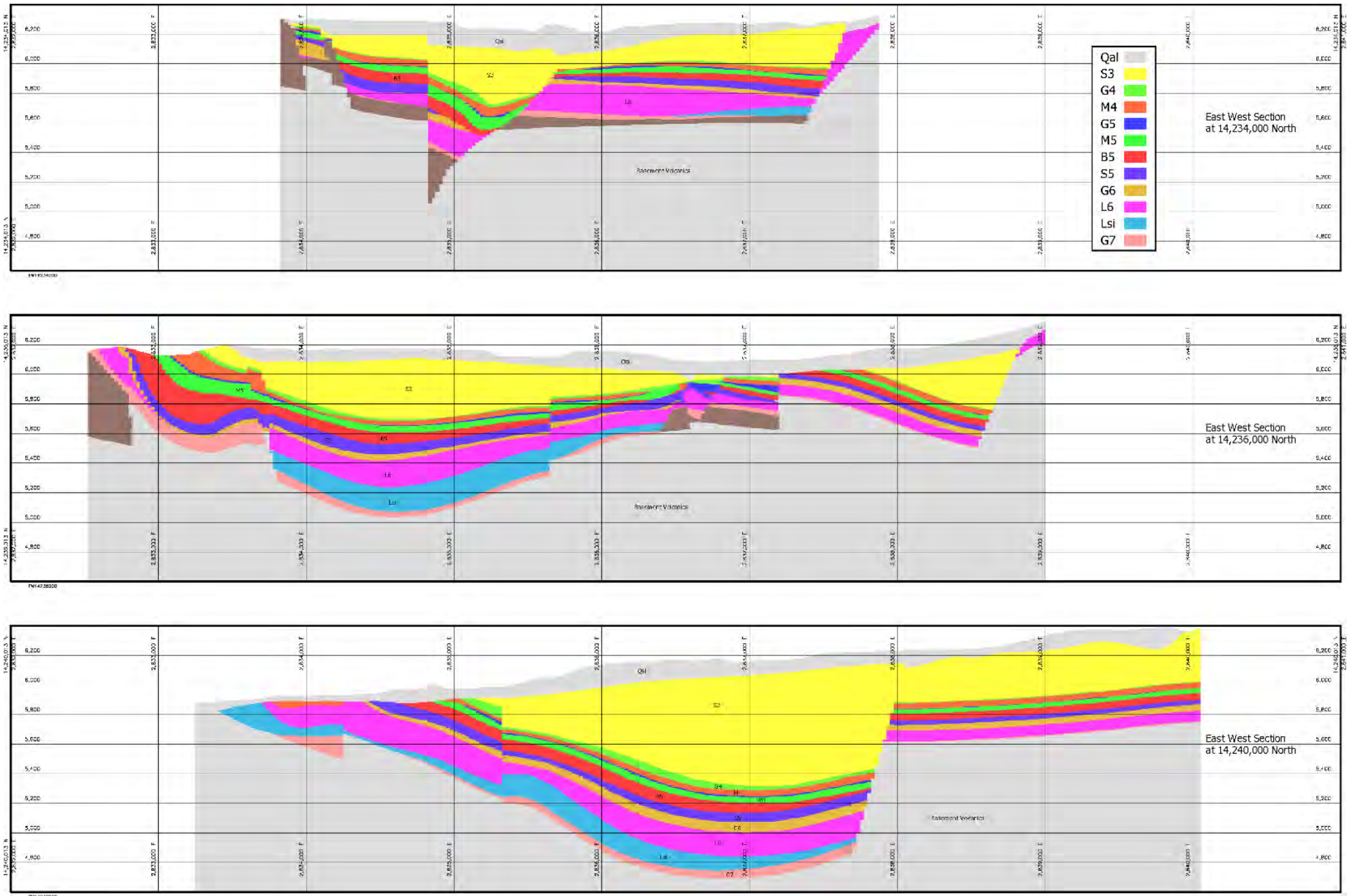


Figure 11-5 - East - West Cross Sections

Source: ioneer, 2025

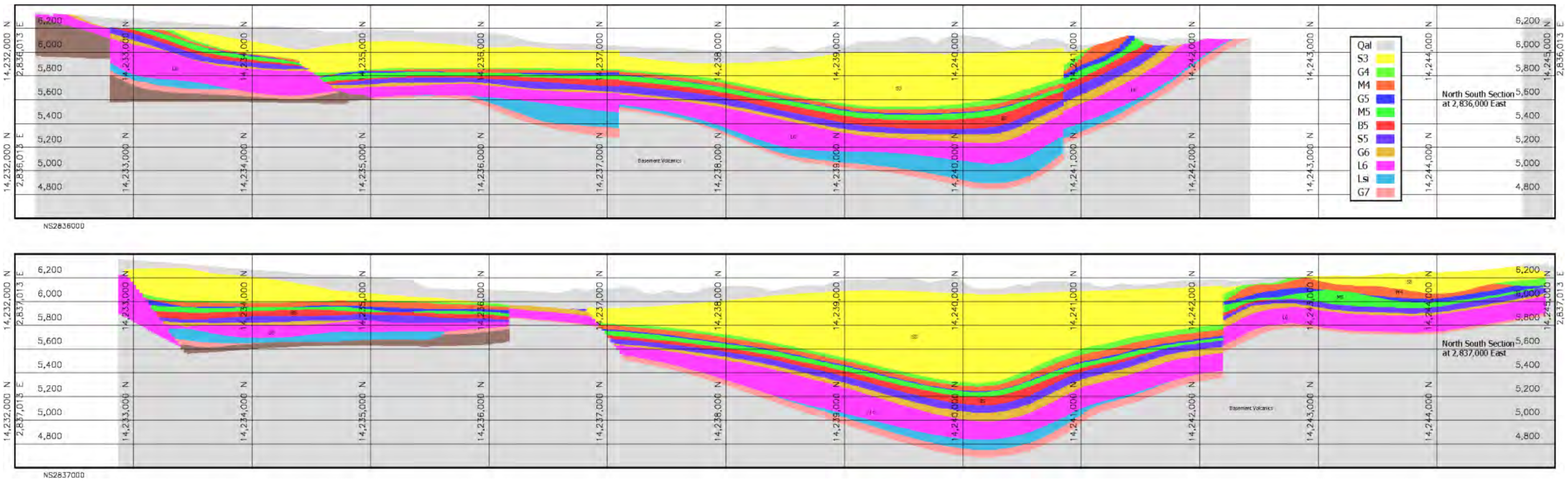


Figure 11-6 - North - South Cross Sections

Source: ioneer, 2025

11.4.3. Fault Block Model

The model of the fault blocks has 30 different fault blocks which have off set the CSF seams within the south basin block model. The offsets are seen in Figure 11-5 and Figure 11-6. Figure 11-7 shows the boundaries of the fault blocks at 5,600 ft (1,708 m) elevation in the 1.52 m (5 ft) block height model. The development of the fault block model is discussed in Section 7.

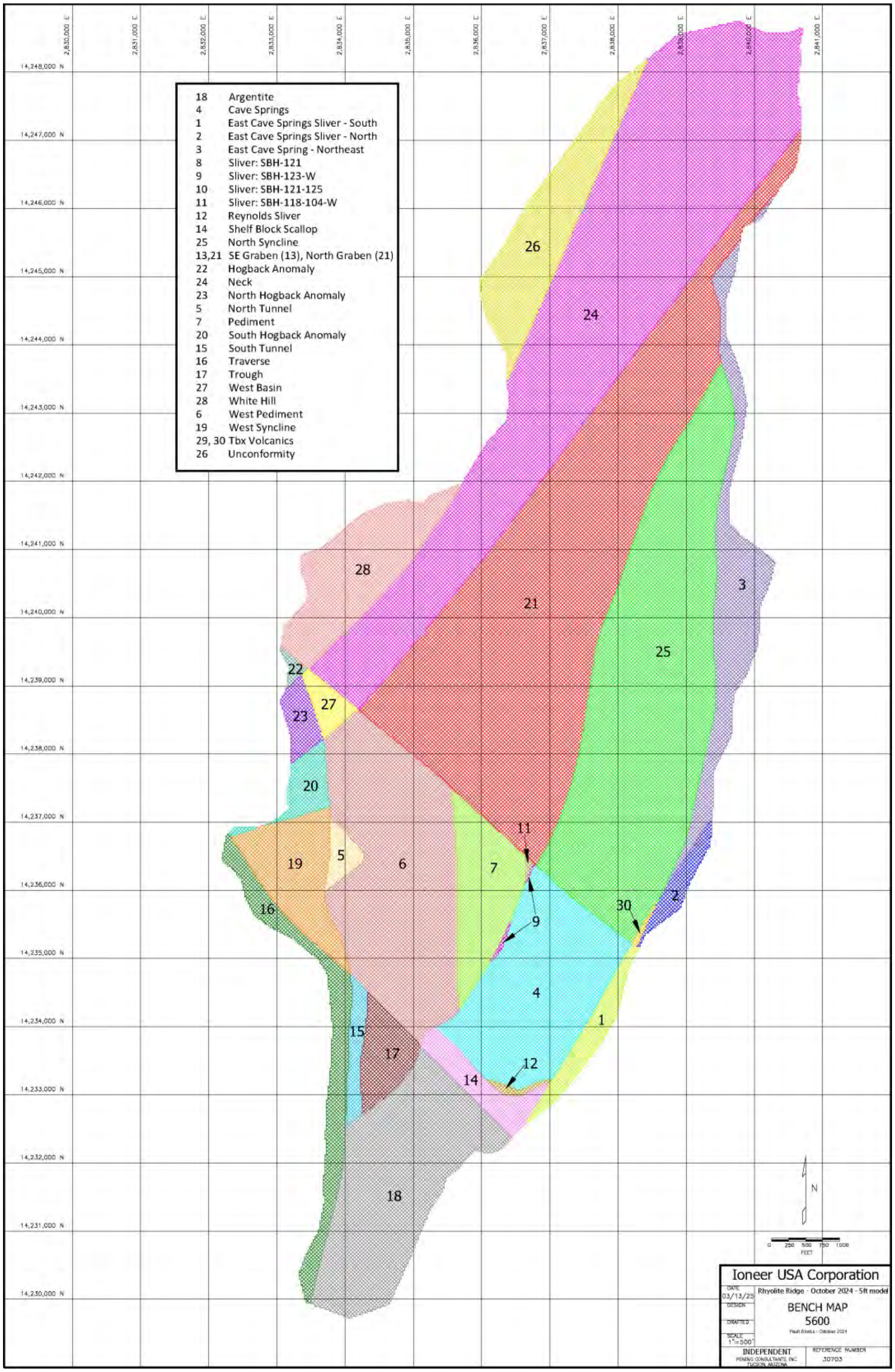


Figure 11-7 - Fault Blocks at 5,600 ft (1,706 m) Elevation

Source: ioneer, 2025

11.4.4. Grade Model

This sub-section contains information related to density and grade for the Project.

11.4.4.1. Estimation Approach

The grades for the following elements were estimated from the drill hole 1.52 m composite database into the block model using an inverse distance squared interpolation approach. The elements estimated (and the block model code and units) are: boron (b_id, ppm), lithium (li_id, ppm), calcium (ca_id, %), magnesium (mg_id, %), sodium (na_id, %), potassium (k_id, %), aluminum (al_id, %), iron (fe_id, %), strontium (sr_id, ppm), and manganese (mn_id, ppm). In all estimation runs, the estimations were restricted to the individual seam being estimated, but the search for drill hole data points could cross the fault block boundaries. Statistics have shown that the grades are comparable across the fault block boundaries and much of the faulting occurred post mineral deposition.

The orientation of the seams based on the floor contours of the seam change orientation in some areas of the deposit due to faulting and folding of the seams. Figure 11-8 illustrates this with the floor contours of the B5 seam. To account for these changes, estimation domains were developed based on the orientation of the seam floor for the seven seams being estimated (G5, M5, B5, S5, G6, L6 and Lsi). The orientation of the search ellipse was modified to reflect the orientation of the seam floor. The search distance based on the variogram results was held constant for all the domains within each of the seams.

No grade capping was applied to the assay data prior to compositing to the 1.52 m composite lengths. A review of the cumulative frequency plots and the high-grade samples provided support that capping was not needed.

The maximum distance for the grade estimations is based on the variogram results for the seams. With the orientations adjusted for the various domains within each seam, distances are:

- G5: 305 x 305 m (1,000 x 1,000 ft);
- M5: 533.4 x 533.4 m (1,750 x 1,750 ft);
- B5: 533.4 x 533.4 m (1,750 x 1,750 ft);
- S5: 228.6 x 228.6 m (750 x 750 ft);
- G6: 228.6 x 228.6 m (750 x 750 ft);
- L6: 305 x 305 m (1,000 x 1,000 ft);
- Lsi: 305 x 305 m (1,000 x 1,000 ft).

These search distances are within the range of the variogram results for the seams.

The same search distance was used for all the elements being estimated. The vertical window of 61 m (200 ft) was selected to be able to use assay data from adjacent domains where seam offsets occur (usually defined by fault block boundaries).

The grades into the block model (block size of 7.62 x 7.62 x 1.52 m or 25 x 25 x 5 ft) are estimated using an inverse distance squared approach. The number of samples used to estimate the grades of a model block are a minimum of two, maximum of ten and no more than three from any drill hole. For each model block estimated, the grades were assigned along with the number of samples used, the average distance of the samples to the block center, and the distance to the closest sample.

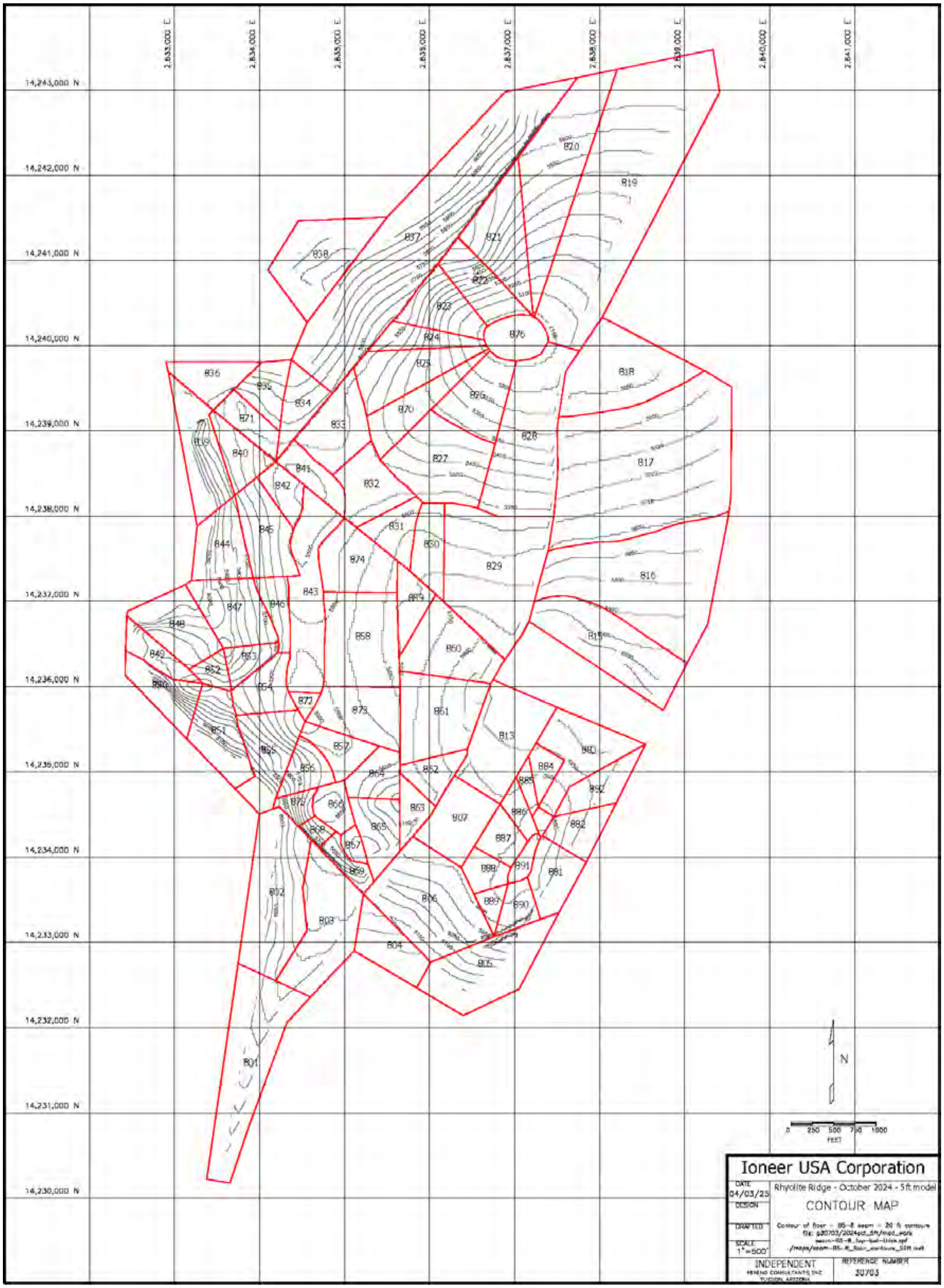


Figure 11-8 – B5 Estimation Domains

Source: ioneer, 2025

11.4.4.2. Estimation Results and Mineralization

The estimation of the grades into the block model was reviewed by comparison of the block model grades, and the drill hole grades on sections and plans. Tabulation of the grade estimates and the drill hole grades by seam and the fault blocks were reviewed and a summary of the results is shown in Table 11-5 and the details of the B5 seam in Table 11-6. Both of these tables used a zero cutoff for boron. Seam S5 is a low-grade seam for both boron and lithium. There has been some smearing of higher grades into the lower grade areas in S5 and the other seams. This occurs predominately in areas below the cutoff grade for the process streams and thus does not impact the tabulation of mineral resources.

Table 11-5 - Comparison of Block Model Grades and Drill Hole Grades

Seam	Block Model					Drill Hole Data		
	# blocks	# blocks estimated	% estimated	Average Boron, ppm	Average Lithium, ppm	# Assays	Average, Boron, ppm	Average Lithium, ppm
G5	323,255	145,230	44.93%	64	473	167	79	790
M5	769,042	509,156	66.21%	1,166	2,219	1,196	1,601	2,377
B5	713,322	641,938	89.99%	14,037	1,873	1,789	14,249	1,927
S5	944,061	611,280	64.75%	800	867	1,197	803	860
G6	628,537	367,690	58.50%	183	337	501	236	369
L6	4,194,225	1,759,933	41.96%	3,426	1,216	2,113	3,647	1,250
Lsi	795,574	633,451	79.62%	910	952	618	1,296	928

Table 11-6 - Comparison of Block Model Grades and Drill Hole Grades for Seam B5

Fault Block		Block Model				Drill Hole Data		
		# blocks	# blocks estimated	Average Boron, ppm	Average Lithium, ppm	# Composites	Average, Boron, ppm	Average Lithium, ppm
1	East Cave Springs Sliver – South	12	12	6,795	2,390			
2	East Cave Springs Sliver - North	0						
3	East Cave Spring – Northeast	28	0					
4	Cave Springs	63,259	63,259	9,741	2,114	157	10,392	2,116
5	North Tunnel	9,055	9,055	16,524	2,021	74	16,655	1,990
6	West Pediment	148,167	148,167	18,228	1,816	639	19,101	1,837
7	Pediment	22,290	22,290	6,719	2,203	58	4,696	2,136
8	Sliver: SBH-121	231	231	355	2,378			
9	Sliver: SBH-123-W	595	595	992	2,516	11	371	2,707
10	Sliver: SBH-121-125	246	246	808	2,433			
11	Sliver: SBH-118-104-W	715	715	1,696	2,291			
12	Reynolds Sliver	1,148	1,148	6,406	2,061	22	6,604	2,080
13	SE Graben	1,406	1,406	1,207	2,037	13	1,717	2,069
14	Shelf Block Scallop	7,984	7,984	5,654	2,020	72	4,434	2,149
15	South Tunnel	5	5	7,863	2,338			
16	Traverse	31	31	13,477	2,597			
17	Trough	36,523	36,378	6,274	2,434	185	6,570	2,402
18	Argentite	2,281	2,281	8,223	2,046			
19	West Syncline	35,555	35,555	15,630	2,137	219	15,071	2,090
20	South Hogback Anomaly	6,269	6,269	13,394	2,131	26	12,481	2,083
21	North Graben	229,665	223,932	14,411	1,723	255	16,710	1,749
22	Hogback Anomaly	1,781	1,781	14,886	1,818	12	15,026	1,759
23	North Hogback Anomaly	4,884	4,884	15,082	1,890	12	14,298	1,969

24	Neck	53,192	53,192	15,510	1,586	161	13,219	1,490
25	North Syncline	74,878	9,400	6,624	2,333			
26	Unconformity	0						
27	West Basin	7,936	7,936	17,463	1,783	42	17,027	1,787
28	White Hill	5,186	5,186	14,281	1,318			
29, 30	Tbx Volcanics							

11.5. Moisture Basis

The geological model and resultant estimated mineral resource tonnages are presented on a dry basis.

The moisture content for the mineralized units should continue to be evaluated with future drilling. Additional modifying factor studies are currently underway and should be evaluated as part of future analytical programs.

Moisture analyses were performed on 110 samples as part of the 2018 to 2019 drilling program; however, the results are highly variable. Samples from ¼ core, ½ core, and whole core showed considerable variability within the same geological units, and the lag time between drilling and sample submission for some of the samples has also likely impacted the results. The 2018 to 2019 moisture analysis results will be discussed further in Section 14.

11.6. Density

The density values used to convert volumes to tonnages were assigned on a by-geological unit basis using mean values calculated from 145 density samples collected from drill core during the 2018 - 2019 and Phase 1- Phase 2 drilling programs. The density analysis was performed using the water displacement method for density determination, with values reported in dry basis. The density data collected during the 2010 - 2011 drilling programs (and used for the October 2023 mineral resource) were not used for the current mineral resource as methodology could not be confirmed.

The application of assigned densities by geological unit assumes that there will be minimal variability in density within each of the units across their spatial extents within the Project area. The use of assigned density with no density samples, which is the case with one of the waste units Q1 (alluvium), is a factor that represents a low risk to the mineral resource estimate confidence.

Density values were assigned for all geological units in the model, including mineralized units as well as overburden, interburden, and underburden waste units. By-unit densities were assigned in the grade block model based on the block geological unit code as shown in Table 11-7.

Table 11-7 - Summary of Density Data by Unit

Grade Model Density Parameters		Sample Count	Mean of Density (kg/m^3)	Min Density (kg/m^3)	Max Density (kg/m^3)
Q1	Overburden	-	1800.5		
S3		17	1500.9	985.1	1,859.7
G4		2	1617.9	1529.8	1,704.4
M4		13	1862.9	1675.5	2,474.9
G5		5	1646.7	1,068.4	1,875.8
M5	Mineralized	21	1638.7	938.7	2,202.5
B5		34	1781.3	1,374.4	2,619.0
S5	Mineralized / Interburden	9	1842.1	1,616.3	2,148.1
G6	Interburden	4	1848.5	1,694.8	2,205.7
L6	Mineralized	11	1976.7	1,691.6	2,647.9
Lsi	Underburden	-	1976.7		
G7		-	1856.5		
Tbx		8	1856.5	1,401.6	2,620.6
Mean / Totals		**124**	**1798.7**	**938.7**	**2647.9**

Grade Model Density Parameters		Sample Count	Mean of Density (lb/ft^3)	Min Density (lb/ft^3)	Max Density (lb/ft^3)
Q1	Overburden	-	112.4		
S3		17	93.7	61.5	116.1
G4		2	101.0	95.5	106.4
M4		13	116.3	104.6	154.5
G5		5	102.8	66.7	117.1
M5	Mineralized	21	102.3	58.6	137.5
B5		34	111.2	85.8	163.5
S5	Mineralized / Interburden	9	115.0	100.9	134.1
G6	Interburden	4	115.4	105.8	137.7
L6	Mineralized	11	123.4	105.6	165.3
Lsi	Underburden	-	123.4		
G7		-	115.9		
Tbx		8	115.9	87.5	163.6
Mean / Totals		**124**	**111.6**	**58.6**	**165.3**

As samples were not collected for density analyses for the Q1, Lsi, and G7 units, a default value for typical quaternary overburden was assigned for Q1 while the mean density value for the TBX unit was assigned to G7. The mean density of L6 was assigned to Lsi.

A portion of the M5 samples were taken from the thin upper portion M5a; however, these were excluded from the M5 calculation as they do not accurately represent the M5 unit as a whole.

11.7. Resource Classification

This sub-section contains information related to mineral resource classification for the Project. The material factors that could cause actual results to differ materially from the conclusions, estimates, designs, forecasts or projections include any significant differences from one or more of the material factors or assumptions that were set forth in this sub-section including geological and grade continuity analysis and assumptions.

Mineral resources are subdivided into the following categories based on increased geological confidence: Inferred, Indicated, and Measured, which are defined under S-K 1300 as:

- “Inferred Mineral Resource is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. The level of geological uncertainty associated with an inferred mineral resource is too high to apply relevant technical and economic factors likely to influence the prospects of economic extraction in a manner useful for evaluation of economic viability. Because an inferred mineral resource has the lowest level of geological confidence of all mineral resources, which prevents the application of the modifying factors in a manner useful for evaluation of economic viability, an inferred mineral resource may not be considered when assessing the economic viability of a mining project and may not be converted to a mineral reserve.”

- “Indicated Mineral Resource is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of adequate geological evidence and sampling. The level of geological certainty associated with an indicated mineral resource is sufficient to allow a QP to apply modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Because an indicated mineral resource has a lower level of confidence than the level of confidence of a measured mineral resource, an indicated mineral resource may only be converted to a probable mineral reserve.”

- “Measured Mineral Resource is that part of a mineral resource for which quantity and grade or quality are estimated on the basis of conclusive geological evidence and sampling. The level of geological certainty associated with a measured mineral resource is sufficient to allow a QP to apply modifying factors, as defined in this section, in sufficient detail to support detailed mine planning and final evaluation of the economic viability of the deposit. Because a measured mineral resource has a higher level of confidence than the level of confidence of either an indicated mineral resource or an inferred mineral resource, a measured mineral resource may be converted to a proven mineral reserve or to a probable mineral reserve.”

The mineral resource classification applied by the QP included the consideration of data reliability, spatial distribution, and abundance of data and continuity of geology and grade parameters. Data reliability was addressed in Section 9 of this Report; checks and statistical tests show that the database meets industry standards for reliability. The QP performed a statistical and geostatistical analysis for evaluating the confidence of continuity of the geological units and grade parameters along with visual review of plans and sections. The results of this analysis were applied to developing the mineral resource classification criteria. The distances used for both grade estimation and the classifications varied by stratigraphic seam, and all are within the variogram ranges for the seams estimated.

Estimated mineral resources were classified as follows:

- Measured:
  - G5, M5, B5, L6 and Lsi: 121.9 m (400 ft) spacing between points of observation, with sample interpolation from a minimum of four drill holes;

    - S5 and G6: 106.7 m (350 ft) spacing between points of observation, with sample interpolation from a minimum of four drill holes.

The minimum of four drill holes for the Measured classification provided data on the tonnage and grade which are interpolated between drill holes. The percent of the total estimation search distance that was used for a Measured classification ranged from 23% in B5 to a maximum of 47% in S5 and G6. The percent of the total blocks estimated that are classified as Measured range from 44% in B5 to 4% in G6 where the data is more sparce. Seams M5 and S5 have 33% classified as Measured and G6 and Lsi have 5% and 8%, respectively.

- Indicated:

    - M5 and B5: 243.8 m (800 ft) spacing between points of observation, with sample interpolation from a minimum of two drill holes;

    - G5, L6 and Lsi: 213.4 m (700 ft) spacing between points of observation, with sample interpolation from a minimum of two drill holes;

    - S5 and G6: 167.6 m (550 ft) spacing between points of observation, with sample interpolation from a minimum of two drill holes.

- Inferred: the full estimation distance (M5 and B5 – 533 m [1,750 ft], S5 and G6 – 229 m [750 ft], G5, L6 and Lsi - 304 m [1,000 ft]) between points of observation, with sample interpolation from a minimum of one drill hole (two composites).

The range of the percentage of blocks estimated as Inferred range from 38% in Lsi to 12% in the B5, with the remaining seams between 17 - 32%.

Mineral resource classification codes for Measured, Indicated, and Inferred mineral resources were assigned directly to the individual model blocks (in the 1.52 m block height model) according to the classification criteria presented above.

Figure 11-9 shows the vertical combination of the classification within the B5 seam (red = measured, green = indicated, blue = inferred).

It is the QP’s opinion that the classification criteria applied to the mineral resource estimate are appropriate for the reliability and spatial distribution of the base data and reflect the confidence of continuity of the modeled geology and grade parameters. The shorter distance limits and higher number of drill holes for the Measured class were selected as the grades were mainly interpolated from surrounding holes. The Indicated class had less densely drilled areas with some blocks receiving extrapolated grades. The Inferred class extended to the estimation limits which are respective of the variogram statistics and are bounded by the limits of the seams.

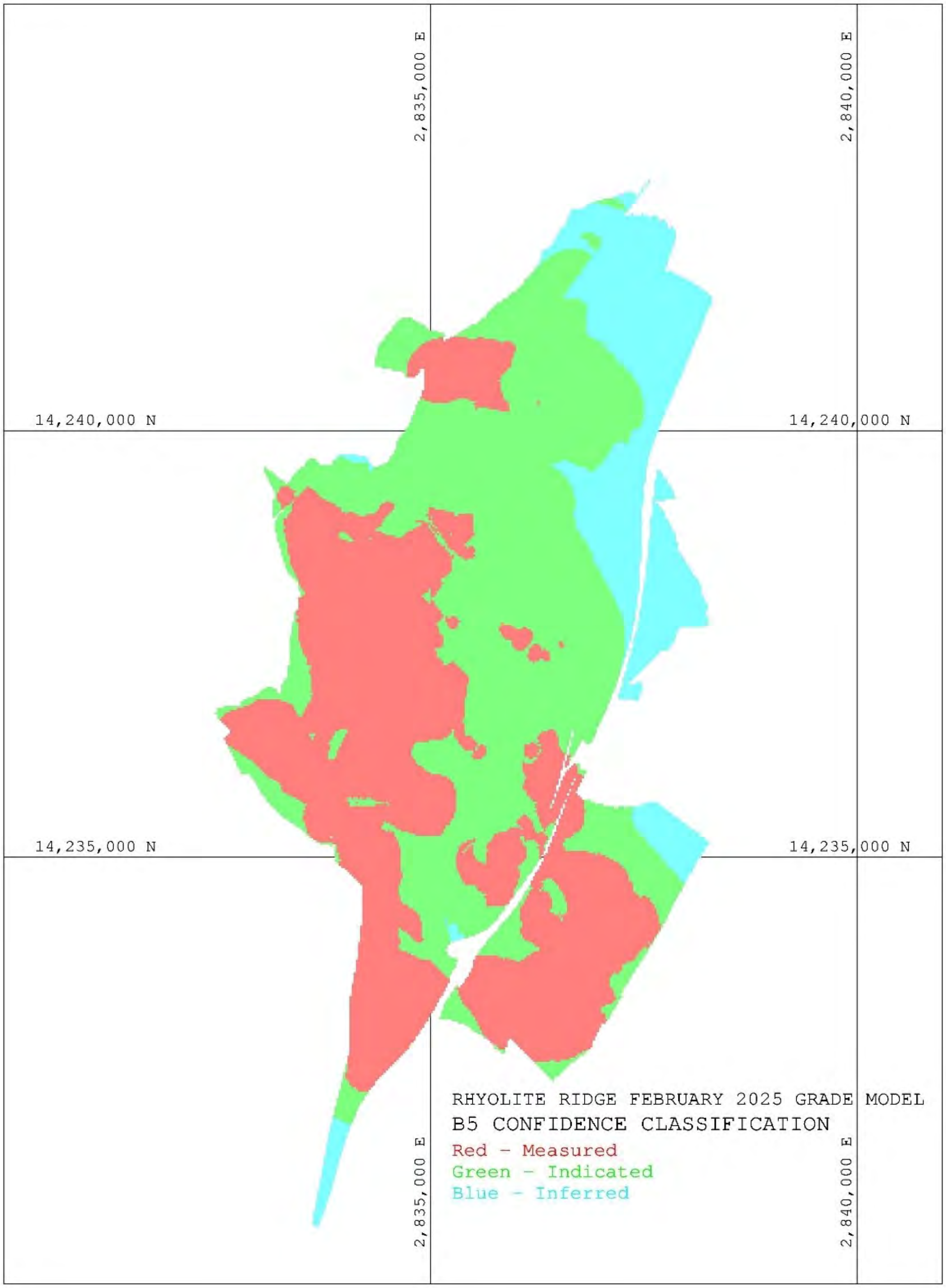


Figure 11-9 - Resource Classification for B5 Seam

Source: ioneer, 2025

11.8. Reblocked Model

The 1.52 m (5 ft) bench model was re-blocked to a 9.14 m (30 ft) bench model to be used for the tabulation of the mineral resource and mineral reserve. The 9.14 m (30 ft) model reflects the mining approach which will be open pit with 9.14 m (30 ft) benches. The economic seams are M5, B5, S5 and L6 and the re-blocking to 9.14 m (30 ft) benches incorporates the influence of adjacent seams G5, G6 and Lsi which were also estimated in the 1.52 m (5 ft) model. When contact between seams falls within a 9.14 m (30 ft) high block, the grades of the adjacent seams from the 1.52 m (5 ft) model were included in the calculation of the attributes of the 9.14 m (30 ft) model block. The approach to develop the 9.14 m (30 ft) model is:

- The 9.14 m (30 ft) model has the same horizontal block dimensions of 7.62 x 7.62 m (25 x 25 ft) and the same North-South and East-West extents as the 1.52 m (5 ft) model;
- Six benches from the 1.52 m (5 ft) model are combined to create the attributes of the 9.14 m (30 ft) model;
- The seams and fault blocks for the 9.14 m (30 ft) model are assigned from the original solids and surface contacts between seams files (on a majority basis) that were used to develop the seams and fault blocks in the 1.52 m (5 ft) model;
- The kt, grades and class values were extracted from the 1.52 m (5 ft) model and allowed to cross seams in the 1.52 m (5 ft) model to generate the 9.14 m (30 ft) combination from the 1.52 m (5 ft) model;
- The kt per block were added together from the six 1.52 m (5 ft) model blocks;
- The grades were averaged, weighted by ktons from the 1.52 m (5 ft) model;
- Confidence classification was assigned by majority from the 1.52 m (5 ft) model with the following modifications:
- If there were equal number of blocks (3 and 3), the classification used the lower class: measured moved to indicated or indicated moved to inferred;
- In fault block domains with few or no composites, the following edits were done:
- Measured set to inferred if there are no composites in fault block;
- Measured set to inferred if less than four (< 4) composites in fault block;
- Measured set to indicated if four to nine (4 – 9) composites in fault block;
- Indicated set to inferred if less than four (< 4) composites in fault block.

An example of the combining the grade and tonnage for four adjacent blocks (west to east) on the 1,859 m (6,100 ft) bench is shown in Table 11-8 in imperial units.

Table 11-8 - Example of Reblocked 9.14 m (30 ft) Bench from Six 1.52 m (5 ft) Benches

Block #	9.14 m (30 ft) Model		1.52 m (5 ft) Model Compiled	5 ft Model Individual Blocks					
				Seam	ktons	B ppm	Li ppm	Bench m	Bench ft
6100 ft-Blk 1	Seam	8	8	8	0.1738	8890	2000	1867	6125
	ktons	1.043	1.0428	8	0.1738	8888	2010	1865	6120
	B (ppm)	8860	8860	8	0.1738	8902	2019	1864	6115
	Li (ppm)	2025	2025	8	0.1738	8923	2027	1862	6110
				8	0.1738	8949	2033	1861	6105
				8	0.1738	8610	2060	1859	6100
6100 ft-Blk 2	Seam	10	10	9	0.1797	579	628	1867	6125
	ktons	1.081	1.0812	10	0.1803	0	0	1865	6120
	B (ppm)	96	96	10	0.1803	0	0	1864	6115
	Li (ppm)	104	104	10	0.1803	0	0	1862	6110
				10	0.1803	0	0	1861	6105
				10	0.1803	0	0	1859	6100
6100 ft-Blk 3	Seam	9	9	9	0.1797	1092	655	1867	6125
	ktons	1.08	1.08	9	0.1797	533	618	1865	6120
	B (ppm)	289	289	9	0.1797	92	659	1864	6115
	Li (ppm)	321	321	10	0.1803	0	0	1862	6110
				10	0.1803	0	0	1861	6105
				10	0.1803	0	0	1859	6100
6100 ft-Blk 4	Seam	9	9	9	0.1797	1075	844	1867	6125
	ktons	1.079	1.0788	9	0.1797	535	595	1865	6120
	B (ppm)	314	314	9	0.1797	97	553	1864	6115
	Li (ppm)	559	559	9	0.1797	91	647	1862	6110
				9	0.1797	87	715	1861	6105
				10	0.1803	0	0	1859	6100

11.9. Establish Prospect of Economic Extraction

To establish the prospect of economic extraction, a net value ($/tonne) in each resource model block was calculated and used to establish the limits of a resource pit shell within which the mineral resource was tabulated.

11.9.1. Assumptions for Establishing Prospects of Economic Extraction

A key requirement in the estimation of mineral resources is that there must be a reasonable prospect for economic extraction of the mineral resources. The mineral resource estimate presented in this Report was developed with the assumption that the lithium-boron mineralization within the mineral resource pit shell, described further below, has a reasonable prospect for economic extraction based on the following key considerations:

- The geological continuity of the mineralized zones and grade parameters demonstrated via the current geological and grade model for the South Basin of Rhyolite Ridge.
- The potential for extraction of the HiB-Li (Stream 1) mineralized intervals encountered in the B5, M5, S5, and L6 units using current conventional open pit mining methods.
- The potential for extraction of the LoB-Li (Stream 2) mineralized intervals encountered in the B5, S5, and L6 units using current conventional open pit mining methods.

- The potential for extraction of the LoB-Li Clay (Stream 3) mineralized intervals encountered in the M5 using current conventional open pit mining methods. The potential to produce boric acid and lithium carbonate products using current processing and recovery methods.
- The assumption that boric acid and lithium carbonate produced by the Project will be marketable and economic considering transportation costs and processing charges and that there will be continued demand for boric acid and lithium carbonate.
- The assumption that the location of the Project in the southwest of the continental United States would be viewed favorably when marketing boric acid and lithium carbonate products to potential domestic end users.
- The assumption that the production costs are reasonable estimates.

To establish the prospect of economic extraction, a new value of US dollars per tonne was calculated for each block that received an estimate of boron and lithium grades. The inputs to the net value calculation are shown in both imperial and metric units in the follow tables. The net value is the result of calculating:

- The gross value of a block based on the grades of boron and lithium, their process recovery and the product prices for boric acid and lithium carbonate;
- The cost of producing the two products (boric acid and lithium carbonate) using the three process streams which include two associated costs:
  - A fixed process cost per short ton, including the estimate of the associated G&A costs;
  - The cost of acid consumed during the process (acid consumption times the cost of acid).

The process team has established three process streams for producing boric acid and lithium carbonate based on the test work and discussions presented in Section 10 of this report. The streams have different recoveries and costs based on the geologic seams and the grades of boron, lithium and gangue minerals. The attributes of the three streams are shown in Table 11-9. Stream 3 is similar to stream 2 with the exception that M5 is segregated to stream 3 because it has a higher clay content and will require a modification to the process.

Table 11-9 - Attributes of Process Streams

Stream	Seams Included	Boron Grade Range	Lithium Grade Range	Net Value Cutoff
1	M5, B5, S5, L6	>= 5000 ppm	No limits	Net Value > $11.13/tonne ($10.10/st)
2	B5, S5, L6	< 5000 ppm	No limits	Net Value > $11.13/tonne ($10.10/st)
3	M5	< 5000 ppm	No limits	Net Value > $11.13/tonne ($10.10/st)

Additional detail on the key assumptions relating to establishing reasonable prospect for eventual economic extraction of the mineral resources are presented below.

11.9.2. Inputs

The inputs to the calculation of the net value include the product prices, boron and lithium recoveries and the process costs which are split between a fixed cost per tonne and the cost of acid per tonne. The product prices are based on third party estimates of the long-term prices (discussed in Chapter 16) and for the mineral resource are:

- Boric acid, $1,172.78 per metric ton or $1,063.94 per short ton
- Lithium carbonate, $19,351.38 per metric ton or $17,555.46 per short ton

The recovery of boron to boric acid and lithium to lithium carbonate vary based on the process stream and the seam assuming a two day vat leach time. The average recoveries used for the calculation of the net value are shown in Table 11-10. The fixed portion of the process costs used are shown in Table 11-11. The variable cost portion is the cost of acid based on the acid consumption which is related to the grades of lithium and the associated gang minerals (Ca, Mg, Na, K, Al, Fe, Sr and Mn).

Table 11-10 – Process Recovery

Seam	Boron to Boric Acid		Lithium to Lithium Carbonate	
	Stream 1	Streams 2 & 3	Stream 1	Streams 2 & 3
M5	80.2%	65.0%	85.7%	78.0%
B5	78.3%	78.3%	85.2%	85.2%
S5	77.0%	46.8%	82.5%	84.8%
L6	75.8%	32.9%	79.4%	78.7%

Table 11-11 - Process Fixed Costs

Seam	Process Fixed Cost / tonne	
	Stream 1	Streams 2 & 3
M5	$30.50	$30.80
B5	$30.50	$30.50
S5	$30.50	$15.19
L6	$30.50	$17.53

11.9.3. Acid Consumption and Cost

The acid cost per tonne being processed is based on the cost of acid and the amount of acid consumed during the process. The source of acid will be from an onsite acid plant. The operating costs of the acid plant are offset by the generation of heat and power for the process; thus, the cost of acid is tied to the cost of sulfur to generate sulfuric acid. The sulfur cost used is $254.60/tonne, one tonne of sulfur will generate 3.05 tonnes of acid, and the cost per metric ton of sulfuric acid is $83.49/tonne.

The amount of acid consumed varies depending on the grades of the elements estimated in each block of the resource block model. Table 11-12 is an example of the acid consumption calculation for seam B5 assuming a three day vat leach time; the total acid consumption in this example is 0.53325 tons of acid per ton processed which includes 0.006 tons for other minor elements. The cost of acid in this example is $44.52/metric ton ($40.39 per process ton:0.53325 ton of acid per process ton times $75.74 per ton of acid). Table 11-13 shows the extraction percent for the elements that consume acid assuming a three day leach time and the overall reduction of the combined acid consumption when moving to a two day leach time.

Table 11-14 shows the average acid consumption for a two day leach time along with the minimum and maximum by seam and stream for blocks with a positive net value.

Table 11-12 - Acid Consumption Calculation for Seam B5 using a Three Day Leach Time

	Li, ppm	Ca, %	Mg, %	Na, %	K, %	Al, %	Fe, %	Sr, ppm	Mn, ppm
Block Model values	2152.70	9.13	4.21	2.64	0.99	0.83	0.65	8698.30	403.35
Factor[1]	1.00	1.00	1.00	1.00	2.10	2.35	1.00	1.00	1.00
Weight %	0.22	9.13	4.21	2.64	0.99	0.83	0.65	0.87	0.04
Extraction	94.1%	100.0%	93.5%	90.8%	52.7%	47.6%	45.1%	95.0%	91.0%
Factor[2]	0.50	1.00	1.00	0.50	0.50	1.50	1.00	1.00	1.00
Weight[3]	6.941	40.079	24.305	22.990	39.098	26.982	55.847	87.620	54.938
Acid[4]	0.01432	0.22348	0.15888	0.05114	0.01375	0.05063	0.00515	0.00925	0.00065
% of Acid	2.68%	41.91%	29.79%	9.59%	2.58%	9.50%	0.97%	1.73%	0.12%

Notes:

1. Two acid conversion factor.
2. Stoichiometric factor (mol/mol acid).
3. Molecular weight.
4. Ton of acid / ton processed.
5. Acid cost per short ton processed = 0.53325 tons acid x $75.74/ton acid = $40.39/ton processed.

Table 11-13 - Acid Extraction by Element and Seam

	Percent Extraction by Element (3 Day Vat Leach Cycle)									2 Day Factor
Seam	Li	Ca	Mg	Na	K	Al	Fe	Sr	Mn	Factor*
M5	94.1	100.0	93.5	90.8	52.7	47.6	45.1	95.0	91.0	83.3%
B5	94.1	100.0	93.5	90.8	52.7	47.6	45.1	95.0	91.0	79.8%
S5	94.1	80.0	93.5	90.8	52.7	47.6	45.1	95.0	91.0	69.9%
L6	94.1	86.0 (Ca <= 15%) 63.0 (Ca > 15%)	93.5	90.8	52.7	47.6	45.1	95.0	91.0	79.4%

Notes:*3-day leach reduction to 2-day acid extraction

Table 11-14 - Range of Acid Consumption for Two Day Vat Leach Cycle

Seam	Stream 1				Stream 2 or 3			
	# blocks	Acid Consumption (metric ton acid/metric ton processed			# blocks	Acid Consumption (metric ton acid/metric ton processed		
		Mean	Minimum	Maximum		Mean	Minimum	Maximum
M5	10,703	0.5193	0.1545	0.6220	71,785	0.4882	0.1515	0.6768
B5	93,523	0.3868	0.1106	0.5796	14,278	0.3842	0.1170	0.5374
S5	10,392	0.2585	0.0960	0.4226	77,797	0.2120	0.0425	0.4360
L6	68,610	0.3520	0.1087	0.4496	205,851	0.3297	0.0668	0.4755

Notes: Blocks with net value >= $11.13/tonne

11.9.4. Calculation of Net Value

A net value was calculated for each block in the four seams which meet the cutoff grades for the three process streams and is shown in Table 11-15. The net value is the net of process costs and if the net value is negative, it is set to zero. The net value was used to define the resource shell within which the mineral resource was tabulated, less the mineral reserve. The net value does not include mining costs or property general and administrative costs; both of these costs are included as costs to define the resource shell. In general terms, the net value is:

- Gross value of a block minus the process costs for blocks above the cutoff grades
- Gross value = sum of the recovered values of boric acid plus lithium carbonate
- Process costs = sum of the cost of acid plus the process fixed costs (by seam and stream)

Table 11-15 - Mean and Range of the Net Values by Seam and Process Stream for 2 Day Vat Leach Cycle

Seam	Stream 1				Stream 2 or 3			
	# blocks	Net Value, $ per tonne			# blocks	Net Value, $ per tonne		
		Mean	Minimum	Maximum		Mean	Minimum	Maximum
M5	10,703	167.85	44.64	224.26	71,785	95.12	11.16	179.98
B5	93,523	169.81	33.34	282.78	14,278	128.12	11.28	225.57
S5	10,392	100.81	25.69	272.07	77,797	50.67	11.13	245.87
L6	68,610	101.76	11.44	261.06	205.851	54.76	11.13	182.56

11.10. Mineral Resource Statement

Based on the geological model, grade model, parameters for establishing prospects for economic extraction, and the resource classification discussed in this Section, the categorized August 2025 mineral resource estimate of the South Basin for the ioneer Rhyolite Ridge Project is presented by mineralized unit below in Table 11-16. A comparison to the October 2023 mineral resource is shown in Table 11-17.

The mineral resource is reported as in-situ and exclusive of the mineral reserve tonnes and grade (tonnes and grade from within the Life of Mine (LOM) reserve schedule have been removed from the stated mineral resources).

Mineral resource categorization of Measured, Indicated, and Inferred Mineral Resources presented in the table is in accordance with the definitions presented in S-K 1300. The report date of the mineral resource estimate is August 2025. The current mineral resource estimate reflects an update to the October 2023 mineral resource estimate.

The tabulation of the mineral resource includes the following steps:

- Run the resource pit shell and tabulate the measured, indicated and inferred tonnage and grades for the three process streams within the four seams (M5, B5, S5, L6);
- For process streams 1, 2 and 3: subtract the proven tonnage and grade within the LOM schedule from the measured tonnage and grade within the mineral resource pit shell;
- For process streams 1, 2 and 3: subtract the probable tonnage and grade within the LOM schedule from the indicated tonnage and grade within the mineral resource pit shell;
- All inferred tonnage and grade within the resource pit shell is included in the mineral resource.

From the mineral resource dated October 2023, until the date of the mineral resource dated August 2025, the QP is aware of the following material changes that have affected the resource model and mineral resource estimate:

- Drill Hole Database: added 54 holes (5 RC, 49 core), total additional meters – 9,183 m (30,129 ft) and 1,547 additional assay samples;
- Density: Use of 2010 density dataset was not used in the August 2025 resource as the values could not be validated leading to a lower density value and overall tonnage than calculated in March 2023 resource;
- Resource Block Model: new geologic framework and grade estimation: tabulation changed from a 1.52m (5 ft) model to 9.14 m (30 ft) reblock model from a 1.52 m (5 ft) model;
- Recovery: changed from one recovery (Boron at 83.5%, Lithium at 81.1%) to recovery by seam and process stream (Table 11-10);
- Process Costs: changed from one total process cost to combination of fixed cost (by seam and stream) plus a cost of acid based on the acid consumption calculated for each block in the resource model (Tables 11-13, 11-14 and 11-15);
- Resource Tabulation: changed from tabulating seams above 5,000 ppm Boron or above 1090 ppm Lithium to tabulating M5, B5, S5, L6 for process streams 1, 2, 3 (Table 11-9).

Table 11-16 - Mineral Resource Estimate - South Basin Rhyolite Ridge (August 2025)

Stream	Group	Classification	Tonnage kt	Li ppm	B ppm	Li_2CO_3 wt. %	H_3BO_3 wt. %	Contained Li_2CO_3 kt	Contained H_3BO_3 kt
Stream 1 (>= 5,000 ppm B)	Upper Zone B5 Unit	Measured	10,414	1,921	15,063	1.02	8.61	106	897
		Indicated	7,214	1,749	13,240	0.93	7.57	67	546
		Total (M&I)	17,628	1,850	14,317	0.98	8.19	174	1,443
		Inferred	10,628	1,712	10,563	0.91	6.04	97	642
		Total (MII)	28,255	1,798	12,905	0.96	7.38	270	2,085
	Upper Zone M5 Unit	Measured	1,073	2,186	7,397	1.16	4.23	12	45
		Indicated	814	2,100	7,535	1.12	4.31	9	35
		Total (M&I)	1,887	2,149	7,456	1.14	4.26	22	80
		Inferred	763	2,197	6,515	1.17	3.73	9	28
		Total (MII)	2,650	2,163	7,185	1.15	4.11	31	109
	Upper Zone S5 Unit	Measured	1,456	1,561	7,467	0.83	4.27	12	62
		Indicated	1,393	1,571	7,132	0.84	4.08	12	57
		Total (M&I)	2,849	1,566	7,303	0.83	4.18	24	119
		Inferred	1,572	1,400	6,469	0.75	3.70	12	58
		Total (MII)	4,421	1,507	7,006	0.80	4.01	35	177
	Upper Zone Total	Measured	12,943	1,902	13,573	1.01	7.76	131	1,004
		Indicated	9,420	1,753	11,844	0.93	6.77	88	638
		Total (M&I)	22,363	1,839	12,845	0.98	7.34	219	1,642
		Inferred	12,963	1,703	9,828	0.91	5.62	117	728
		Total (MII)	35,326	1,789	11,738	0.95	6.71	336	2,371
	Lower Zone L6 Unit	Measured	12,014	1,355	9,838	0.72	5.63	87	676
		Indicated	26,139	1,319	10,365	0.70	5.93	183	1,549
		Total (M&I)	38,153	1,330	10,199	0.71	5.83	270	2,225
		Inferred	13,914	1,415	12,287	0.75	7.03	105	978
		Total (MII)	52,067	1,353	10,757	0.72	6.15	375	3,203
	Total Stream 1 (all zones)	Measured	24,957	1,639	11,775	0.87	6.73	218	1,680
		Indicated	35,559	1,434	10,757	0.76	6.15	271	2,187
		Total (M&I)	60,516	1,518	11,177	0.81	6.39	489	3,867
		Inferred	26,877	1,554	11,101	0.83	6.35	222	1,706
		Total (MII)	87,393	1,529	11,153	0.81	6.38	711	5,573

Stream	Group	Classification	Tonnage kt	Li ppm	B ppm	Li_2CO_3 wt. %	H_3BO_3 wt. %	Contained Li_2CO_3 kt	Contained H_3BO_3 kt
Stream 2 (>= 11.13/tonne net value, < 5,000 ppm B. Low Clay)	Upper Zone B5 Unit	Measured	438	2,321	2,925	1.24	1.67	5	7
		Indicated	362	2,092	3,674	1.11	2.10	4	8
		Total (M&I)	800	2,217	3,264	1.18	1.87	9	15
		Inferred	3,690	1,695	1,776	0.90	1.02	33	37
		Total (MII)	4,491	1,788	2,041	0.95	1.17	43	52
	Upper Zone S5 Unit	Measured	9,400	996	1,226	0.53	0.70	50	66
		Indicated	7,981	1,012	1,524	0.54	0.87	43	70
		Total (M&I)	17,382	1,003	1,363	0.53	0.78	93	135
		Inferred	15,491	889	1,014	0.47	0.58	73	90
		Total (MII)	32,873	949	1,198	0.51	0.69	166	225
	Upper Zone Total	Measured	9,839	1,055	1,302	0.56	0.74	55	73
		Indicated	8,343	1,059	1,617	0.56	0.92	47	77
		Total (M&I)	18,182	1,057	1,447	0.56	0.83	102	150
		Inferred	19,187	1,044	1,160	0.56	0.66	107	127
		Total (MII)	37,369	1,050	1,300	0.56	0.74	209	278
	Lower Zone L6 Unit	Measured	19,043	1,155	1,979	0.61	1.13	117	215
		Indicated	51,191	1,158	1,624	0.62	0.93	316	475
		Total (M&I)	70,234	1,157	1,720	0.62	0.98	433	691
		Inferred	47,474	1,244	790	0.66	0.45	314	214
		Total (MII)	117,708	1,192	1,345	0.63	0.77	747	905
	Total Stream 2 (all zones)	Measured	28,881	1,121	1,748	0.60	1.00	172	289
		Indicated	59,535	1,144	1,623	0.61	0.93	363	553
		Total (M&I)	88,416	1,137	1,664	0.60	0.95	535	841
		Inferred	66,662	1,186	897	0.63	0.51	421	342
		Total (MII)	155,078	1,158	1,334	0.62	0.76	956	1,183
Stream 3(>= 11.13/tonne net value, < 5,000 ppm B, High	Total Stream 3 (M5 zone)	Measured	13,602	2,202	1,487	1.17	0.85	159	116
		Indicated	11,437	2,100	1,205	1.12	0.69	128	79
		Total (M&I)	25,039	2,155	1,358	1.15	0.78	287	194
		Inferred	11,608	1,654	601	0.88	0.34	102	40
		Total (MII)	36,647	1,997	1,118	1.06	0.64	389	234
All Streams	**M&I Resource**	**Measured**	**67,440**	**1,530**	**5,406**	**0.81**	**3.09**	**549**	**2,085**
		Indicated	**106,531**	**1,344**	**4,627**	**0.72**	**2.65**	**762**	**2,818**
		Total (M&I)	**173,971**	**1,416**	**4,929**	**0.75**	**2.82**	**1,311**	**4,903**
	Inferred Resource	**Inferred**	**105,147**	**1,332**	**3,472**	**0.71**	**1.99**	**745**	**2,088**
		Total (MII)	**279,117**	**1,384**	**4,380**	**0.74**	**2.50**	**2,056**	**6,991**

Notes:

1. kt = thousand tonnes; Li= lithium; B= boron; ppm= parts per million; Li_2CO_3 = lithium carbonate; H_3BO_3 = boric acid

2. Totals may differ due to rounding mineral resources reported on a dry in-situ basis. Lithium is converted to Equivalent Contained Tons of lithium carbonate using a stochiometric conversion factor of 5.322, and boron is converted to Equivalent Contained Tons of boric acid using a stochiometric conversion factor of 5.718. Equivalent stochiometric conversion factors are derived from the molecular weights of the individual elements which make up lithium carbonate and boric acid. Lithium carbonate and boric acid are reported in metric tons.
3. The statement of estimates of mineral resources has been compiled by the QP, a full-time employee of Independent Mining Consultants, Inc. and is independent of ioneer and its affiliates. The QP 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'.
4. All mineral resource figures reported in the table above represent estimates at August 2025. Mineral resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. The totals contained in the above table have been rounded to reflect the relative uncertainty of the estimate.
5. Mineral resources are reported in accordance with the US SEC Regulation S-K Subpart 1300. The mineral resources in this Report were estimated using the regulation S-K 229.1304 of the United States Securities and Exchange Commission ("SEC"). Mineral resources are also reported in accordance with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves.
6. The Mineral Resource estimate is the result of determining the mineralized material that has a reasonable prospect of economic extraction. In making this determination, constraints were applied to the geological model based upon a pit optimization analysis that defined a conceptual pit shell limit. The conceptual pit shell was based upon a net value per tonne calculation including a 5,000ppm boron cut-off grade for high boron – high lithium (HiB-Li) mineralization (Stream 1) and a $11.13/tonne net value cut-off grade for low boron (LoB-Li) mineralization below 5,000ppm boron broke into two material types, low clay and high clay material respectfully (Stream 2 and Stream 3). The pit shell was constrained by a conceptual Mineral Resource optimized pit shell for the purpose of establishing reasonable prospects of eventual economic extraction based on potential mining, metallurgical and processing grade parameters identified by mining, metallurgical and processing studies performed to date on the Project. Key inputs in developing the Mineral Resource pit shell included a 5,000 ppm boron cut-off grade for HiB-Li mineralization, $11.13/tonne net value cut-off grade for LoB-Li low clay mineralization and LoB-Li high clay mineralization; mining cost of US$1.69 /tonne; G&A cost of US$11.13 /process tonne; plant feed processing and grade control costs which range between US$18.87/tonne and US$98.63/tonne of plant feed (based on the acid consumption per stream and the mineral resource average grades); boron and lithium recovery (respectively) for Stream 1: M5 80.2% and 85.7%, B5 78.3% and 85.2%, S5 77.0% and 82.5%, L6 75.8% and 79.4%; Stream 2 and 3: M5 65% and 78%, B5 78.3% and 85.2%, S5 46.8% and 84.8%, L6 32.9% and 78.7%, respectively; boric acid sales price of US$1,172.78/tonne; lithium carbonate sales price of US$19,351.38/tonne.
7. The mineral resource is reported exclusive of the mineral reserves.

Table 11-17 - Comparison Between August 2025 and October 2023 Mineral Resources

Category	Tonnage (Mt)[1]	Li, ppm	B,ppm	Li_2CO_3 ktonnes	H_3BO_3 ktonnes
August 2025					
Measured	67.4	1,530	5,406	549	2,085
Indicated	106.5	1,344	4,627	762	2,818
Sum M&I	174.0	1,416	4,929	1,311	4,903
Inferred	105.1	1,332	3,472	745	2,088
Total	279.1	1,384	4,380	2,056	6,991
October 2023					
Measured	17.1	1,503	9,374	137	919
Indicated	220.1	1,760	4,654	2,061	5,856
Sum M&I	237.2	1,741	4,995	2,198	6,775
Inferred	62.1	1,795	4,392	593	1,558
Total	299.3	1,752	4,870	2,791	8,334
Difference					
Measured	50.3			412.2	1,165.7
Indicated	-113.6			-1,299.4	-3,038.0
Sum M&I	-63.3			-887.3	-1,872.3
Inferred	43.1			152.7	529.2
Total	-20.2			-734.5	-1,343.1

Note 1: Mt = one million metric tonnes

The mineral resource estimates presented in this report are based on the factors related to the geological and grade models presented in this section, and the criteria for reasonable prospects of economic extraction are described in Section 11.8 of this Report. The mineral resource estimates may be affected positively or negatively by additional exploration that expands the geological database and models of lithium-boron mineralization on the Project. The mineral resource estimates could also be materially affected by any significant changes in the assumptions regarding forecast product prices, mining, and process recoveries, or production costs. If the price assumptions are decreased or the assumed production costs increased significantly, then the cut-off grade must be increased and the potential impacts on the mineral resource estimates would likely be material and need to be re-evaluated.

The mineral resource estimates are also based on assumptions that a mining project may be developed, permitted, constructed, and operated at the Project. Any material changes in these assumptions would materially and adversely affect the mineral resource estimates for the Project; potentially reducing to zero. Examples of such material changes include extraordinary time required to complete or perform any required activities, unexpected and excessive taxation, or regulation of mining activities that become applicable to a proposed mining project on the Project.

Except as described in this section, the QP does not know of environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the mineral resource estimates.

11.10.1.Mining Factors or Assumptions

The mineral resource estimate presented in this Report assumes the use of three processing streams: one which can process ore with boron content greater than 5,000 ppm and two which can process ore with boron content less than 5,000 ppm within the mineral resource pit shell, as described in the preceding section, has a reasonable prospect for eventual economic extraction using current conventional open pit mining methods.

The mining factors or assumptions used in establishing the reasonable prospects for eventual economic extraction of the HiB-Li (Stream 1) and LoB-Li (Stream 2 and 3) mineralization are based on preliminary results from mine design and planning work from the 2020 FS and subsequent work.

Except for the mineral resource criteria discussed, no other mining factors, assumptions, or mining parameters such as mining recovery, mining loss, or dilution have been applied to the mineral resource estimate presented in this Report.

11.10.1.1. Metallurgical Factors or Assumptions

The metallurgical factors or assumptions used in establishing the reasonable prospects for eventual economic extraction of the HiB-Lo (Stream 1) mineralization are based on results from the metallurgical and material processing work as part of the 2020 FS for the Project and subsequent work. The metallurgical factors or assumptions used in establishing the reasonable prospects for eventual economic extraction of the LoB-Li (Stream 2 and 3) mineralization are based on studies completed in 2010-2012 by ALM and since 2016 by ioneer, as well as additional metallurgical and material processing work that was conducted following the completion of the 2020 FS for the Project.

The HiB-Li (Stream 1) mineralization test work completed as part of the 2020 DFS as well as the test work focused on the LoB-Li (Stream 2 and Stream3) mineralization completed in 2012-2012, 2016-2019, and after the 2020 DFS were performed using current processing and recovery methods for producing boric acid and lithium carbonate products.

11.10.1.2. Environmental Factors or Assumptions

Environmental and socio-economic studies are in progress for the Project; however, there have been no environmental factors or assumptions applied to the geological modeling and/or estimated mineral resources presented in this Report.

In December 2022, the United States Fish and Wildlife Service (USFWS) listed Tiehm’s buckwheat as an endangered species under the Endangered Species Act (ESA) and has designated critical habitat by way of applying a 1,640-foot radius around several distinct plant populations that occur on the Project site. Ioneer is committed to the protection and conservation of the Tiehm’s buckwheat. The Project’s Mine Plan of Operations submitted to the BLM in July 2022 and currently under NEPA review has no direct impact on Tiehm’s buckwheat and includes measures to minimize and mitigate for indirect impacts within the designated critical habitat areas identified.

The mineral resource pit shell used for the August 2025 mineral resource update was not adjusted to account for any impacts from avoidance of Tiehm’s buckwheat or minimization of disturbance within the designated critical habitat.

Environmental and permitting assumptions and factors will be taken into consideration during future modifying factors studies for the Project. These permitting assumptions and factors may result in potential changes to the mineral resource footprint in the future.

11.11. Mineral Resource Uncertainty Discussion

The sources of uncertainty for the mineral resource evaluation include the following topics, along with their location in this Report:

- Sampling and drilling methods – Section 7.2 and 8.0
- Data processing and handling – Section 11.2 and 11.3
- Geological modeling – Section 11.4
- Tonnage estimation – Section 11.6
- Process recovery and costs – Section 10 and 11.8

The sampling and drilling methods present a low source of uncertainty based on the standard methods that were in place with ioneer and ALM for the recent exploration history. The items that helped to reduce uncertainty with the sampling and drilling methods include the fact that most of the drill holes were cored with PQ or HQ size core; the 2018-2023 drilling was also performed using a triple-tube core barrel to optimize core recovery and therefore, sample representativity. The core was then measured and logged and sampled with guidance from the ioneer geological team. The core was then sent to accredited commercial independent laboratories where QA/QC programs were implemented and actively monitored for laboratory performance.

Once the assay results were received from the laboratories, the data was input into the geological database along with the collar, drill hole information, and lithology records. The lithology records from the core logging were validated based on the assay results by the ioneer geological team to adhere with known trends for the various domains. The data handling was secure in the geological database and this process also demonstrates a low level of uncertainty for the mineral resource estimate.

The validated database was loaded into the geological model where surfaces for lithology were modeled and validated based on drill holes, geological trends, and operational experience. The current geological model appears to define the Measured and Indicated Mineral Resource areas of the quarry well. Uncertainty for these areas can be classified as low for a global estimate; however, there will likely be minor local variability when the area is mined and compared back to the model. This is common, as the geological model is just that, a model that is used to estimate tonnages.

The Inferred Mineral Resource portion of the deposit will require future drilling and exploration to better define and understand the lithological variation before they can be upgraded to Measured, or Indicated, Mineral Resources. The level of uncertainty for the lithological model is moderate for the Inferred Mineral Resource areas due to the type of geological deposit that is being modeled. As with the Measured and Indicated Mineral Resource areas, the global uncertainty is lower than the local uncertainty due to the ability to average over the areas when estimating globally.

The geological model was used to code the blocks according to the geological domains to support the grade estimation. The geological model was developed by GSI Environmental with significant review and input from the ioneer geologists who are very well versed in the geological environment of Rhyolite Ridge and, therefore, the uncertainty is low. The final geological model was provided to IMC for incorporation into the block model for grade estimation.

Geostatistical analysis of the drill hole data was completed to better understand the variability of the grades by domain. The data was sufficient for this analysis to be completed by the QP. However, this type of analysis is only a tool to help predict the grades through block modeling. With more drilling and data in the geostatistical analysis, the geostatistical results could change if an area of the deposit has significantly different variability in grade. Based on the understanding of the current deposit, this is unlikely but could occur in the inferred areas where drill spacing is greater.

Geostatistical models were used to interpolate grades and densities into the block model. The results were verified by the QP through visual inspection and global statistics. Like the geological modeling, uncertainty for areas classified as Measured and Indicated Mineral Resources are low globally, but low-moderate for local variability. For Inferred Mineral Resources, the uncertainty is higher based on a larger drill spacing and is low-moderate for global variability and moderate for local variability. The modeling approach for the Measured and Indicated portions of the deposit is appropriate to use for conversion to mineral reserves.

The mineral resource tonnages are limited with the use of an optimized quarry shell where reasonable prices, costs, and cut-off grades were used. The estimate was completed by utilizing the block model with the mineral resource classification and the mineral resource quarry limit. The optimized resource quarry shell was developed using the proprietary software from Independent Mining Consultants, Inc. (IMC) Mine Planning software. The resource quarry shell surface was then used as the lower limiting surface on the mineral resource estimate, with the topographic surface serving as the upper limiting surface.

Areas of uncertainty for the mineral resource estimate include:

- Potential significant changes in the assumptions regarding forecast product prices, process recoveries, or production costs;
- Potential changes in geometry and/or continuity of the geological units due to displacement from localized faulting and folding;
- Potential changes in grade based on additional drilling that would influence the tonnages that would be excluded with the cut-off grade;
- Potential for changes to the environmental requirements related to permit applications;
- In summary, given all the considerations in this Report, the uncertainty in the tonnage estimate for the Measured Mineral Resources, is low, Indicated Mineral Resources estimates is low to moderate, and Inferred Mineral Resources is moderate, as shown in Table 11-18.

Table 11-18 - Mineral Resource Uncertainty

Uncertainty Item	Measured Uncertainty	Indicated Uncertainty	Inferred Uncertainty
Sampling and Drilling Methods	Low	Low	Low
Data Processing and Handling	Low	Low	Low
Geological Modeling – Globally/Locally	Low/Low	Low/Low-Moderate	Low-Moderate/Moderate
Geological Domaining	Low	Low	Low
Geostatistical Analysis	Low	Low	Moderate
Block Modeling – Globally /Locally	Low/Low	Low/Low-Moderate	Low-Moderate/Moderate
Tonnage Estimate	Low	Low-Moderate	Moderate

11.12. Factors That are Likely to Influence the Prospect of Economic Extraction

It is the QP's opinion that the factors that have the potential to influence the prospect of economic extraction relate primarily to the permitting, mining, processing and market economic factors, parameters, and assumptions. These factors and assumptions were used to support the reasonable prospects for eventual economic extraction of the mineral resources.

Further, the mineral resource estimates could be materially affected by any significant changes in the assumptions regarding forecast product prices, mining and process recoveries, or production costs. If the price assumptions are decreased or the assumed production costs increased significantly, then the cut-off grade must be increased and, if so, the potential impacts on the mineral resource estimates would likely be material and need to be re-evaluated.

The QP has identified additional risk factors relating to geology and mineral resource estimation including the following:

- Geological uncertainty relating to local structural control relating to geometry, location, and displacement of faults.
- Geological uncertainty and opportunity regarding the continuity and geometry of stratigraphy and mineralization in the eastern and northern extents of the basin, outside of the current mineral resource footprint.
- Opportunity to recover lithium from the LoB-Li mineralization encountered on the Project by way of additional LoB-Li mineralization metallurgical studies.
- Potential impacts to the mineral resource footprint related to potential changes in the Project footprint relating to avoidance and mitigation measures relating to the Tiehm’s buckwheat and designated critical habitat areas.

These additional geological risk factors are considered as either opportunities to potentially expand the mineral resource inventory in the future, or as potential impacts on local geology and estimates rather than global (deposit wide) geology and estimates. The QP does not consider these factors as posing a risk to the prospect of economic extraction for the mineral resource as currently stated.

These risk factors, along with those identified by the QPs responsible for the other sections of this study, are presented in detail in Section 22.

12. MINERAL RESERVE ESTIMATES

12.1. Key Assumptions, Parameters, and Methods

The mineral reserve was developed from the 9.14 m (30 ft) mine planning block model and is the total of all proven and probable category ore that is planned for processing. Section 13 presents detailed information on the development of the mine plan. The mineral reserve was estimated by tabulating the contained tonnage of measured and indicated mineral resources (proven and probable mineral reserves) from the mine productions schedule tabulated within the designed final pit geometry at the planned cut-off grade. The final pit design and the internal phase (pushback) designs were guided by the results of the Lerchs-Grossmann algorithm, project constraints, and other relevant factors.

12.1.1. Mine Design Criteria

Multiple quarry design objectives and constraints were incorporated into the pit targeting exercise, resulting in five pushback designs that guided the mine planning. These phase designs had a significant impact on various outcomes, including the final quarry designs, the quarrying approach, and the corresponding mine production plan.

12.1.1.1. Buckwheat Constraint

An endangered species, known as Tiehm's buckwheat, exists within the Rhyolite Ridge Project site. Tiehm's buckwheat currently is currently found exclusively on the outcropping of the B5, M5, and S3 units on the western edge of the quarry area. A total of eight sub-populations of this buckwheat species were mapped throughout the Project area.

In December 2022, the U.S. Fish & Wildlife Service (USFWS) listed Tiehm's buckwheat as an endangered species under the Endangered Species Act (ESA) and designated critical habitat within a 500 m (1,640 ft) radius around the distinct plant populations in the Project area. Up to 2.26 km^2 (559 acres) of designated Tiehm's buckwheat critical habitat (including 0.21 km^2 [51 acres] of sub-populations) would be fenced. ioneer is committed to the protection and conservation of the Tiehm's buckwheat. The Mine Plan of Operations, submitted to the Bureau of Land Management (BLM) in July 2022 and Record of Decision (ROD) issued in October 2024, has no direct impact on the Tiehm's buckwheat populations. The approved plan includes measures to minimize and mitigate any indirect impacts within the designated critical habitat areas.

All decisions from the ROD in October 2024 were taken into consideration for mineral reserve footprint and mineral reserve estimate.

Geotechnical considerations impacting the Tiehm's buckwheat were incorporated into the mine designs, resulting in the inclusion of an engineered highwall support structure (strand anchor system) to secure and mitigate the disturbance to the designated critical habitat areas.

12.1.1.2. Geotechnical Constraint

The quarry encounters problematic adversely oriented bedding conditions where low strength materials daylight on the proposed slope faces. Pre-2022 quarry design included the removal on these materials, however due to constraints related to the Tiehm's Buckwheat populations removal of this material is currently not an option.

Laboratory testing of drill hole cores collected while drilling was completed by Call & Nicholas, Inc. in Tucson, Arizona and Geo-Logic Associates, Inc. (Geo-Logic Associates, 2024) to expand the data set to include all horizons. The tests were completed to estimate rock strength for units that will form the quarry slopes.

Each phase incorporated the geotechnical guidance provided by GLA into the mine designs. This is discussed in detail within Section 13.

12.1.1.3. Phase Sequencing of Quarry Development

The first two quarry development phases are located in an area south of the Tiehm's buckwheat area. These phases are planned to be exclusively mined during the first two years of operation, this allows sufficient time for detailed engineering to prepared for the highwall support structure(s). Including the execution of a geotechnical exploration and data collection program to be completed in year two. The engineered highwall support structures are only planned to be installed the highwall located below buckwheat populations on the final western wall and below the cultural conversation site on the east side of the quarry, below Cave springs. The timing of the installation of the strand anchor system was incorporated into the mine plan The mine plan is discussed in Section 13.

12.1.2. Modifying Factors

Modifying factors are considered when converting mineral resources to mineral reserves, including dilution, mining and process recovery factors, the mining equipment size (selective mining unit, SMU) beneficiation assumptions, property limits, permit status, changes to the Mine Plan of Operations, commodity price, cut-off grades, pit optimization assumptions, and the ultimate pit design.

12.1.2.1. Dilution, Loss, and Mining Recovery

Geologically complex mining operations can often incur higher loss and dilution values due to dipping or inconsistent ore interfaces. This issue is compounded when using the large size equipment that is planned for the Project. The block size within the resource block model was sized to accommodate the planned mining equipment and mining method. The resulting block size, 7.62 x 7.62 x 9.14 m (25 x 25 x 30 ft) within the block model incorporates mining dilution within the model estimation itself. No additional mining dilution was incorporated within the reserve estimate. In an effort to minimize the effects of loss and dilution, high-precision global positioning system (GPS) instrumentation, competent operators, and a fleet management system (FMS) will be required. Using an integrated GPS-guided grade/ore control system, such as Caterpillar's (CAT) MineStar Terrain package, wheel loader operators will be able to identify the material being loaded in real time. According to CAT, the system provides satellite-guided bucket positioning with a resolution of less than 10 cm (4"). The MineStar Terrain package is planned to be installed on various support equipment to assist with ore mining.

12.1.2.2. Project Limits

The mineral reserve is based on the processing and recoveries presented in Section 14. The mine plan includes three process streams that are intercorrelated, impacting the plant yields and sulfuric acid consumption factors, which in turn affects the forecast product tonnages for boric acid and lithium carbonate. Stream 3 is currently limited to a maximum production rate of 10% of the planned process feed. The portion of the stream 3 stockpile that cannot be processed within the production schedule shown in this Report will remain in the stockpile and is not included within the mineral reserve estimate.

12.1.2.3. Project Limits

The mineral reserve estimate was constrained by an engineered final quarry design. Given the location of the planning mining activities relative to the site boundary, the property surface right limits did not impact the mineral reserve estimate.

12.1.2.4. Conversion from Elemental Grades to Equivalent Grades

Two saleable products are planned to be produced from the M5, B5, S5 and L6 units: boric acid and lithium carbonate. Lithium carbonate and boric acid do not naturally occur in the ore but will be processed products produced from the ore. Equivalent contained tons of lithium carbonate and boric acid were estimated using stochiometric conversion factors derived from the molecular weights of the individual elements that make up lithium carbonate and boric acid. The conversion factors used are constant and as follows:

- Boric acid grade (ppm) = boron grade (ppm) x 5.718;
- Lithium carbonate grade (ppm) = lithium grade (ppm) x 5.322.

12.1.2.5. Cut-Off Grade

IMC applied a two-phase approach to defining the cut-off grade, including a grade-tonnage evaluation and an economic evaluation.

The grade tonnage evaluation limited the stream 1 process feed to material with boron grades >5,000 ppm in seams M5, B5, S5, and L6. The streams 2 and 3 process feed to material with net value > $11.13/t (10.10/st) (stream 2 restricted to seams B5, S5, and L6; stream 3 restricted to seam M5).

The economic evaluation portion of the cut-off grade analysis applied the processing costs and recoveries to remove material that was not economic to process.

12.1.2.5.1. Grade–Tonnage Analysis

Boric acid and lithium carbonate will be produced from the M5, B5, S5, and L6 units. As discussed above, the quantities of boric acid and lithium carbonate generated from potential plant feed material are dependent upon their elemental boron and lithium grades.

The final cut-off grade determination was a single boron cut-off of 5,000 ppm for the HiB-Li processing stream (stream 1), no boron cut-off grade for the LoB-Li processing stream (streams 2 and 3), no lithium cut-off grade for the HiB-Li processing stream (stream 1) and a Net Value cutoff of $11.13/t (10.10/st) for the LoB-Li processing streams (streams 2 and 3).

12.1.2.5.2. Economic Evaluation

A summary of the unit costs applied to the evaluation supporting the cut-off grade estimate is provided in Table 12-1. These assumptions are based on a unit mining cost that was developed during previous studies and updated using current costs for input elements such as fuel and labour. The modified unit mining cost and pit slope angles were applied to the quarry optimization analysis. Costs shown in Table 12-1 were assumed to be fixed for the cut-off grade applied to all time periods of the LOM plan as discussed in Section 13 and the corresponding economic analysis discussed in Section 19.

A transportation cost of $145 per lithium carbonate equivalent (LCE) ton was applied in the cut-off grade and quarry optimization analysis. While it is recognized that the total amount of product tons will exceed the LCE tons, and therefore the transportation cost is based on a smaller tonnage. This is not considered by the QP to be a material impact on the cut-off grade and quarry optimization analysis.

Table 12-1 - Summary of Cut-off Grade Assumptions for Pit Optimizations

Input	Units	Value
Mining cost		
Fixed cost	US$/metric ton mined	1.69
Average mining cost[1]	US$/metric ton mined	2.44
Average mining cost[1]	US$/metric ton processed	9.49
Processing cost (fixed)[2]	US$/metric ton	22.08
Processing cost (variable)[3]	US$/metric ton	40.96
Sulfuric acid cost	US$/metric ton-sulfuric acid	75.74
Net of processing[4]	US$/metric ton	61.38
Process feed cut-off grade		
Boron (stream 1)	ppm	5,000
Lithium (streams 2 & 3)	US$ net value/metric ton	11.13
Boric acid recovery[5]		
Stream 1 (B5)	%	78.3
Stream 1 (M5)	%	80.2
Stream 1 (S5)	%	77.0
Stream 1 (L6)	%	75.8
Stream 2 (B5)	%	78.3
Stream 2 (S5)	%	46.8
Stream 2 (L6)	%	32.9
Stream 3 (M5)	%	65.0
Lithium carbonate recovery[5]		
Stream 1 (B5)	%	85.2
Stream 1 (M5)	%	85.7
Stream 1 (S5)	%	82.5
Stream 1 (L6)	%	79.4
Stream 2 (B5)	%	85.2
Stream 2 (S5)	%	84.8
Stream 2 (L6)	%	78.7
Stream 3 (M5)	%	78.0
Stochiometric conversion factors[5]		
Boric acid	factor	5.718
Lithium carbonate	factor	5.322
Selling price		
Boric acid	US$/metric ton	1,172.78
Lithium carbonate	US$/metric ton	19,351.38
Pit slope angles[6]		
TBX inter-ramp pit wall angle	degrees	42
Q1 inter-ramp pit wall angle	degrees	35
All other rock units in low-wall inter-ramp	degrees	42
All other rock units in highwall inter-ramp	degrees	42

Notes:

1. A variable mining cost of $0.00180/tonne per vertical foot from reference elevation 1,893 m (6,210 ft) amsl was applied to the quarry optimization to simulate increased mining costs resulting from longer haulage distances from deeper haul profiles. Estimate provided by IMC.
2. Fixed Process Cost: LOM weighted average cost based on a fixed process cost; where, Stream 01: M5=$30.5/t, B5=$30.5/t, S5=$30.5/t, L6=$30.5/t; Stream 02: B5=$30.5/t, S5=$15.19/t, and L6=$17.53/t; Stream 03: M5=$30.80/t, Process cost estimates provided by ioneer project team.
3. Acid Consumption Process Cost: The acid consumption is calculated within the block model based on the elemental acid consumption (Lithium, Aluminum, Calcium, Iron, Potassium, Magnesium, Sodium, Strontium and Manganese) formula provided by the ioneer project team. The LOM weighted average acid consumption cost where Stream 1: B5 = $32.56/t, S5=$21.04/t, L6=$33.06/t, M5=$42.08/t; for Stream 2: B5= $30.39/t, S5=$16.20/t, L6=$30.38/t and Stream 3: M5 = 39.91$/t.
4. Net of Processing is the value added per ton processed after the fixed and variable processing costs have been deduced, but it does not include mining or G&A costs.
5. Recovery and conversion factors provided by ioneer project team.
6. Geotechnical slope design recommendations based on QP recommendations provided in Section 13.1.1.

In discussion with ioneer, IMC applied a lithium carbonate selling price of $19,351.3/t ($17,555.46/st) and boric acid selling price of $1,172.78/t ($1,063.94/st) for the purposes of the cut-off grade estimate and quarry optimization for all periods of the mineral reserve estimate. The selling prices of lithium carbonate and boric acid were based on the forecast metal prices discussed in Section 16.

For the purposes of the cut-off grade estimate, IMC applied recoveries as follows:

Table 12-2 - Summary of Process Recovery Seams

Summary of Process Recovery Seams	Boron		Lithium	
	Stream 1	Stream 2 & 3	Stream 1	Stream 2 & 3
M5	80.2%	65.0%	85.7%	78.0%
B5	78.3%	78.3%	85.2%	85.2%
S5	77.0%	46.8%	82.5%	84.8%
L6	75.8%	32.9%	79.4%	78.7%

The Rhyolite Ridge heat and material balance, RR40-1000-91-PO-HMB-00001 v5 (dated 5 December 2023), was used as the basis to estimate potentially saleable quantities of boric acid and lithium carbonate.

Based on the results of leaching process test work, a 5,000 ppm boron and net value of $11.13/t$ cut-off was selected as the basis of the cut-off grade estimate and quarry optimization analysis. The lithium grade was not deemed material for the cut-off evaluation and quarry optimization analysis, as all resource blocks containing more than 5,000 ppm boron have sufficient lithium grades for processing, which will contribute incremental value to the project.

Table 12-3- Summary of Process Stream Estimates within Engineered Pit Design

Description	Units	Stream 1				Stream 2			Stream 3	TOTAL
		B5	M5	S5	L6	B5	S5	L6	M5	ALL
Plant Input										
ROM Ore	ktonnes	59,446	6,900	5,591	19,303	8,912	42,500	93,888	23,800	260,341
Boron Grade (Contained)	ppm	14,732	7,542	7,622	8,004	2,277	957	1,467	1,276	5,201
Lithium Grade (Contained)	ppm	1,807	2,332	1,230	1,351	2,169	894	1,212	2,109	1,451
Contained Metals										
Contained Boron	ktonnes	876	52	43	155	20	41	138	30	1,354
Contained Lithium	ktonnes	107	16	7	26	19	38	114	50	378
Contained Boric Acid	ktonnes	5,008	298	244	883	116	233	788	174	7,742
Contained Lithium Carbonate	ktonnes	572	86	37	139	103	202	606	267	2,011
Contained LCE	ktonnes	875	104	51	192	110	216	653	278	2,480
Mass Recovery										
Boric Acid Recovery	%	78.3%	80.2%	77.0%	75.8%	78.3%	46.8%	32.9%	65.0%	
Lithium Carbonate Recovery	%	85.2%	85.7%	82.5%	79.4%	85.2%	84.8%	78.7%	78.0%	
Recovered Metals										
Recovered Boric Acid	ktonnes	3,921	239	188	670	91	109	259	113	5,589
Recovered Lithium Carbonate	ktonnes	487	73	30	110	88	171	477	208	1,645
Recovered LCE	ktonnes	725	88	42	151	93	178	492	215	1,984
Notes: Because the Project will develop two different saleable products, it is useful to express the recoverable Boric Acid and Lithium Carbonate as a Lithium Carbonate Equivalent (LCE) grade. Assuming the above sales prices, an equivalent Lithium Carbonate grade can be calculated using the assumed stoichiometric conversions and mass recoveries as follows:										
Lithium Carbonate Equivalent (ppm) = (Boron Grade x 5.718 x ($1,172.78 / $19,351.38)) + (Lithium Grade x 5.322)										

Notes:

1. Since there will be two different saleable products, it is useful to express the recoverable boric acid and lithium carbonate as a lithium carbonate equivalent (LCE) grade. Assuming the above sales prices, an LCE grade can be calculated using the assumed stoichiometric conversions and mass recoveries as follows:

   LCE (ppm) = (boron grade x 5.718 x ($922.32 / $16,210.20)) + (lithium grade x 5.322)

Based on the observations from the grade-tonnage analysis and the economic evaluation in Figure 12-3, the following observations were made within the engineered pit design:

Stream 1 feed:

- All of the measured and indicated mineral resource classifications has a boron grade >5,000 ppm. The inferred resource classification was not included in within process stream estimates summarized in Figure 12-3;
- The majority of the stream 1 feed is contained within the B5 material. The approximate 59.4 Mt of in-situ B5 material, accounts for nearly 65% of the stream 1 process feed;
- The second largest contribution of stream 1 feed is contained within the L6 material. Approximately 19.3 Mt of in-situ L6 within the stream 1 process feed.
- Only 6.9 Mt of in-situ M5 is within the stream 1 feed. Up to half of the M5 unit consists of the M5a unit, a swelling clay which presents problems for the proposed processing plant design. Only a small portion of the M5 unit can therefore be processed based on the cut-off grade analysis.

Stream 2 feed:

- All of the measured and indicated mineral resource classifications has a net value grade of at least $11.13/t. The inferred resource classification was not included in within process stream estimates summarized in Figure 12-3;
- The majority of the stream 2 material is within the L6 seam. A total of 93.9 Mt of in-situ L6 within the measured and indicated mineral resource classifications has a Net Value grade of at least $11.13/t;
- There is only 8.9 Mt of in-situ B5 material, or nearly 6% of stream 2 feed.

Stream 3 feed:

- All of the measured and indicated mineral resource classifications has a net value grade of at least $11.13/t. The inferred resource classification was not included in within process stream estimates summarized in Figure 12-3;
- There is only 41.9 Mt of in-situ M5 within the stream 3 feed. The majority of the M5 seam would be treated as process stream 3. The stream 3 material must be blended with other process streams, therefore only a portion of the M5 material can be included within the mine production schedule.

12.1.3. Pit Targeting Methodology and Pit Selection

IMC performed numerous pit targeting exercises under various scenarios and assumptions to identify the economic extents of the LOM Quarry using the 9.14 m (30 ft) mine planning block model and Hexagon MinePlan® software's quarry optimization capabilities. These pit targeting exercises formed the basis of IMC's subsequent quarry designs.

Key inputs influencing the pit targeting exercise included:

- Modifying factors;
- Unit costs, including mining, processing, and sales costs;
- Metallurgical recovery;
- Sales prices;
- Cut-off grades;
- Geotechnical criteria, including overall quarry slopes;
- Other external constraints such as the locations of buckwheat, permit boundaries, public utilities and infrastructure.

Modifying factors were applied to the in-situ block model to estimate tonnages and grades that can be expected from the mining process.

Due to the geology and varying geotechnical constraints in the quarry area, differing inter-ramp slope angles were used in the quarry optimization based upon GLA initial geotechnical recommendations (GeoLogic, 2024). Based on the pit targeting criteria, IMC performed nested quarry optimizations at static input costs and incremental revenue factors ranging from 10% to 110% of the base selling prices using the Lerchs-Grossmann algorithm to test the sensitivity of the deposit to selling prices and identify the best 50 years of process feed. A summary of the results of the pit targeting exercise is provided in Table 12-4.

Based upon the results of this pit targeting exercise, the 15% revenue factor quarry shell was chosen as a basis for the development of the LOM quarry design due to its roughly 255 Mt of ore, which equates to a mine life of approximately 84 years at an average production rate of 3.08 Mtpa ore. Increasing the revenue factor and additional study tons would have increased the mine life but, would have also included lower-value mineralization into the quarry plan without any substantial benefit in Project value on a NPV basis by extending the mine life beyond a 50-year timeframe.

Table 12-4 - Summary of Pit Optimization Results

Revenue Factor	Strip Ratio	Tonnes NOT Processed (000s tonnes)	Tonnes TO BE Processed (000s tonnes)	Boron Grade (ppm)	Lithium Grade (ppm)	Recovered Boric Acid[1] (000s tonnes)	Recovered Lithium Carbonate[1] (000s tonnes)	Approximate[2] Mine Life (years)
10%	1.51	376,641	249,129	4,957	1,471	5,000	1,587	80.8
15%	1.57	448,949	286,707	4,736	1,456	5,479	1,806	93.0
20%	1.62	488,296	301,021	4,688	1,448	5,696	1,885	97.6
25%	1.72	536,789	311,787	4,721	1,445	5,953	1,948	101.1
30%	1.89	608,695	322,255	4,805	1,447	6,281	2,016	104.5
35%	1.93	627,267	324,649	4,816	1,448	6,345	2,033	105.3
40%	1.95	634,159	325,522	4,816	1,448	6,362	2,039	105.5
45%	1.96	638,220	326,093	4,814	1,448	6,370	2,042	105.7
50%	1.97	642,586	326,618	4,811	1,448	6,377	2,044	105.9
55%	1.98	647,669	327,269	4,807	1,447	6,383	2,047	106.1
60%	1.99	651,739	327,831	4,802	1,446	6,387	2,049	106.3
65%	2.00	655,302	328,236	4,799	1,446	6,391	2,052	106.4
70%	2.00	658,037	328,507	4,799	1,446	6,396	2,053	106.5
75%	2.01	659,609	328,649	4,798	1,445	6,397	2,054	106.6
80%	2.02	666,760	329,489	4,788	1,444	6,400	2,057	106.8
85%	2.03	670,348	329,847	4,785	1,444	6,403	2,059	106.9
90%	2.04	671,747	329,966	4,784	1,444	6,404	2,060	107.0
95%	2.04	675,195	330,205	4,784	1,444	6,408	2,061	107.1
100%	2.05	677,614	330,386	4,783	1,444	6,410	2,062	107.1
105%	2.08	692,092	332,003	4,760	1,442	6,411	2,069	107.6
110%	2.09	692,574	332,050	4,760	1,442	6,411	2,069	107.7

Note: Annual process feed based on 3.1 Mt per year to process plant. All of Stream 3 included to be processed.

12.1.4. Final Quarry Design

While the pit targeting exercise helped to identify the lowest-cost ore within the designated study period, the quarry and phasing designs were defined by the orientation of geotechnical controlling stratification of the deposit. Due to the highly sensitive nature of the quarry wall orientations to the dip and orientation of various sedimentary units on quarry slope stability, the quarry design process required close collaboration between IMC and GLA to finalize designs. Numerous iterations of the quarry phases were designed before finding wall orientations that met the quarry slope stability acceptance criteria, other design objectives, and constraints set out in Section 13.1.1.

Phase 1 to phase 8 of the quarry, whose extents are shown in Figure 12-1 through Figure 12-8, were designed as a preliminary entry point into the development of the quarry. It was designed to maximize mining recovery to the extent possible while allowing ioneer to operate under an initial EIS permit for as long as possible. As shown in Table 12-5, IMC's resultant design for the phases of the quarry included 136.2 Mt (1,501 Mst) of overburden and 37.3 Mt (41.1 Mst) of measured and indicated mineral resources, which equates to approximately 12 years of ore production at an average annual acid consumption rate of 1.21 Mtpa.

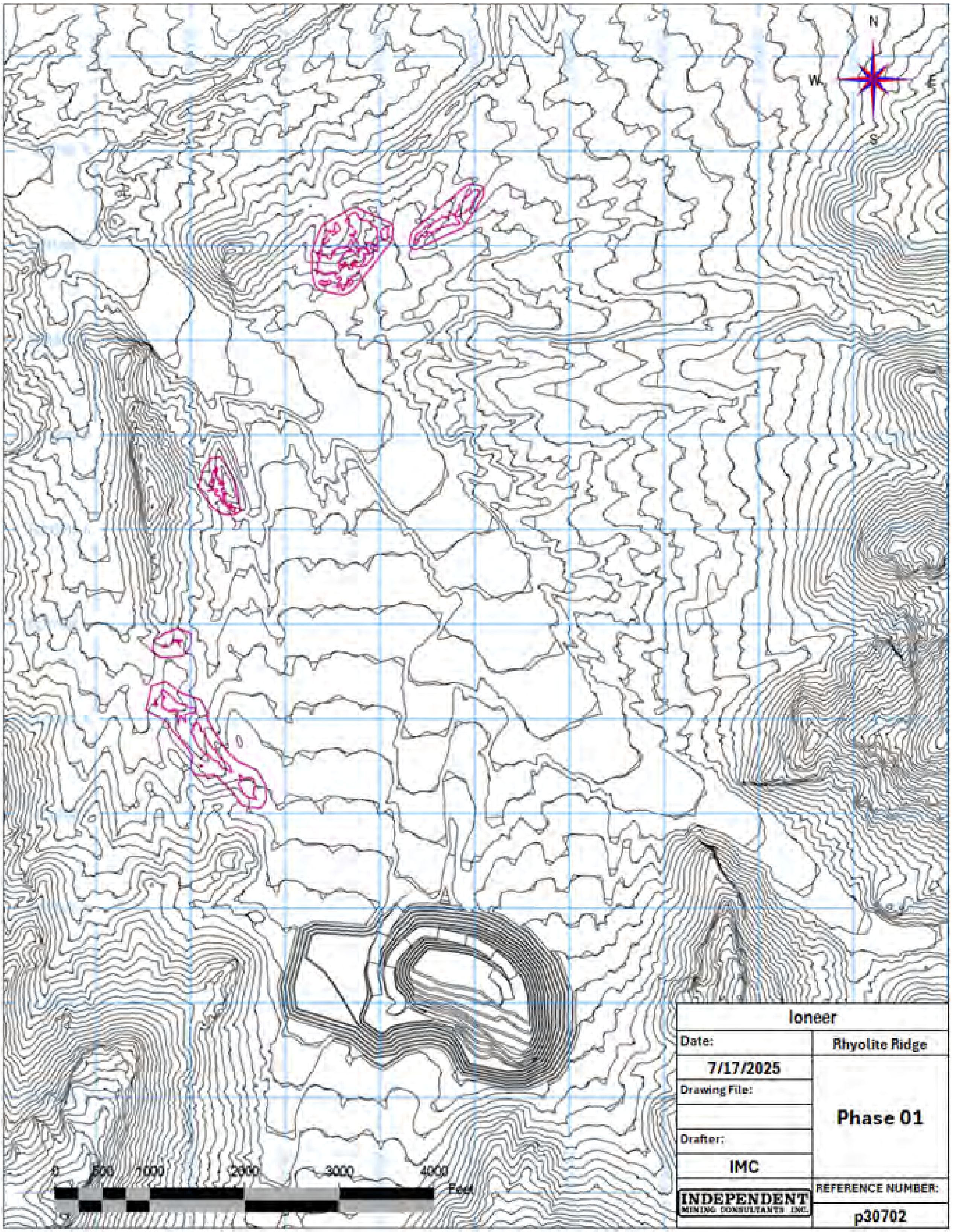


Figure 12-1 - Phase 1 Quarry Design

Source: ioneer, 2025

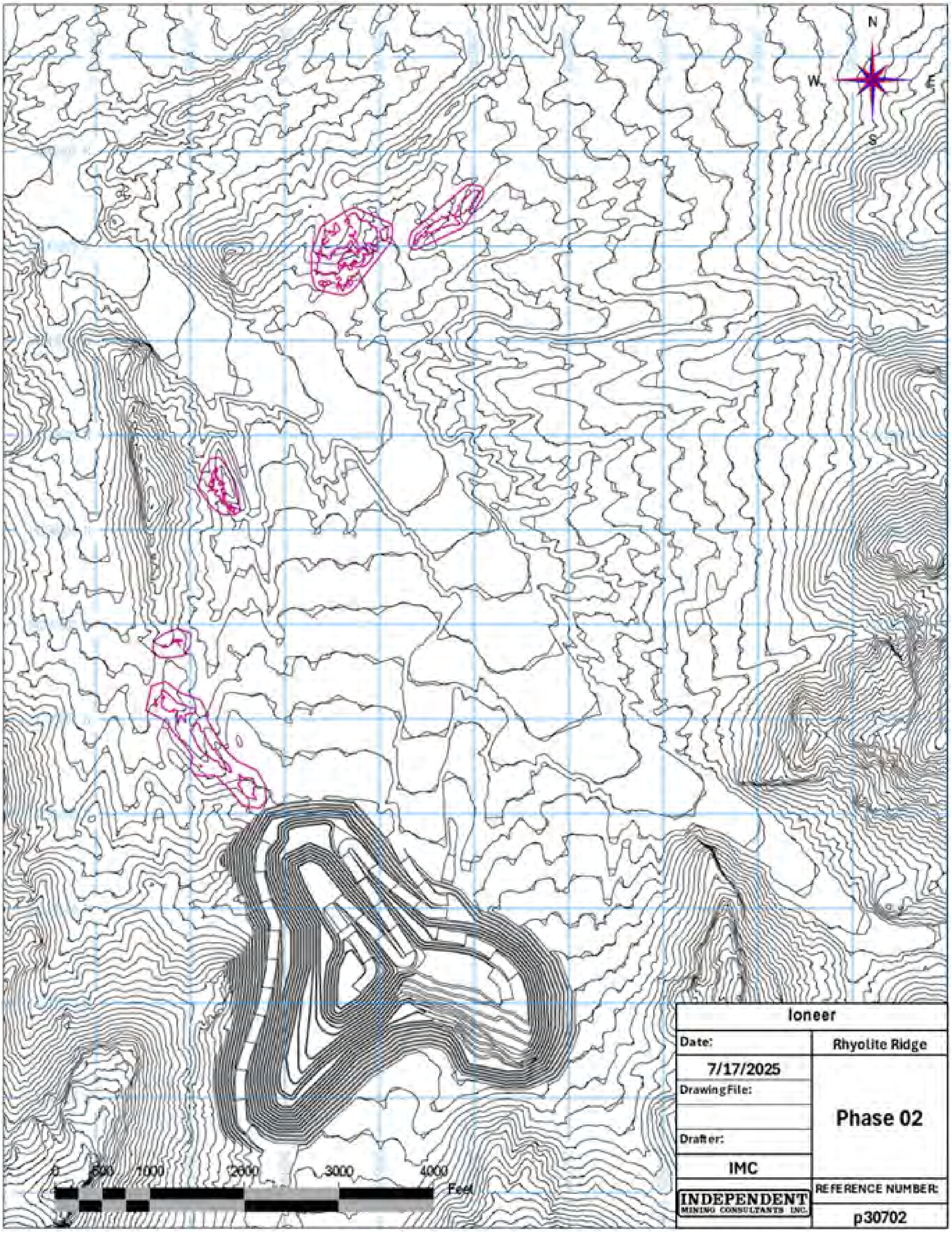


Figure 12-2 - Phase 2 Quarry Design

Source: ioneer, 2025

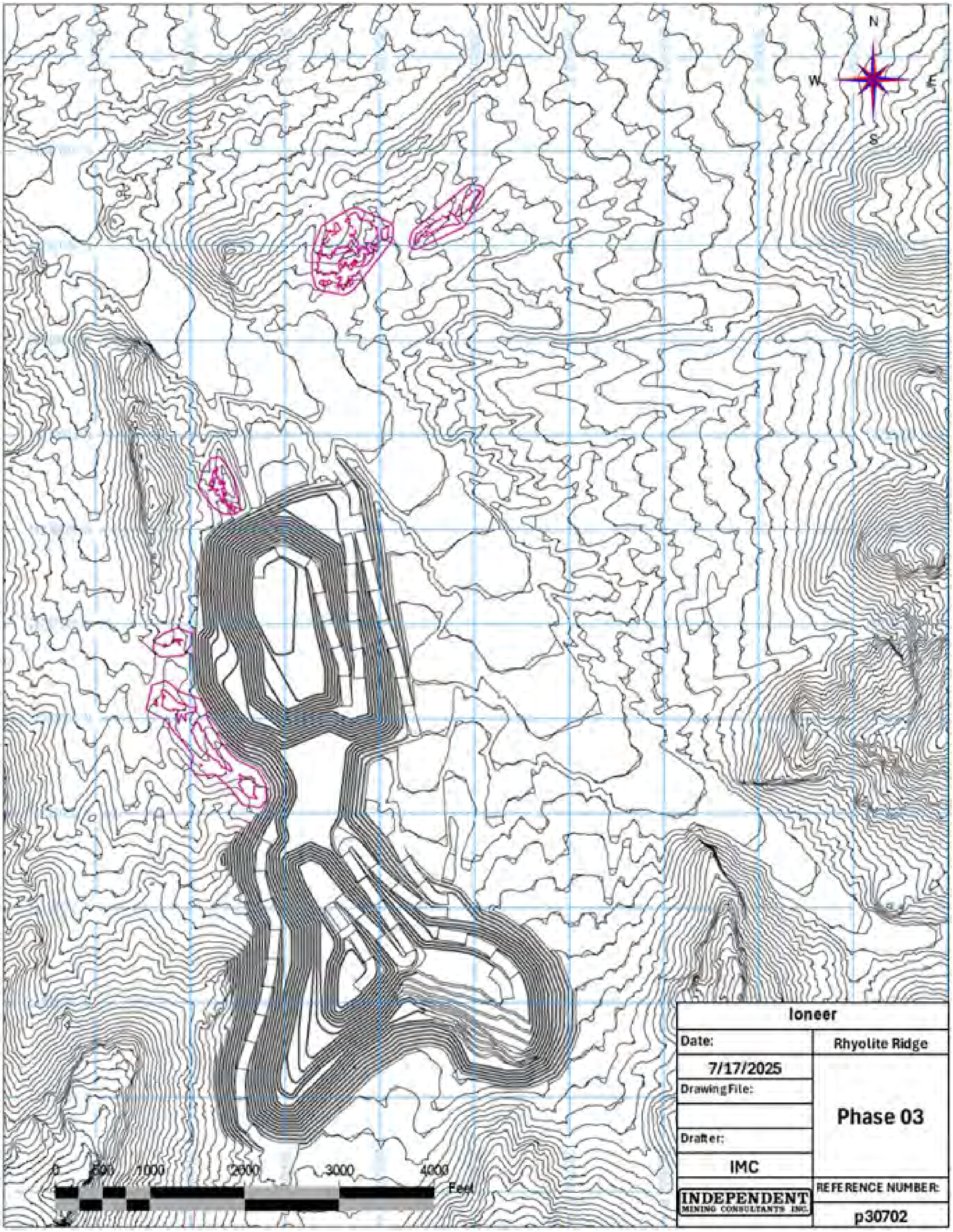


Figure 12-3 - Phase 3 Quarry Design

Source: ioneer, 2025

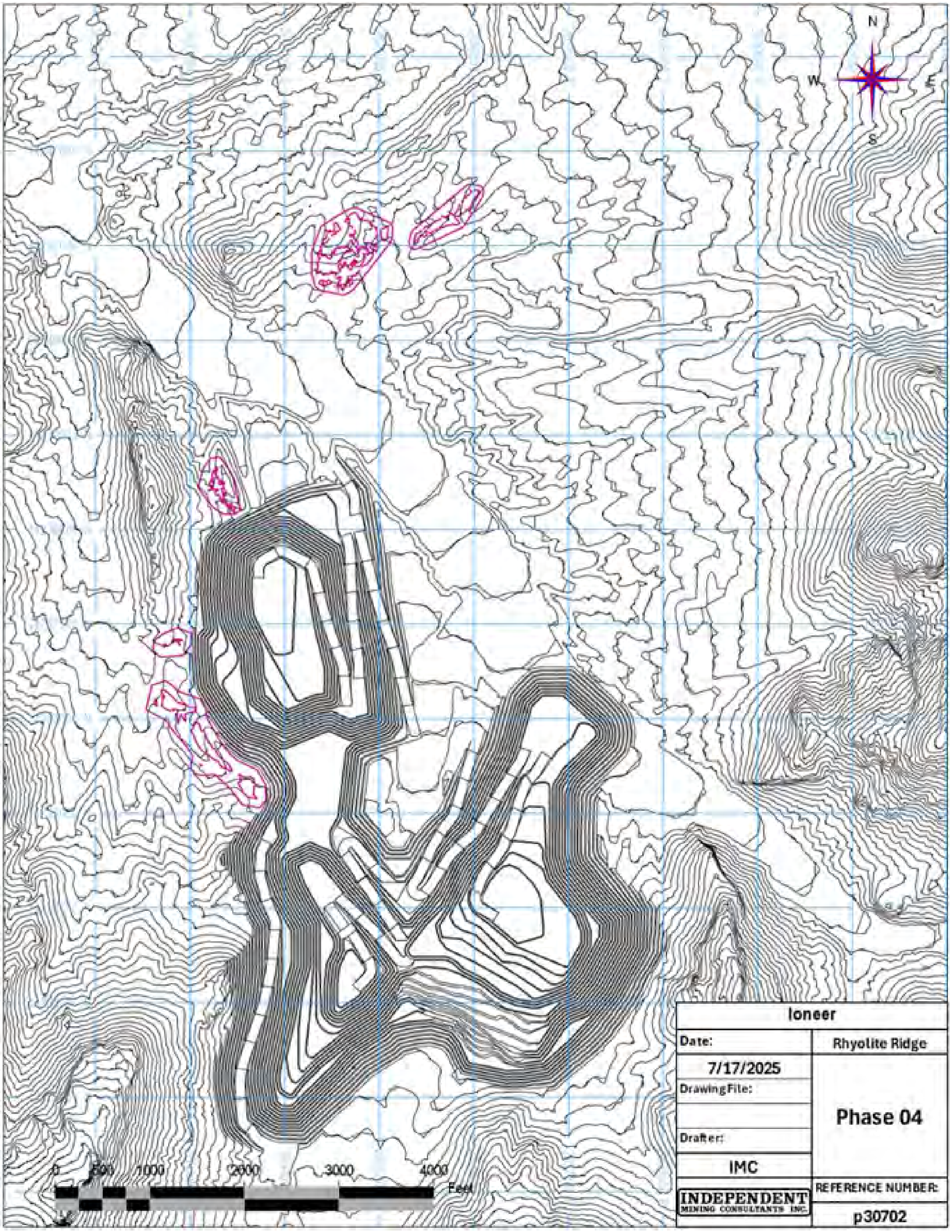


Figure 12-4 - Phase 4 Quarry Design

Source: ioneer, 2025

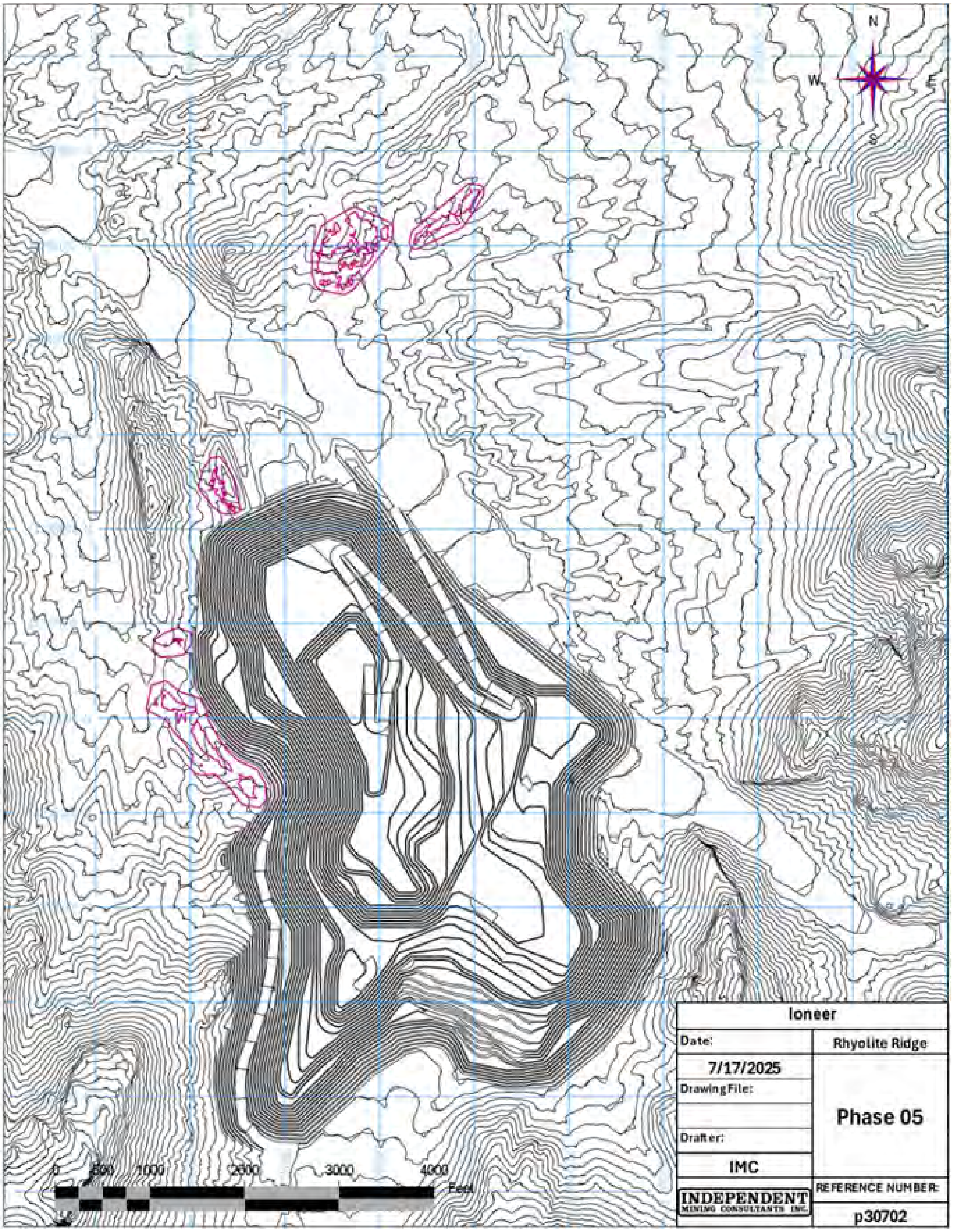


Figure 12-5 - Phase 5 Quarry Design

Source: ioneer, 2025

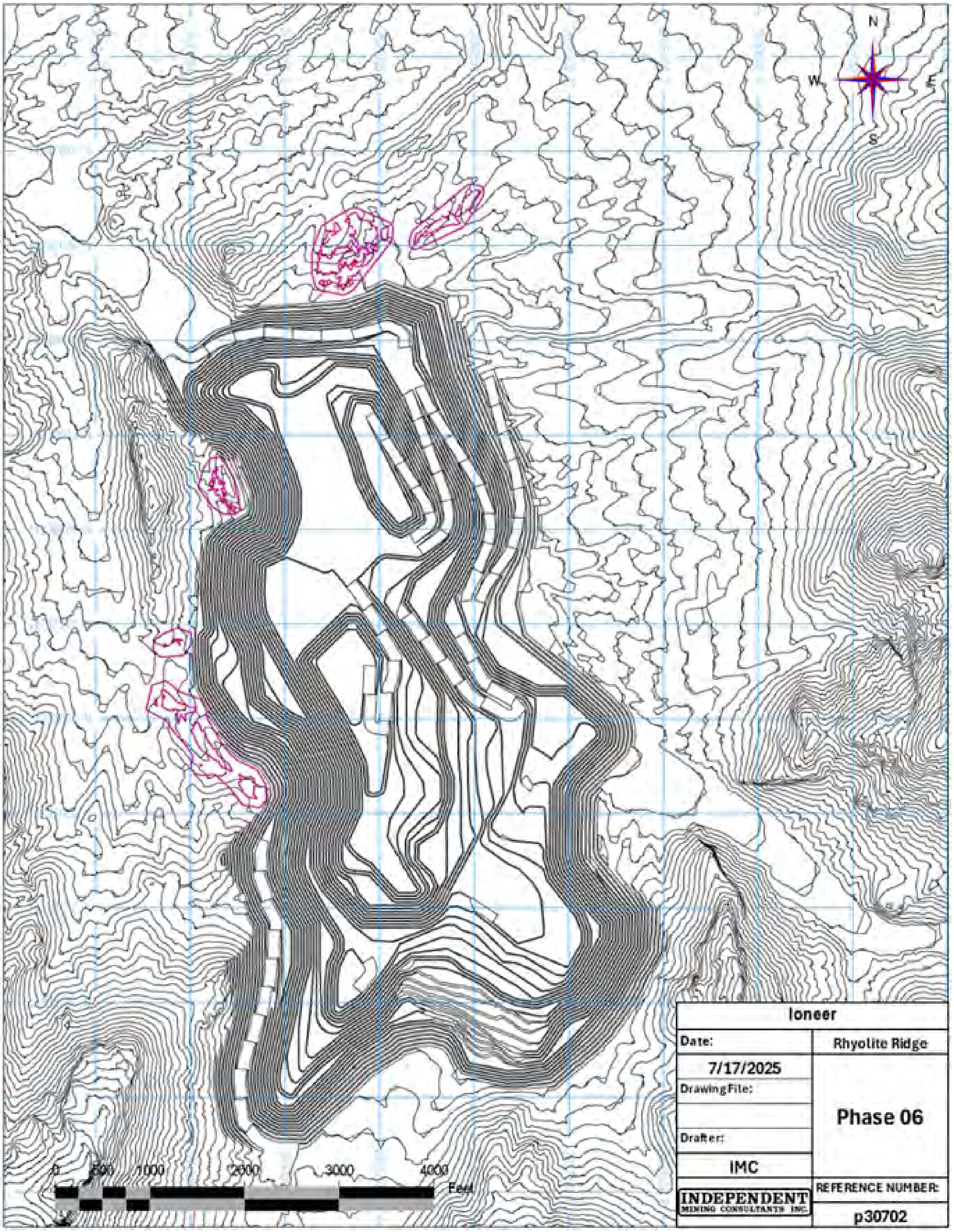


Figure 12-6 - Phase 6 Quarry Design

Source: ioneer, 2025

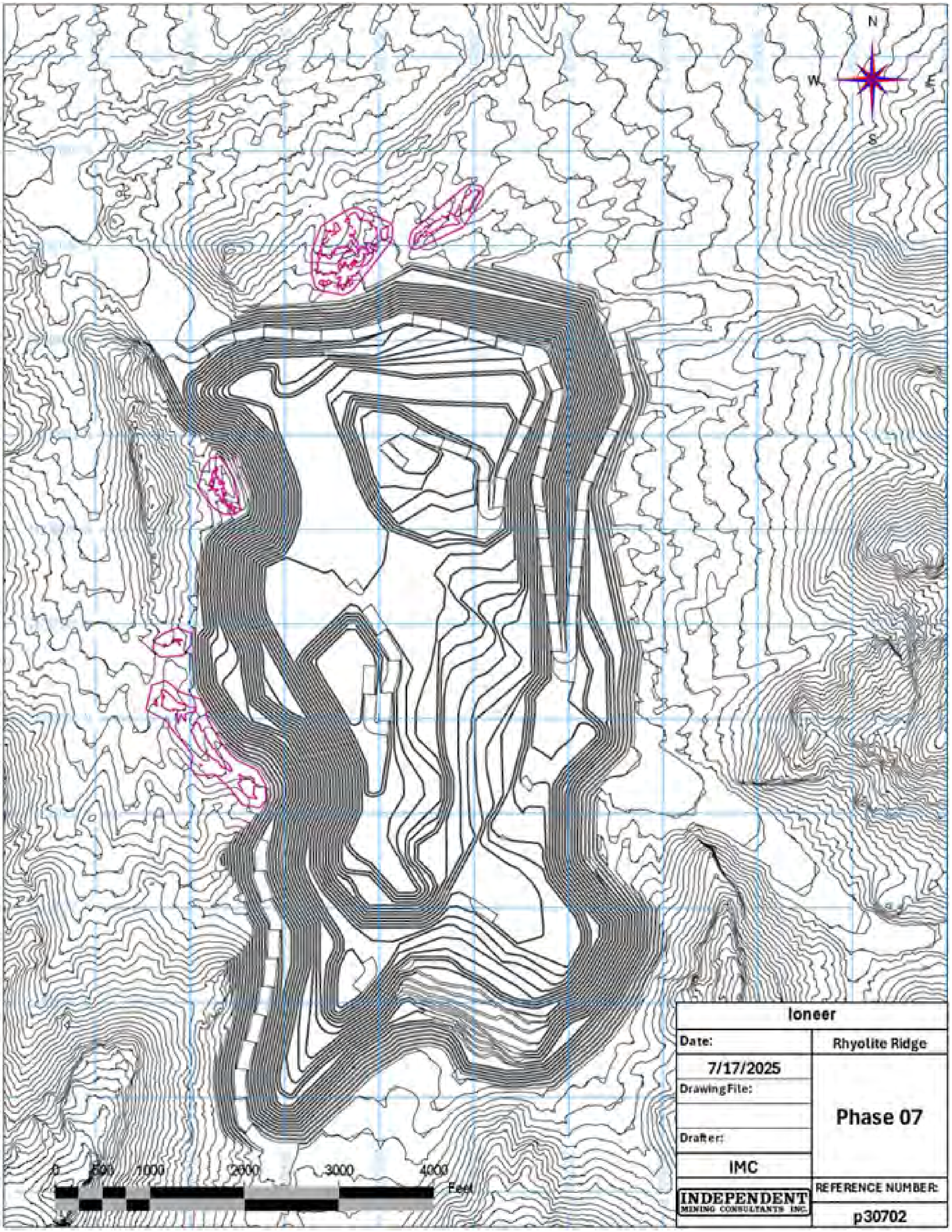


Figure 12-7 - Phase 7 Quarry Design

Source: ioneer, 2025

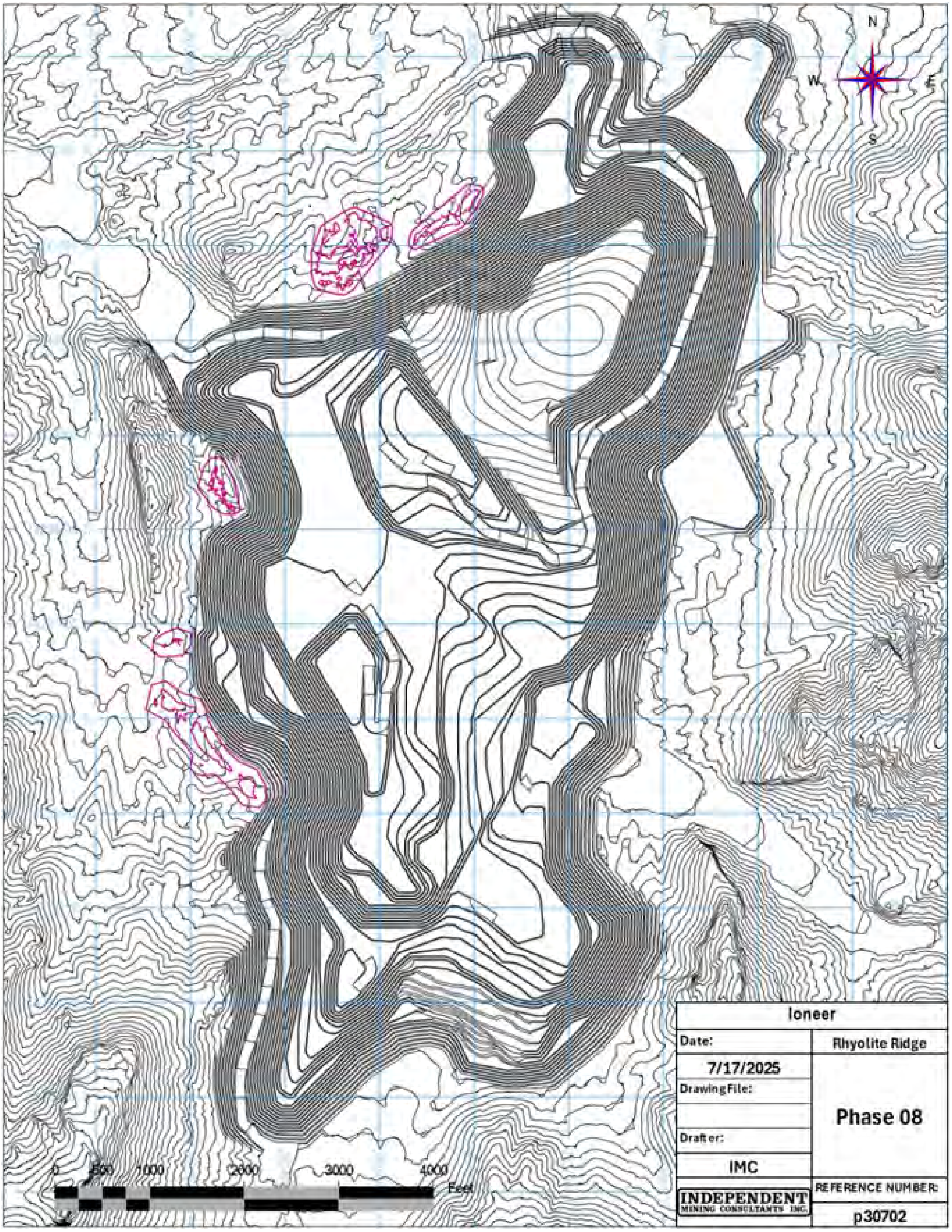


Figure 12-8 - Phase 8 Quarry Design

Source: ioneer, 2025

Table 12-5 - Pit Design Tonnages, Grades, Contained and Recovered Metals

Description	Units	Total	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8
Material Movement										
Overburden & Non-Economic Material	000s tonnes	897,337	33,500	60,828	69,700	85,560	157,773	101,244	128,060	260,672
ROM Ore Tons[1]	000s tonnes	260,341	9,581	12,189	15,497	30,666	65,452	46,269	42,968	37,719
Total Material	**000s tonnes**	**1,157,678**	**42,996**	**72,985**	**84,641**	**118,458**	**218,384**	**218,384**	**218,384**	**218,384**
ROM Strip Ratio	tons/ton	3.45	3.50	4.99	4.50	2.79	2.41	2.19	2.98	6.91
ROM Ore Grade										
Boric Acid (H_3BO_3)	%	2.97	1.50	1.81	4.10	2.08	3.34	3.81	2.25	3.15
Lithium Carbonate ($Li_{2C}O_3$)	%	0.77	0.82	0.96	0.85	0.75	0.72	0.77	0.74	0.81
Boron	ppm	5,201	2,625	3,172	7,165	3,629	5,843	6,668	3,937	5,506
Lithium	ppm	1,451	1,547	1,812	1,592	1,412	1,351	1,445	1,396	1,527
Contained Metals										
Boric Acid (H_3BO_3)[2]	000s tonnes	7,742	144	221	635	636	2,187	1,764	967	1,188
Lithium Carbonate ($Li_{2C}O_3$)[3]	000s tonnes	2,011	79	118	131	231	471	356	319	306
Boron	000s tonnes	1,354	25	39	111	111	382	309	169	208
Lithium	000s tonnes	378	15	22	25	43	88	67	60	58
Recovered Metals										
Boric Acid (H_3BO_3)[2]	000s tonnes	5,588	93	167	484	426	1,589	1,297	650	883
Lithium Carbonate ($Li_{2C}O_3$)[3]	000s tonnes	1,645	64	99	110	187	387	290	258	250
Boron	000s tonnes	977	16	29	85	75	278	227	114	154
Lithium	000s tonnes	309	12	19	21	35	73	55	49	47
Sulfuric Acid Consumption	000s tonnes	90,415	3,333	4,351	5,485	10,354	21,270	16,096	15,142	14,384
Approximate Ore Production	Years	85	3.1	4.0	5.0	10.0	21.3	15.0	14.0	12.2

Notes:
1. Ore includes dilution and losses.
2. Totals may differ due to rounding, Mineral Reserves reported on a dry in-situ basis.
3. A stochiometric conversion factor of 5.718 was applied to convert the boron grade to an equivalent boric acid grade.
4. A stochiometric conversion factor of 5.322 was applied to convert the lithium grade to an equivalent lithium carbonate grade.

The end of mine life quarry, and overburden storage facilities are provided in Figure 12-9. Access ramps used in the design phases have been sized to accommodate two lanes of traffic at a maximum allowable grade of 10%. Ramps have therefore been designed to a width of 32 m (105 ft) to accommodate a berm, two lanes of traffic, and a drainage ditch.

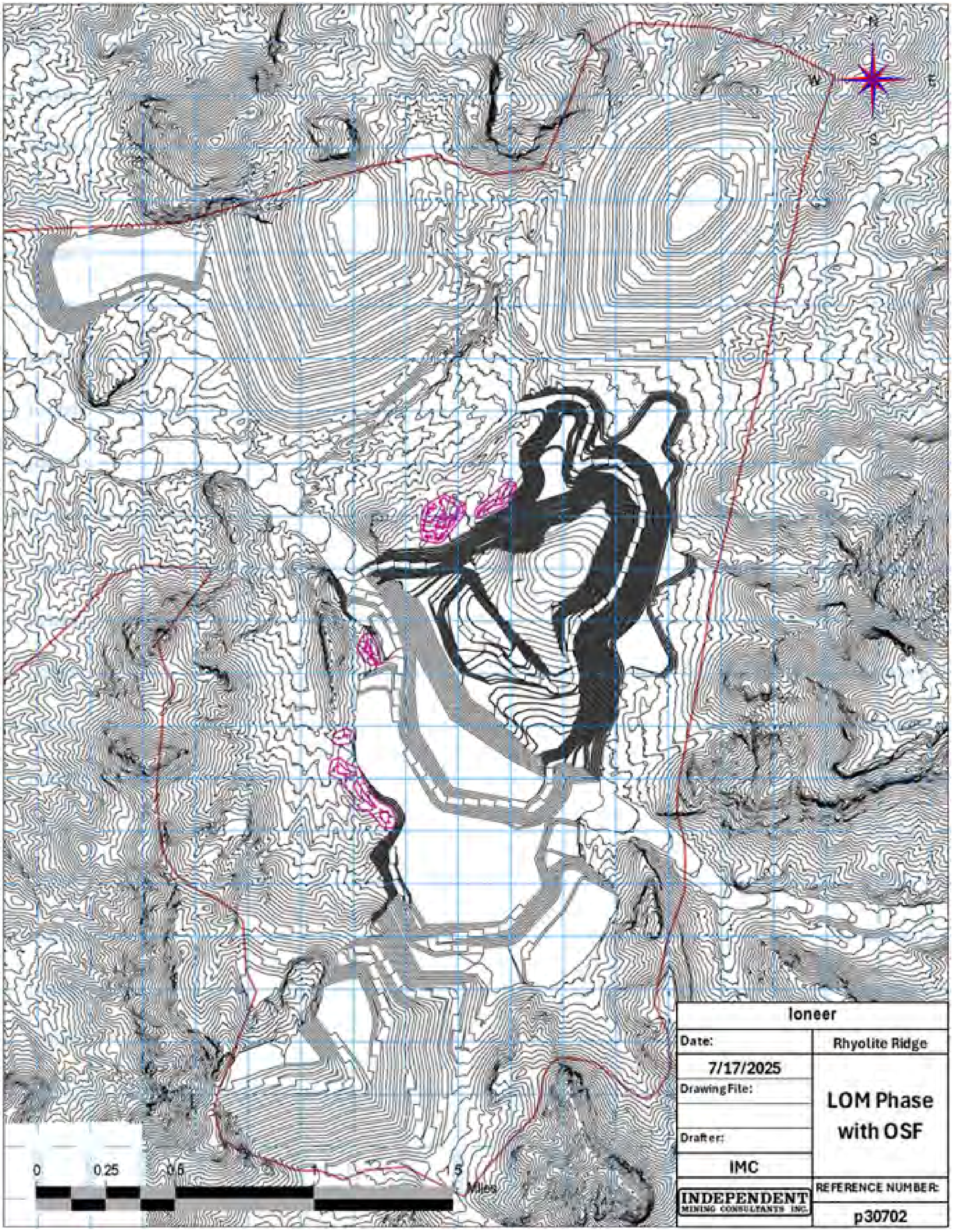


Figure 12-9 – End of Mine Life Quarry and Overburden Storage Facility

Source: ioneer, 2025

IMC's quarry designs were further analyzed by GLA to check for quarry slope stability. The analyses found that each of the phase design is predicted to be in a stable configuration. Further discussion on the geotechnical criteria that formed the basis of each phase quarry design is provided in Section 13.1.1.

12.2. Mineral Reserve Estimate

The mineral reserve estimate for the South Basin is presented by quarry in Table 12-6. Mineral reserves are reported using the definitions in S-K 1300.

Mineral reserves are stated as dry metric tonnes of ore delivered at the processing plant ore stockpile. All figures are rounded to reflect the relative accuracy of the estimates and rounded subtotals may not add to the stated total.

The mineral reserve estimate is based on the LOM production plan described in Section 13.0 and realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social, and governmental modifying factors described in this Report section.

Contained equivalent tonnes of lithium carbonate and boric acid reported in the mineral reserves are the equivalent tonnages of marketable products potentially available. Lithium carbonate and boric acid do not naturally occur in the ore but are processed products produced from the ore. Equivalent contained tons of lithium carbonate and boric acid are estimated using stochiometric conversion factors derived from the molecular weights of the individual elements which make up lithium carbonate and boric acid. The conversion factors used are constant and as follows: Li_2CO_3 – 5.322 and H_3BO_3 – 5.718.

The statement of estimates of mineral reserves has been compiled by IMC, an independent third-party firm.

Based on the outcomes of the August 2025 feasibility study presented in this Report and the consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social, and governmental modifying factors, it is the QP's opinion that the extraction of the stated mineral reserves could be reasonably justified at the time of reporting.

Table 12-6 - Mineral Reserves as of August 2025

Area	Group	Classification	Short Tons (kt)	Lithium Grade Li (ppm)	Boron Grade B (ppm)	Contained Equivalent Grade Li_2CO_3 (wt.%)	Contained Equivalent Grade H_3BO_3 (wt.%)	Contained Equivalent Tons Li_2CO_3 (kt)	Contained Equivalent Tons H_3BO_3 (kt)	Recovered Equivalent Tons Li_2CO_3 (kt)	Recovered Equivalent Tons H_3BO_3 (kt)
Stream 1 (>= 5,000 ppm B)	Upper Zone	Proven	3,489	2,401	7,652	1.28	4.38	45	153	38	122
	M5 Unit	Probable	3,410	2,262	7,430	1.20	4.25	41	145	35	116
		Sub-total B5 Unit	**6,899**	**2,332**	**7,542**	**1.24**	**4.31**	**86**	**298**	**73**	**239**
	Upper Zone	Proven	27,991	1,880	15,364	1.00	8.79	280	2,459	239	1,925
	B5 Unit	Probable	31,456	1,742	14,169	0.93	8.10	292	2,549	248	1,995
		Sub-total M5 Unit	**59,447**	**1,807**	**14,732**	**0.96**	**8.42**	**572**	**5,008**	**487**	**3,921**
	Upper Zone	Proven	2,237	1,326	7,754	0.71	4.43	16	99	13	76
	S5 Unit	Probable	3,355	1,166	7,533	0.62	4.31	21	145	17	111
		Sub-total S5 Unit	**5,592**	**1,230**	**7,621**	**0.65**	**4.36**	**37**	**244**	**30**	**187**
	Upper Zone	Proven	33,717	1,897	14,061	1.01	8.04	340	2,711	290	2,124
	(B5, M5 & S5)	Probable	38,221	1,738	12,985	0.92	7.42	353	2,838	301	2,223
	Sub-Total	**Sub-total Upper Zone**	**71,938**	**1,813**	**13,489**	**0.96**	**7.71**	**694**	**5,549**	**591**	**4,347**
	Lower Zone	Proven	5,712	1,389	8,357	0.74	4.78	42	273	34	207
	L6 Unit	Probable	13,592	1,334	7,856	0.71	4.49	96	611	77	463
		Sub-total Lower Zone	**19,303**	**1,350**	**8,004**	**0.72**	**4.58**	**139**	**883**	**110**	**670**
	Total Stream 1 (all zones)	Proven	39,428	1,824	13,235	0.97	7.57	383	2,984	323	2,331
		Probable	51,813	1,632	11,640	0.87	6.66	450	3,448	377	2,686
		Sub-total Stream 1	**91,241**	**1,715**	**12,329**	**0.91**	**7.05**	**833**	**6,432**	**700**	**5,017**
Stream 2 ($16.54/t net value cut-off grade. Low Clay)	Upper Zone	Proven	4,528	2,219	2,143	1.18	1.23	53	55	46	43
	B5 Unit	Probable	4,384	2,118	2,415	1.13	1.38	49	61	42	47
		Sub-total B5 Unit	**8,912**	**2,169**	**2,277**	**1.15**	**1.30**	**103**	**116**	**88**	**91**
	Upper Zone	Proven	15,005	1,022	1,125	0.54	0.64	82	97	69	45
	S5 Unit	Probable	27,495	825	866	0.44	0.50	121	136	102	64
		Sub-total S5 Unit	**42,500**	**895**	**957**	**0.48**	**0.55**	**202**	**233**	**172**	**109**
	Upper Zone	Proven	19,533	1,299	1,361	0.69	0.78	135	152	115	89
	(B5 & S5)	Probable	31,880	1,003	1,079	0.53	0.62	170	197	144	111
	Sub-Total	**Sub-total Upper Zone**	**51,413**	**1,116**	**1,186**	**0.59**	**0.68**	**305**	**349**	**259**	**200**
	Lower Zone	Proven	24,936	1,254	1,279	0.67	0.73	166	182	131	60
	L6 Unit	Probable	68,952	1,196	1,535	0.64	0.88	439	605	345	199
		Sub-total Lower Zone	**93,888**	**1,211**	**1,467**	**0.64**	**0.84**	**605**	**788**	**476**	**259**
	Total Stream 2 (all zones)	Proven	44,469	1,274	1,315	0.68	0.75	302	334	246	149
		Probable	100,832	1,135	1,391	0.60	0.80	609	802	490	310
		Sub-total Stream 2	**145,301**	**1,177**	**1,368**	**0.63**	**0.78**	**911**	**1,136**	**736**	**459**
Stream 3 ($16.54/t net value cut-off grade, High Clay)	**Total Stream 3 (M5 zone)**	Proven	5,621	2,199	1,702	1.17	0.97	66	55	51	36
		Probable	18,178	2,082	1,145	1.11	0.65	201	119	157	77
		Sub-total Stream 3	**23,799**	**2,110**	**1,277**	**1.12**	**0.73**	**267**	**174**	**208**	**113**
TOTAL of All Streams, All Seams, and All Proven & Probable			**260,341**	**1,451**	**5,201**	**0.77**	**2.97**	**2,010**	**7,742**	**1,645**	**5,588**

Notes:

1. Li= lithium; B= boron' ppm= parts per million; Li_2CO_3 = lithium carbonate; H_3BO_3 = boric acid; kt = thousand metric tonnes.
2. Totals may differ due to rounding, Mineral Reserves reported on a dry in-situ basis. The Contained and Recovered Lithium Carbonate (Li_2CO_3) and Boric Acid (H_3BO_3) are reported in the table above in short tons. Lithium is converted to Equivalent Contained Tonnes of Lithium Carbonate (Li_2CO_3) using a stochiometric conversion factor of 5.322, and boron is converted to Equivalent Contained Tonnes of Boric Acid (H_3BO_3) using a stochiometric conversion factor of 5.718. Equivalent stochiometric conversion factors are derived from the molecular weights of the individual elements which make up Lithium Carbonate (Li_2CO_3) and Boric Acid (H_3BO_3). The Equivalent Recovered Tons of Lithium Carbonate (Li_2CO_3) and Boric Acid (H_3BO_3) is the portion of the contained tonnage that can be recovered after processing.
3. The statement of estimates of Mineral Reserves has been compiled by Independent Mining Consultants, Inc. (IMC) and is independent of ioneer and its affiliates. IMC 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 S-K §229.1304 of the United States Securities and Exchange Commission ("SEC").
4. All Mineral Reserve figures reported in the table above represent estimates at August 2025. Mineral Reserve estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. The totals contained in the above table have been rounded to reflect the relative uncertainty of the estimate.
5. Mineral Reserves are reported in accordance with the US SEC Regulation S-K Subpart 1300. The Mineral Reserves in this report were estimated and reported using the regulation S-K §229.1304 of the United States Securities and Exchange Commission ("SEC"). Mineral Reserves are also reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The Joint Ore Reserves Committee Code – JORC 2012 Edition).
6. The Mineral Reserve estimate is the result of determining the measured and indicated resource that is economically minable allowing for the conversion to proven and probable. In making this determination, constraints were applied to the geological model based upon a pit optimization analysis that defined a conceptual pit shell limit. The conceptual pit shell was based upon a net value per ton calculation including a 5,000 ppm boron cut-off grade for high boron – high lithium (HiB-Li) mineralization (Stream 1) and $11.13 net value per metric tonne cut-off for low boron (LoB-Li) mineralization below 5,000 ppm boron broke in to two material types low clay and high clay material respectfully (Stream 2 and Stream 3). The conceptual pit shell was constrained by the measured and indicated resource that incorporates the potential mining, metallurgical and processing grade parameters identified by mining, metallurgical and processing studies performed to date on the Project. The conceptual pit shell was used a guide for an engineered pit design. Key inputs in developing the Mineral Reserve pit shell included a 5,000 ppm boron cut-off grade for HiB-Li mineralization, $11.13 net value per metric tonne cut-off for LoB-Li low clay mineralization and $11.13 Net value per metric tonne cut-off for LoB-Li high clay mineralization; base mining cost of US$1.69/t and incremental cost of $0.055/t per bench below 1,896 m (6,220 ft) elevation; plant feed processing and grade control costs which range between US$52.92/t and US$82.55/t of plant feed for stream 1, US$18.87 and US$98.62 for streams 2&3; boron and lithium recovery for Stream 1: M5= of 80.2% and 85.7%, B5=80.2% and 78.3%, S5=77.0% and 82.5%, L6=75.8% and 79.4%; Stream 2 and 3: M5 65% and 78%, B5 78.3% and 85.2%, S5 46.8% and 84.8%, L6 32.9% and 78.7%, respectively; boric acid sales price of US$1,172.78/t; lithium carbonate sales price of $19,351.38/t.
7. The Mineral Reserve is reported exclusive of Mineral Resources.
8. Equivalent Lithium Carbonate (Li_2CO_3) and Boric Acid (H_3BO_3) grades have been rounded to the nearest tenth of a percent.

12.3. QP's Opinion on Factors That Could Materially Affect the Mineral Reserve Estimates

The mineral reserve estimate may be affected positively or negatively by additional exploration that alters the geological database and models of lithium-boron mineralization on the Project.

The mineral reserve estimates could also be materially affected by any significant changes in the assumptions regarding the quarry slope stability analysis (e.g., hydrogeologic data and/or geologic structure remodeling with new drilling), forecast product prices, mining and process recoveries, or production costs.

If the price assumptions are decreased or the assumed production costs increased significantly, then the cut-off grade must be increased and, if so, the potential impacts on the mineral reserve estimates would likely be material and need to be re-evaluated.

The mineral reserve estimate is also based on assumptions that a mining project can be developed, permitted, constructed, and operated. Any material changes in these assumptions would materially and adversely affect the mineral reserve estimates for the Project; potentially reducing to zero. Examples of such material changes include extraordinary time required to complete or perform any required activities, or unexpected and excessive taxation, or regulation of mining activities that become applicable to a proposed mining project on the Project.

The QP is not aware of environmental, permitting decisions, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the mineral reserve estimate that are not discussed in this Report.

13. MINING METHODS

13.1. Parameters Relative to the Quarry Design and Plans

13.1.1. Geotechnical

Geo-Logic Associates, Inc. (GLA) completed the geotechnical quarry slope designs, which included limit equilibrium stability and kinematic stability evaluations, including structurally controlled failures and toppling evaluations. GLA's geotechnical analyses included catch bench width, backbreak analysis and inter-ramp slope analysis. Bench heights were 9.14 m (30 ft) and bench width was 6.4 m (21 ft), regardless of quarry phase or location in the quarry.

The planned quarry area includes problematic adversely oriented bedding conditions where very low strength materials (i.e. layers M4, M5a, M5, and B5) daylight on the proposed slope faces.

GLA notes that there are some aspects of the quarry design that are based on limited geotechnical laboratory testing, in particular, the northern extents of the Phase 3, and the LOM quarry limits beyond Phase 3. These areas, however, do have drill holes within these design extents completed for mineral resource and mineral reserve estimation purposes, which provides support for the interpretations of the lithologic units present and their orientations.

GLA assumed that the quarry slopes will be dry (unsaturated) as a result of dewatering performed during mine operations and quarry development. The development of a quarry lake at the cessation of mining is not expected to adversely impact the final quarry slope stability.

The interramp angle results from the backbreak (combined plane and wedge) and kinematic analyses for all quarries ranged from 41 to 54°. GLA elected to use an inter-ramp angle consistent with the limit equilibrium analyses of 42° because that value fell within the range determined within the kinematic and backbreak analyses for phases of the quarry. Results of the limit equilibrium analyses indicate that the proposed designs meet acceptable factor of safety (FoS) stability criteria, specified as a minimum factor of safety of 1.2 for static analyses and a minimum factor of safety of 1.05 for pseudostatic analyses. Some cross sections analysed for the Phases 3-5 and LOM quarry required implementation of a system of ground anchors to achieve the factor of safety stability criteria.

Control of blasting will be extremely important as production progresses; especially where steeply dipping materials are present. The potential need for controlled blasting techniques near the final quarry wall may be required during normal operations. Such techniques may include buffer blasting, trim blasting, pre-splitting, post-split blasting, and line drilling. GLA recommends that radar monitoring and prisms be implemented, at a minimum, for increased safety and productivity, as well as for protection of the Tiehm's buckwheat population.

13.1.2. Hydrogeological

A groundwater resources baseline report was prepared by Piteau Associates in 2023. For the purposes of the water resource analysis, the study area consists of two general units: volcanic and sedimentary sequences of the Project area, and the alluvial and sedimentary of Fish Lake Valley. The conceptual model domain encompasses the full Fish Lake Hydrographic Basin (Basin 117) to evaluate the effects of resource dewatering, water supply, and the formation of a pit lake following mine closure. The numerical model domain extends into smaller portions of Big Smoky Valley and Clayton Valley and is designed to ensure that potential hydrological changes related to the Project would not impinge on the model domain boundary.

The model scenario includes the development of the Rhyolite Ridge mine through 2040 as well as an open quarry closure with partial backfilling and the development of a quarry lake.

Quarry dewatering will be achieved through the installation of vertical wells, sumps, and horizontal drains. This alternative includes the development of a water supply source north of Dyer, NV, designed to produce an additional 4,933,927 m^3 (4,000 acre-feet) per year of groundwater from the Fish Lake Valley groundwater system. The water will be conveyed to the site via a 31 km (19 mile) pipeline. The Rhyolite Ridge mine is planned to be closed as a quarry lake that functions as a groundwater sink. The key findings based on numerical modeling include:

- The Rhyolite Ridge mine will be excavated to its lowest elevation of 1,670 m (5,480 ft) amsl. Dewatering or sump pumping is anticipated to stabilize slopes and manage quarry wall seepage.
- The North, South and quarry backfill overburden storage facilities will be established as mining continues. The southern portion of the Rhyolite Ridge mine will be backfilled with non-potentially acid generating overburden rock.
- Dewatering rates are expected to range from ~227 lpm (60 gpm) to a maximum annual average of 2,461 lpm (650 gpm) occurring in 2033. The average dewatering rates through the LOM is expected to be about 1,041 lpm (275 gpm).
- At the end of quarry mining (2040), simulated heads show changes in piezometric levels of more than 122 m (400 ft) in the Project area due to quarry dewatering.
- Two water supply wells pumping at 4,933,927 m^3 (4,000 acre-feet) per year will be installed in the agricultural area north of Dyer. A small area of drawdown forms below the new wells but is to a limited extent. The maximum differential drawdown will be less than 6 m (20 ft).

A quarry lake will form as a terminal sink upon closure of the mine. Lake levels are expected to recover to approximately 1,721 m (5,646 ft) amsl elevation during the first 60 years post closure.

13.1.3. Surface Water Controls

Due to the proximity of the south overburden storage facility to the quarry, the stormwater controls developed for the South overburden storage facility serve to divert stormwater around the east side of the Quarry. Stormwater controls were designed to route upgradient runoff (non-contact water) around the proposed south overburden storage facility infrastructure and to accommodate and contain on-site runoff (contact water) from design storm events. The intent of the stormwater controls is as follows:

- The non-contact water channels have been designed to withstand the discharge of the peak flow from a 100-year, 24-hour storm event and convey the 500-year, 24-hour storm event within the channel freeboard.
- Non-contact water channels were hydraulically designed to accommodate the 500-year storm event in accordance with Nevada Administrative Code (NAC) 519A and 445A.433 requirements for permanent channels, and temporary contact water channels were designed to accommodate the 100-year storm event.
- Contact water will be managed by a contact water system that includes berms, channels, an underdrain system and a contact water pond. The system was designed to manage runoff from the 100-year, 24-hour storm event.

- Contact water is designed to be collected in a contact water pond that will be constructed at the southern end of the quarry. An underdrain collection system will be implemented beneath the South overburden storage facility that will direct water that infiltrates the South overburden storage facility to that contact water pond. This pond will minimize the amount of contact water that reports to the quarry.

- Permanent and temporary non-contact surface and contact water diversion channels will be constructed upgradient of the overburden storage facilities and the quarry to manage runoff from the overburden storage facilities and run-on to the quarry. As concurrent reclamation progresses, contact water channels will be diverted or converted to non-contact surface water channels to reduce the volume of water requiring management of contact water.

- The contact water pond was designed to accommodate, with a 0.3 m (1 ft) freeboard, the runoff from a 100-year, 24-hour storm; the overall pond capacity is 41,938 m^3 (34 acre-feet) at freeboard and 45,639 m^3 (37 acre-feet) at crest.

Hydrologic and hydraulic calculations were performed to establish design peak flows, runoff volumes, channel capacities, minimum channel dimensions, and slopes required to pass the design peak flows from up gradient watersheds that will be diverted around the South overburden storage facility. Stormwater diversion channels were designed to transport flow around the facility and discharge into natural drainage courses. All temporary stormwater diversion channels were at minimum designed with total depths to contain the discharge of the peak flow from a 100-year, 24-hour storm event. Permanent diversion channels that will remain in place for the life of quarry were designed with total depths to convey the 500-year, 24-hour storm event within the freeboard of the channel. The stormwater diversion channels will consist of trapezoidal channels with 2.5H:1V side slopes (maximum) and variable base widths and depths. Riprap protection will be used, where necessary, to minimize erosion due to runoff resulting from a maximum design storm event of 100-year, 24-hour duration.

The hydrological modelling was performed using HEC-HMS, a precipitation-runoff simulation computer program developed by the US Army Corps of Engineers to calculate the magnitude and timing of the peak flows and volumes resulting from specific storm events. HEC-15 (U.S Department of Transportation Federal Highway Administration, 2005) was then used to estimate channel flow depths and riprap sizing based on the cross-sectional geometry, minimum channel profile slope, and peak flows. The required channel depths and riprap sizing were determined for each channel segment longitudinal slope.

The south diversion channel routes non-contact water around the east side of the south overburden storage facility and quarry and outlets into a stilling basin prior to discharging into the Cave springs drainage. During operations, a trapezoidal channel will be formed by the south overburden storage facility perimeter berm/road and the offset stack slope and will direct flow to the underdrain system or contact water pond. Under normal operations, water from un-reclaimed slopes will be collected in the underdrain collection pipes or perimeter contact water channels, where it will be routed to the contact water pond.

13.1.4. Seismic Activity

The Project area is in a moderately high seismic zone as determined by the seismic hazard assessment prepared for the South overburden storage facility (NewFields, 2024).

The overburden storage facility slope stability analysis considered a seismic event with a 475-year return period, representing a 10% probability of exceedance in 50 years. The foundation of the South overburden storage facility outside of the pit has a shear wave velocity corresponding to a site class C, while the Infill overburden storage facility has a foundation shear wave velocity corresponding to a site class BC. Peak ground accelerations (PGA) for each of the site class BC and site class C soils are 0.26 g and 0.30 g, respectively.

A probabilistic seismic hazard analysis was conducted by GLA to determine the peak horizontal ground acceleration at the at the pit using the United States Geological Survey, United Hazard Tool, Dynamic: Conterminous US 2014 (update) (v4.2.0) edition. The analysis used the coordinates of the approximate quarry center. The assumed average shear wave velocity in the upper 30 m (Vs30) was 760 m/s, which is commensurate with the on-site bedrock classification. This shear wave velocity corresponded to the National Earthquake Hazards Reduction Program site classification “B/C boundary”.

The probability of exceedance was selected as 10% in 50 years, which corresponds to a mean return period of approximately 475 years. The results of the probabilistic seismic hazard analysis indicated that a peak horizontal ground acceleration (PGA) for the site was approximately 0.2449 (g). The deaggregated modal magnitude (M) was M 6.71. The deaggregated site-to-source distance was 9.4 km. Based on the results of the probabilistic seismic hazard analysis a horizontal seismic coefficient of 0.16 was used for pseudostatic analyses, which equates to 0.65 x PGA as suggested by Seed and Martin (1966).

13.2. Mine Design Factors

13.2.1. Quarry Design Objective and Constraints

Production will use surface mining methods constructed on 9.14m (30 ft) bench heights. The quarry designs were developed from the economic pit shells resulting from the cut-off grades, costs, recoveries and slope angles discussed in Section 12 and Section 13.1.1.

The mine production plan incorporates design and sequencing considerations to address both metal production and geotechnical constraints. In particular, the construction of the ground anchor support structures required to protect the Tiehm’s buckwheat populations is incorporated within the mine phase designs and mine plan.

13.2.2. Production Rates

Ore production to the processing facility is planned at a target rate of approximately 8,700 tonnes/d (3.2 Mt/yr). The production rate is constrained by plant acid consumption of approximately 3,131 tonnes/d (1.14 Mt/yr). The mine plan requires one year of preproduction stripping, resulting in 83 years of metal production.

The mine plan has been developed using a phased approach to the quarry design. The quarry production mining is planned to be mined with surface mining equipment. The rock is to be moved using two CAT 995 front end loaders into sixteen CAT 785 autonomous haul trucks. The rock is to be blasted using a CAT MD6200 down the hole hammer drill and a Weiler D560 top hammer pre-split drill.

Annual ore production will be dictated by the amount of sulfuric acid generated by the SAP and subsequently used in the leaching process. Approximately 1.28 Mt of acid will be generated by the SAP on annual basis, and the amount of acid used during the leaching process will vary based on different material characteristics of the ore.

The block model included a variable with an estimate of the amount of sulfuric acid required by the leaching process for each individual block. The resulting acid consumption cost was factored into the economics of each ore block. The mine production schedule extracted the most economical blocks equal to a maximum annual sulfuric acid production of 1.28 Mt. The low grade (less economical) ore blocks were assumed to be stockpiled near the processing facility. Once the mining sequence was determined, the blocks were extracted until the sum of the sulfuric acid used by the blocks equalled the 1.28 Mt of annual sulfuric acid production. On average, the total ore mined in this schedule was approximately 3.2 Mt per annum with variable overburden removal requirements based on quarry orientation and the loading equipment available.

Stockpiles were segregated between low-grade material and potential process feed from stream 3. Approximately 16.4 Mt of the stream 3 stockpile is planned to be processed within the plant and the remaining 18.1 Mt will remain within the stockpile location.

Table 13-1 provides an annual summary of plant feed and waste movement, as well as the average grades of lithium carbonate, boric acid, lithium, and boron for ore feed.

Table 13-1 - Summary of Annual Material Movement

Periods	Plant Feed										Waste	Grand Total[2]
		Contained Grades					Product					
	Plant Feed[1]	Net of Process	Boron	Lithium	H_3BO_3	Li_2CO_3	Boric Acid (H_3BO_3)		Lithium Carbonate (Li_2CO_3)			
	(kt)	($/t)	(ppm)	(ppm)	(%)	(%)	Cont. kt	Rec. kt	Cont. kt	Rec. kt	(kt)	(kt)
PP -1– Q1											3,133	3,138
PP -1– Q2											2,047	2,109
PP -1– Q3											4,279	4,279
PP -1– Q4											4,130	4,279
Year 1 - Q1	404	75	2,182	1,533	1.2	0.8	5.0	2.8	3.3	2.6	6,443	7,484
Year 1 - Q2	472	100	3,161	1,807	1.8	1.0	8.5	6.1	4.5	3.7	5,443	6,644
Year 1 - Q3	612	110	5,662	1,765	3.2	0.9	19.8	15.2	5.8	4.8	6,268	7,196
Year 1 - Q4	626	110	6,048	1,726	3.5	0.9	21.6	16.8	5.8	4.8	4,581	7,195
Year 2- Q1	707	118	5,425	1,912	3.1	1.0	21.9	16.3	7.2	5.9	7,003	8,306
Year 2- Q2	706	114	5,340	1,873	3.1	1.0	21.5	15.6	7.0	5.7	6,969	8,400
Year 2- Q3	700	111	5,071	1,852	2.9	1.0	20.3	14.6	6.9	5.6	6,914	8,493
Year 2- Q4	706	93	3,839	1,705	2.2	0.9	15.5	9.9	6.4	5.2	7,420	8,493
Year 3- Q1	708	120	6,458	1,870	3.7	1.0	26.1	19.7	7.0	5.9	6,646	8,306
Year 3- Q2	715	120	4,480	1,981	2.6	1.1	18.3	12.9	7.5	6.3	7,067	8,399
Year 3- Q3	719	120	2,767	2,069	1.6	1.1	11.4	8.5	7.9	6.6	6,747	8,491
Year 3- Q4	679	125	2,343	2,190	1.3	1.2	9.1	6.9	7.9	6.6	6,534	8,495
Year 4- Q1	674	146	7,144	2,142	4.1	1.1	27.5	21.4	7.7	6.5	5,968	8,309
Year 4- Q2	648	155	7,889	2,249	4.5	1.2	29.3	22.8	7.8	6.6	6,335	8,405
Year 4- Q3	657	155	8,127	2,235	4.6	1.2	30.5	23.9	7.8	6.6	6,526	8,497
Year 4- Q4	670	156	8,911	2,201	5.1	1.2	34.2	26.6	7.9	6.6	7,123	8,496
Year 5	2,771	152	9,178	2,118	5.2	1.1	145.4	113.5	31.2	26.3	26,598	33,309
Year 6	2,733	165	13,599	2,001	7.8	1.1	212.5	166.6	29.1	24.8	24,977	33,675
Year 7	3,210	132	12,292	1,595	7.0	0.8	225.6	175.4	27.2	23.0	24,169	29,923
Year 8	3,266	91	4,012	1,556	2.3	0.8	74.9	54.8	27.1	22.5	21,148	27,977
Year 9	3,266	103	3,695	1,748	2.1	0.9	69.0	52.2	30.4	25.2	24,475	29,355
Year 10	2,797	142	9,390	1,965	5.4	1.0	150.2	117.0	29.3	24.6	17,638	27,737
Year 11	2,928	94	3,539	1,745	2.0	0.9	59.3	38.4	27.2	22.0	22,455	27,080

Year 12	2,732	119	6,412	1,912	3.7	1.0	100.2	77.0	27.8	23.0	15,715	31,898
Year 13	2,835	163	13,195	1,991	7.5	1.1	213.9	167.8	30.0	25.6	21,199	32,033
Year 14	2,782	164	14,679	1,920	8.4	1.0	233.5	183.3	28.4	24.2	24,807	32,038
Year 15	2,901	162	14,098	1,910	8.1	1.0	233.9	183.3	29.5	25.1	18,214	24,468
Year 16	2,927	156	13,980	1,831	8.0	1.0	234.0	183.3	28.5	24.3	18,305	24,465
Year 17	3,137	140	13,158	1,683	7.5	0.9	236.0	183.3	28.1	23.6	20,424	24,446
Year 18	3,266	133	12,641	1,602	7.2	0.9	236.1	183.3	27.8	23.4	19,310	24,806
Year 19	3,266	134	12,603	1,626	7.2	0.9	235.4	183.3	28.3	23.9	14,755	24,434
Year 20	3,266	88	7,736	1,391	4.4	0.7	144.5	107.2	24.2	19.4	9,772	23,970
Year 21	3,266	74	7,246	1,255	4.1	0.7	135.3	100.8	21.8	17.4	6,112	17,841
Year 22	3,056	125	11,458	1,617	6.6	0.9	200.3	155.4	26.3	21.9	16,575	21,343
Year 23	3,266	102	7,584	1,557	4.3	0.8	141.6	104.1	27.1	22.2	13,161	17,841
Year 24	3,021	127	10,369	1,667	5.9	0.9	179.1	139.3	26.8	22.7	17,609	22,909
Year 25	2,986	137	11,916	1,735	6.8	0.9	203.5	158.4	27.6	23.1	18,311	21,767
Year 26	3,266	110	9,870	1,476	5.6	0.8	184.3	140.1	25.7	21.2	17,737	21,742
Year 27	3,266	118	8,993	1,641	5.1	0.9	167.9	129.1	28.5	23.7	18,210	21,742
Year 28	3,266	111	7,126	1,630	4.1	0.9	133.1	102.3	28.3	23.7	13,908	17,841
Year 29	3,266	78	3,439	1,453	2.0	0.8	64.2	44.3	25.2	20.7	12,296	16,844
Year 30	3,266	82	4,789	1,441	2.7	0.8	89.4	63.7	25.1	20.3	13,131	16,933
Year 31	3,266	74	4,094	1,368	2.3	0.7	76.4	55.8	23.8	19.3	13,223	16,850
Year 32	3,266	65	2,997	1,303	1.7	0.7	56.0	37.5	22.6	18.2	13,244	16,933
Year 33	3,250	77	3,639	1,441	2.1	0.8	67.6	45.4	24.9	20.2	15,804	18,752
Year 34	3,266	88	6,048	1,461	3.5	0.8	112.9	79.8	25.4	20.6	13,410	16,933
Year 35	3,266	76	4,547	1,361	2.6	0.7	84.9	59.7	23.7	19.3	8,330	12,397
Year 36	3,266	63	2,653	1,322	1.5	0.7	49.5	27.1	23.0	18.4	8,693	12,397
Year 37	3,266	93	6,699	1,449	3.8	0.8	125.1	95.6	25.2	20.7	9,393	12,623
Year 38	3,266	71	4,545	1,281	2.6	0.7	84.9	62.5	22.3	18.1	6,664	10,678
Year 39	3,266	91	6,176	1,453	3.5	0.8	115.3	85.7	25.3	20.7	5,702	9,187
Year 40-44	16,329	62	3,492	1,224	2.0	0.7	326.1	204.6	106.4	85.2	21,501	50,626
Year 45-49	16,329	80	5,516	1,373	3.2	0.7	515.0	364.3	119.3	96.7	17,475	43,844
Year 50-54	16,329	83	5,830	1,379	3.3	0.7	544.3	388.6	119.8	97.9	11,782	36,960
Year 55-59	16,329	64	2,687	1,335	1.5	0.7	250.9	139.4	116.0	92.4	289	15,250
Year 60-64	16,329	51	2,257	1,123	1.3	0.6	210.8	117.8	97.6	78.1	0	14,814
Year 65-69	16,329	51	1,006	1,182	0.6	0.6	93.9	48.6	102.7	82.3	0	14,814
Year 70-74	16,329	62	2,821	1,307	1.6	0.7	263.4	154.7	113.5	90.1	0	14,814
Year 75-79	16,329	58	776	1,253	0.4	0.7	72.4	35.1	108.9	88.7	0	14,814
Year 80-84	9,916	83	1,210	1,616	0.7	0.9	68.6	39.4	85.3	69.9	0	8,995
Grand Total	**260,341**	**86**	**5,201**	**1,451**	**3.0**	**0.8**	**7,742**	**5,588**	**2,011**	**1,645**	**734,099**	**1,133,513**

Notes:

1. Plant Feed includes stream 1: 5,000 ppm boron, stream 02: Net Value of $11.13/mt and < 5,000 ppm boron, and stream 3 is allowed to feed the plant up to 10% of total feed.
2. Grand Total does not include reclaimed material.

Figure 13-1 summarizes annual production from the quarry from the pre-production phase through production Year 41.

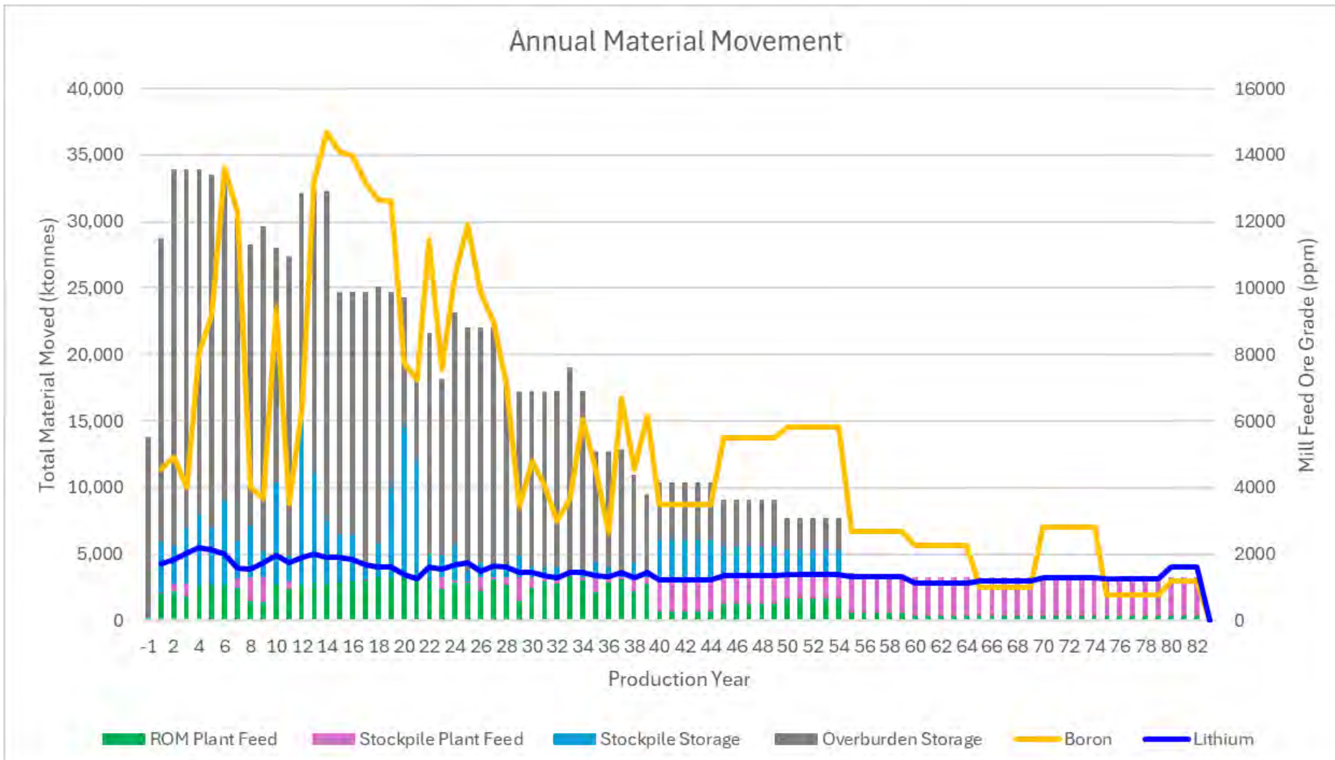


Figure 13-1 - Summary of Annual Material Movement

Source: IMC, 2025

Figure 13-2 shows the delineation of annual plant feed material by mineral reserve classification.

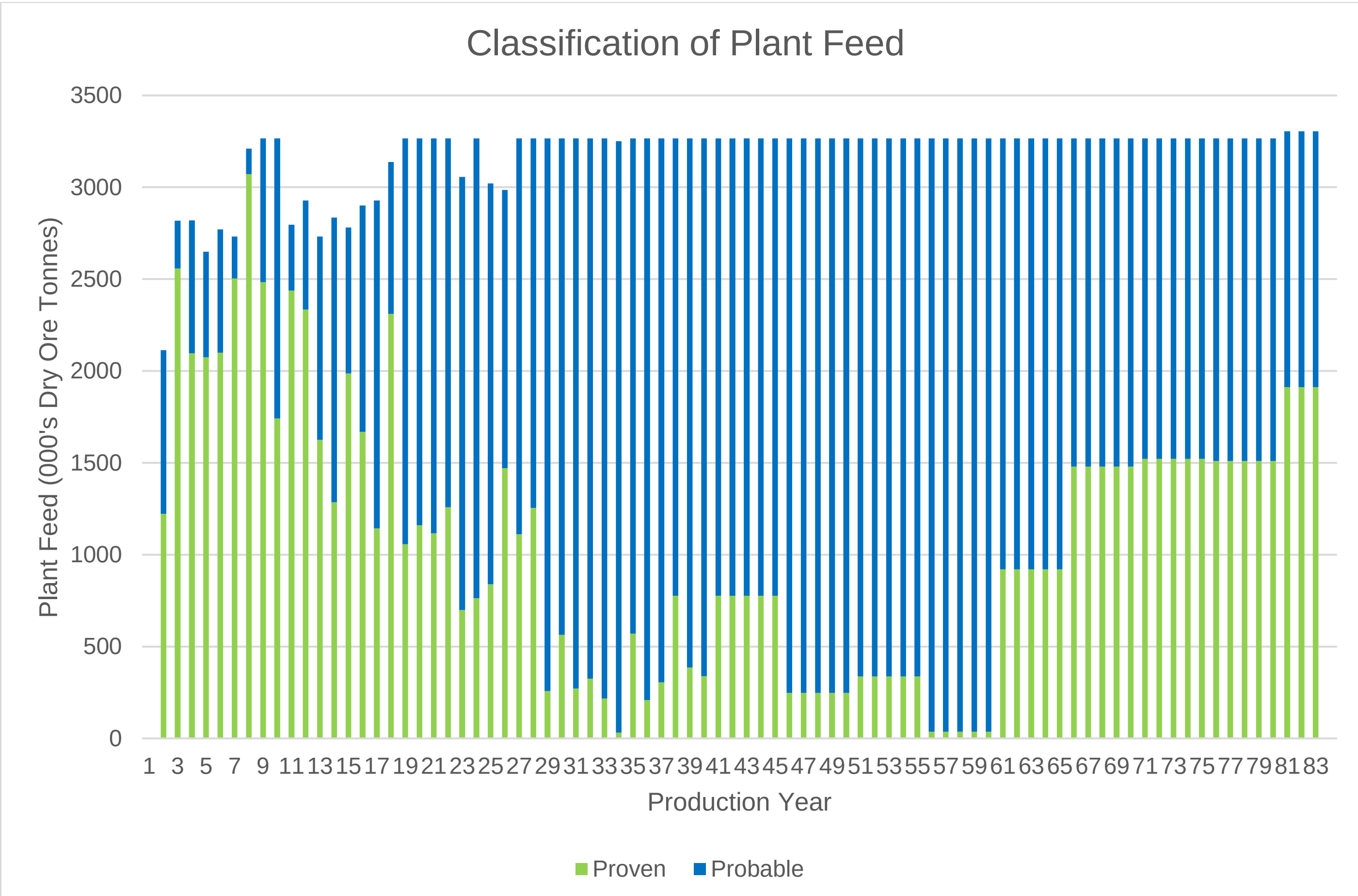


Figure 13-2 - Summary of Annual Plant Feed from the Proven and Probable Reserve Classifications

Source: IMC, 2025

13.2.3. Expected Mine Life

Assuming an annual acid consumption of 1.14 Mt corresponding to about 3.1 Mtpa of ore, the life of mine plan indicates an expected mine life of approximately 83 years. The site layout of the Project is shown in Figure 13–3.

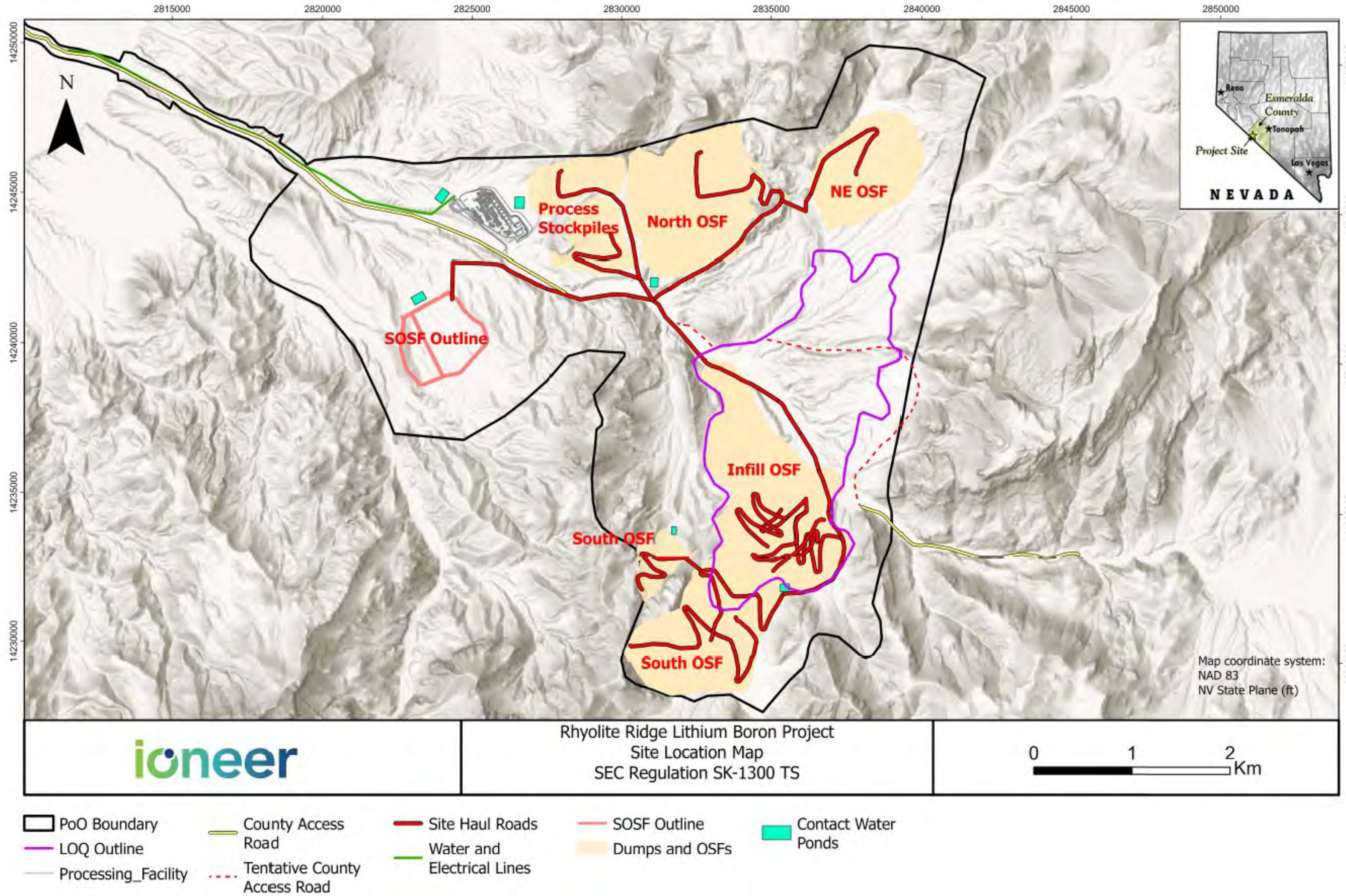


Figure 13–3 - Project Site Layout

Source: ioneer, 2024

13.2.4. Mining Dilution and Recovery Factors

Mining dilution, loss and recovery factors were previously discussed in Section 12.1.2.1 assuming a reasonable accurate geologic model, high precision GPS operations and the use of a fleet management system (FMS). GPS-guided systems are also assumed to be installed on various support equipment to assist with ore cleaning and grade control.

The block size within the 9.14 m (30 ft) mine planning block model discussed in detail within Section 12.1.2.1 is consistent with the selected loading equipment. As a result, the mine planning block model includes an adequate mining dilution allowance within the model estimate; therefore, no additional mining dilution was applied.

13.3. Stripping and Backfilling Requirements

Overburden storage facilities were designed to contain the 735.6 Mt of overburden and non-ore grade material that will be removed from quarry. Four overburden storage facilities were located external to the quarry and the fifth location will be the quarry itself, with backfill placed within portions of the mined-out quarry. The West overburden storage facility will be located west of the quarry and will be active during the pre-production years through the second production year. The South overburden storage facility will be located south of the quarry and periodically active during pre-production through the first 29 years of the mine production schedule. The remaining two overburden storage facilities will be located to the north of the quarry, and are referred to as the North overburden storage facility and Northeast overburden storage facility. these facilities will be periodically active from the 14th year of production through the 38th year of production. The remaining overburden will be stored as backfill as capacity allowed within the production schedule.

Parameters used for the overburden storage facility designs were as follows:

- Inter-bench slopes of 2.4H:1V;
- Overall slope of 3H:1V;
- North overburden storage facility and Northeast overburden storage facility will be constructed on 15.24 m (50-ft) lifts, with a 7.6 m (57.8-ft) wide catch bench established every 30.48 m (100-ft) of vertical elevation gain;
- West overburden storage facility and South overburden storage facility will be constructed on 9.14 m (30-ft) lifts, with a 15.8 m (52-ft) wide catch bench established every 27.4 m (90-ft) of vertical elevation gain;
- Backfill within the quarry will be constructed on 9.14 m (30-ft) lifts and placed at a 37º angle of repose where multiple access ramps along the face serve as catch benches;
- Access road will maintain a grade of no greater than 10%;
- A specific stacking plan was developed to incorporate the placement of material with structural limitations (the M5 geologic unit);
- It is assumed that a 0.6 m thick (24-in) layer of alluvial (Q1) material will be placed on all final out-slope and top surfaces of the overburden storage facilities to facilitate concurrent reclamation.

The placement and timing of material within the various overburden storage facilities was selected based on their proximity to active mining areas to minimize haulage distances, and on-site boundary restrictions and the location of the Cave Springs Formation outcrops. To date, no issues have been identified that would materially impact the proposed overburden storage facility locations.

Special parameters were required for the development of the ex-pit overburden storage facility designs to accommodate stacking the M5 geologic unit. M5 material moved to the ex-pit overburden storage facilities must be encapsulated to minimize the risk of overburden storage facility failure. The overburden storage facility design was developed to allow concentration of the M5 material for future mining extraction and processing. Additional requirements for ex-pit overburden storage facilities involving the M5 stacking plan were as follows:

- M5 material cannot be stacked below a set minimum elevation above sea level, specific to each individual overburden storage facility design;
- M5 material must reside in the overburden storage facilities internally, offset from the final overburden storage facility design surface by 76.2 m (250 ft);
- No M5 material be placed in locations with less than 30.48 vertical meters (100 vertical fieet) of subsequent non-M5 material cover;
- M5 material is assumed to be stacked in a dry condition.

External overburden storage facilities were designed to store excavated overburden until the point where in-pit backfill could begin in production Year 22. Overburden storage facility surfaces will be graded to drain away from the quarry wherever possible. The inter-ramp out-slopes of the overburden storage facilities will also be concurrently graded at a 3H:1V slope with track dozers as progression continues upward. A summary of the designed storage capacities in millions of cubic yards is provided in Table 13-2 and an annual summary of total tons stacked to each overburden storage facility and backfill was provided in Table 13-3.

Table 13-2 - Overburden Storage Facility Storage Capacities

Overburden Storage Facility	Design Storage Capacity (million m^3)
West Overburden Storage Facility	6.87
South Overburden Storage Facility	109.65
North Overburden Storage Facility	117.07
Northeast Overburden Storage Facility	153.81
Backfill	180.24
Total	**567.64**

Table 13-3 - Overburden Placement by Storage Facility Storage Facility (ktonne)

Period	South Overburden Storage Facility (ktonne)	West Overburden Storage Facility (ktonne)	North Overburden Storage Facility (ktonne)	Northeast Overburden Storage Facility (ktonne)	Backfill (ktonne)	Total (ktonne)
1	4,693	8,896	0	0	0	13,590
2	22,736	0	0	0	0	22,736
3	28,306	0	0	0	0	28,306
4	21,264	0	5,730	0	0	26,994
5	0	0	24,806	1,146	0	25,953
6	0	0	22,905	3,693	0	26,598
7	0	0	20,387	773	3,817	24,977
8	0	0	22,654	1,515	0	24,169
9	0	0	12,508	8,641	0	21,148
10	0	0	13,500	10,975	0	24,475
11	0	0	7,642	9,996	0	17,638
12	165	0	7,239	15,051	0	22,455
13	813	0	0	0	14,902	15,715
14	0	0	0	0	21,199	21,199
15	0	0	5,234	696	18,877	24,807
16	6,531	0	0	0	11,683	18,214
17	0	0	0	1,261	17,043	18,305
18	0	0	442	3,242	16,740	20,424
19	0	0	4,553	8,002	6,754	19,310
20	0	0	3,995	10,760	0	14,755
21	0	0	0	9,772	0	9,772
22	0	0	0	3,490	2,623	6,112
23	0	0	0	14,353	2,222	16,575
24	0	0	0	11,422	1,739	13,161
25	0	0	0	0	17,609	17,609
26	0	0	0	0	18,311	18,311
27	0	0	0	0	17,737	17,737
28	0	0	0	0	18,210	18,210
29	0	0	0	0	13,908	13,908
30	0	0	0	0	12,296	12,296
31	0	0	0	0	13,131	13,131
32	0	0	0	0	13,223	13,223
33	0	0	0	0	13,244	13,244
34	0	0	0	0	15,804	15,804
35	0	0	0	0	13,410	13,410
36	0	0	0	0	8,330	8,330

37	0	0	0	0	8,693	8,693
38	0	0	0	0	9,393	9,393
39	0	0	0	0	6,664	6,664
40	0	0	0	0	5,702	5,702
41-45	0	0	0	0	21,501	21,501
46-65	0	0	0	0	17,475	17,475
51-55	0	0	0	0	11,782	11,782
56-60	0	0	0	0	289	289
Total	**84,508**	**8,896**	**151,595**	**114,788**	**374,311**	**734,100**

13.4. Mining Fleet, Machinery, and Personnel Requirements

An autonomous haulage system and conventional support equipment were considered for estimating quarry equipment requirements, labor requirements, capital costs, and operating costs. ioneer opted to use autonomous haulage to save on labor costs. The use of autonomous haulage in mining and quarry operations is relatively new, but has proven to be both reliable, safe, and cost effective in the long term. ioneer has partnered with Caterpillar to develop the 785 model haul truck as an autonomous haulage vehicle. Caterpillar has developed the capability to manufacture and deploy the 785 as an autonomous haulage vehicle, and the Rhyolite Ridge Project will be the first property to deploy these trucks in an autonomous form. While the autonomous haulage vehicle does not require a driver to operate, a team of highly trained and specialized personnel, referred to as the Autonomous Haulage System Run Team, are required to remotely monitor the autonomous haulage vehicles at all times and make sure the vehicles are operating per specifications.

A limited amount of information regarding cost advantages and operational performance gains for autonomous haulage is available from original equipment manufacturers and vendors due to the proprietary nature of this information. The detailed backup information regarding performance factors from the original equipment manufacturers that formed the basis of this autonomous haulage analysis was not provided to the Mineral Reserve QP. The mineral reserve QP is relying on performance factors provided by the manufacturers. It is believed that the information, estimates, and comparisons contained herein are reasonably representative of autonomous haulage requirements based on the QP’s experience with other autonomous haulage studies. The autonomous haulage system information provided by the original equipment manufacturers was used to estimate the equipment and labor requirements that have formed the basis of the capital and operating cost estimates for autonomous haulage.

13.4.1. Quarry Production Tasks

Distinct production tasks include:

- Clearing and Grubbing: Includes equipment and labor required to clear vegetation from disturbance areas within the quarry. Any labor or equipment required to relocate any native species affected by mining, such as Tiehm’s buckwheat, are excluded from this function.
- Drilling and Blasting: Includes equipment and labor required for pre-split drilling, production drilling, and associated drilling support. A contractor is assumed to perform all blasting functions.
- Overburden/Interburden Removal: Includes the equipment and labor costs necessary to remove all overburden and interburden material from the quarry and haul the material to an ex-pit overburden storage facility or backfill. Note that non-ore grade M5 material is included in this category, along with

equipment allocations for dozers to maintain working levels at the overburden storage facility and regrade the final slopes of the overburden storage facility as lifts are completed.

- Ore Mining: Includes the equipment and labor necessary to extract ore and deliver it to the ROM ore stockpile at the process plant. Equipment and labor hours associated with rehandling material from the process stockpile were excluded from this task as this is assumed to be part of the process plant's function.
- Stormwater Controls: Includes the equipment required to maintain sedimentation ponds, water collection/diversion ditches, and culverts for property surface water management.
- General Quarry Support: Includes the equipment and labor required to maintain haul roads and perform other miscellaneous support tasks.

13.4.2. Quarry Production and Support Equipment

The equipment selection, shown in Table 13-4, was dependent on a variety of factors, including annual material movement requirements, bench height, quarry configuration, number of mining faces, and the required selectivity of the mining equipment.

Table 13-4 – Description of Mining Equipment Types

Equipment Make and Model	Equipment Type	Shared with Plant or SOSF	Primary Class Size
Production Equipment			
Caterpillar 995	Front End Loader (FEL)	No	26 m^3 (34 yd^3)
Caterpillar 992	Front End Loader (FEL)	Yes	14.5 m^3 (19 yd^3)
Caterpillar 785	Autonomous Haul Truck (AHT)	Yes	150 tons
Caterpillar MD6200	Down-the Hole Hammer Platform Drill (DTH)	No	14-20 cm (5.5"-7.87") bit
Support Equipment			
Caterpillar 740	Water Truck (WT)	Yes	30,283 liters (8,000 gal)
Caterpillar 777	Water Truck (WT)	No	75,708 liters (20,000 gal)
Weiler D560	Top Hammer Pre-Split Drill (PSD)	No	8.9-15 cm (3.5" - 6") bit
Caterpillar D10	Track Dozer (TD)	No	600 hp
Caterpillar D9	Track Dozer (TD)	No	450 hp
Caterpillar 18	Motor Grader (MG)	No	5.5 m (18 ft) blade
Caterpillar 16	Motor Grader (MG)	Yes	4.9 m (16 ft) blade
Caterpillar 834	Rubber Tire Dozer (RTD)	No	562 hp
Caterpillar 430	Bachoe Loader (BL)	Yes	100 hp
Caterpillar 374	Excavator (EX)	Yes	3.30 m (4.32 yd^3)
Service Equipment			
Fuel/Lube Truck	Service Truck (ST)	Yes	7,571 liters (2,000 gal)
Pickup	Transport/Support Vehicle (TSV)	Yes	4,536 kg (10,000 lb) gwr truck

The assumed mining fleet will consist of two CAT 995s (26 m^3 [34 yd^3]) front end loaders and a fleet of CAT 785s (150-ton class) rigid end-dump haul trucks as the primary loading and haulage equipment for the quarry. A CAT 992 front-end wheel loader (FEL) with a 14.5 m^3 (19 yd^3) bucket was also incorporated into the major mining equipment on site due to its operational versatility. The CAT 992 will primarily be used to feed the crusher at the process plant; however, when not used at the plant it will serve as a backup to the quarry fleet.

Support equipment for the operations include track and wheel dozers to clear vegetation, prepare working surfaces, clean working areas, and create access to the work area. The wheel dozers will provide support for the excavators at mining faces, whereas the track dozers will provide support for haul trucks at the ex-pit overburden storage facilities and backfill facilities. Dozing equipment is also used for road ripping, final grading operations, and alluvium spreading during rehabilitation. A track dozer will be utilized along with the FELs at ore contacts to assist in the reduction of ore seam dilution.

13.4.3. Equipment Performance Factors and Fleet Requirements

The loading, support, and service equipment for autonomous haulage system is not anticipated to differ from the equipment selected for conventional haulage.

Anticipated performance factors for the autonomous haulage vehicles are as follows:

- Mechanical availability = 90.0%;
- Utilization of available time = 92.0%;
- Effective utilization = 82.8%.

Both the mechanical availability and the utilization of available time exceed that of an equivalent manned fleet, this is due to the performance characteristics and the minimized non-operational delays with an autonomous haulage fleet. The impacts of safety stand-downs during blasting, equipment congestion, queuing, and other typical operational delays on the achievability of the 92% utilization of available time were not assessed. A summary of the assumed equipment performance factors for the mine plan are included in Table 13-5.

Table 13-5 - Mechanical Availability and Utilization of Mining Equipment

Machine Make & Model	Equipment Type	Machine Life (years)	Mechanical Availability (MA)	Utilization of Availability (UofA)	Utilization (U)
Caterpillar 995	FEL	25	90%	85%	77%
Caterpillar 785	AHT	25	90%	92%	83%
Caterpillar MD6200	DTH	30	85%	75%	64%
Caterpillar 740	WT	20	88%	76%	67%
Caterpillar 777	WT	20	90%	85%	77%
Weiler D560	PSD	30	85%	70%	60%
Caterpillar D10	TD	20	88%	76%	67%
Caterpillar D9	TD	20	88%	76%	67%
Caterpillar 18	MG	20	88%	77%	68%
Caterpillar 16	MG	20	88%	77%	68%
Caterpillar 834	RTD	25	88%	76%	68%
Caterpillar 430	BL	25	88%	71%	63%
Caterpillar 374	EX	30	88%	75%	66%
Fuel/Lube Truck	ST	20	88%	77%	68%
Pickup	TSV	5	90%	90%	81%

Haul truck travel times were estimated in Hexagon's MinePlan Schedule Optimizer (MPSO) using annual haulage profiles developed for overburden/interburden and ROM ore from source to destination and back. A global speed limit of 25 mph was applied to haul profiles within the production schedule, though speed limits were adjusted at loading and unloading areas and around sharp turns and switchbacks to represent slower truck speeds in these areas. Estimated cycle times were calculated based upon the estimated truck loading time, haul truck travel times calculated in MPSO, and an assumed dump and manoeuvring time of 1.2 minutes for ore and waste. The autonomous haulage vehicle productivities per scheduled shift were then estimated using the effective truck capacities shown in Table 13-6 and Table 13-7, and haul truck cycle times based on an assumed effective utilization of 82.8%.

Table 13-6 - Scheduled Operating Days and Shifts per Year

	Scheduled Days	Shifts/ Day	Scheduled Shifts	Lost Shifts	Available Shifts	No. of Crews
YR-01 - Quarter 01	91	2	182.5	2.5	180	4
YR-01 - Quarter 02	91	2	182.5	2.5	180	4
YR-01 - Quarter 03	91	2	182.5	2.5	180	4
YR-01 - Quarter 04	91	2	182.5	2.5	180	4
YR01 - Quarter 01	91	2	182.5	2.5	180	4
YR01 - Quarter 02	91	2	182.5	2.5	180	4
YR01 - Quarter 03	91	2	182.5	2.5	180	4
YR01 - Quarter 04	91	2	182.5	2.5	180	4
YR02 - Quarter 01	91	2	182.5	2.5	180	4
YR02 - Quarter 02	91	2	182.5	2.5	180	4
YR02 - Quarter 03	91	2	182.5	2.5	180	4
YR02 - Quarter 04	91	2	182.5	2.5	180	4
YR 03-20	365	2	730	10	720	4
YR 21-27	313	2	626	10	616	3
YR 28-43	240	2	480	10	470	2
YR 44-53	192	2	384	10	374	2
YR 54-82	192	1	192	10	182	1

Table 13-7 - Manned Equipment Operating Time per Shift

Schedule Time Per Shift	(min)	720
Less Scheduled Non-Productive Time		
Travel Time/Shift Change/Blasting	(min)	10
Equipment Inspection	(min)	10
Lunch/Breaks	(min)	30
Fueling, Lube, Inspection and Service	(min)	10
Net Scheduled Productive Time (Metered Operating Time)	(min)	660
Job Efficiency (50 Minutes Productive Time per Metered Hour)		83.3%
Net Productive Operating Time Per Shift	(min)	550

Annual estimates of equipment requirements were developed from the productivity and haulage times as presented these are summarized in Table 13-8.

Table 13-8 - Quarry Equipment Quantity by Period

Machine Make & Model	Equipment Type	YR -1 - Q1	YR -1 - Q2	YR -1 - Q3	YR -1 - Q4	YR 1 - Q1	YR 1 - Q2	YR 1 - Q3	YR 1 - Q4	YR 2 - Q1	YR2 - Q 2-4	YR 03	YR 04	YR 05-11	YR 12-18	YR 19	YR 20-23
Caterpillar 995	FEL	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
Caterpillar 785	AHT	4	4	7	5	12	10	10	12	15	16	15	16	16	15	16	13
Caterpillar MD6200	DTH	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 740	WT	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1
Caterpillar 777	WT	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Weiler D560	PSD	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar D10	TD	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3
Caterpillar D9	TD	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 18	MG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 16	MG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 834	RTD	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 430	BL	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 374	EX	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fuel/Lube Truck	ST	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pickup	TSV	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Table 13-9 - Quarry Equipment Quantity by Period cont.

Machine Make & Model	Equipment Type	YR 24	YR 25-26	YR 27	YR 28	YR 29-32	YR 33	YR 34-36	YR 37	YR 38	YR 39-48	YR 49-53	YR 54	YR 55-82	YR 61-84
Caterpillar 995	FEL	2	2	2	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 785	AHT	14	15	13	13	12	11	10	8	7	6	5	4	4	4
Caterpillar MD6200	DTH	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Caterpillar 740	WT	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Caterpillar 777	WT	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Weiler D560	PSD	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Caterpillar D10	TD	3	3	3	2	2	2	2	2	2	2	2	2	0	0
Caterpillar D9	TD	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 18	MG	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Caterpillar 16	MG	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 834	RTD	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 430	BL	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Caterpillar 374	EX	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fuel/Lube Truck	ST	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Pickup	TSV	5	5	5	5	5	5	5	5	5	5	5	5	5	3

Schedule operating days and shifts per annum are available in Table 13-10.

Table 13-10 - AHS Operating Time per ShiftT

Schedule Time Per Shift	(min)	720
Less Scheduled Non-Productive Time		
Travel Time/Shift Change/Blasting	(min)	10
Equipment Inspection	(min)	10
Lunch/Breaks	(min)	0
Fueling, Lube, Inspection and Service	(min)	10
Net Scheduled Productive Time (Metered Operating Time)	(min)	690
Job Efficiency (55 Minutes Productive Time per Metered Hour)		92%
Net Productive Operating Time Per Shift	(min)	633

13.4.4. Labor Requirements

Assumptions made to calculate labor requirements were as follows:

- Autonomous haul trucks are unmanned and therefore do not require haul truck drivers to operate;
- A trained and specialized team of personnel are required to remotely monitor the vehicles and make sure that they are performing to specifications;
- Maintenance will be provided by Empire Equipment as contractors, as such they were not included in the total mine operations personnel count.

A summary of quarry personnel requirements is provided in Figure 13–4.

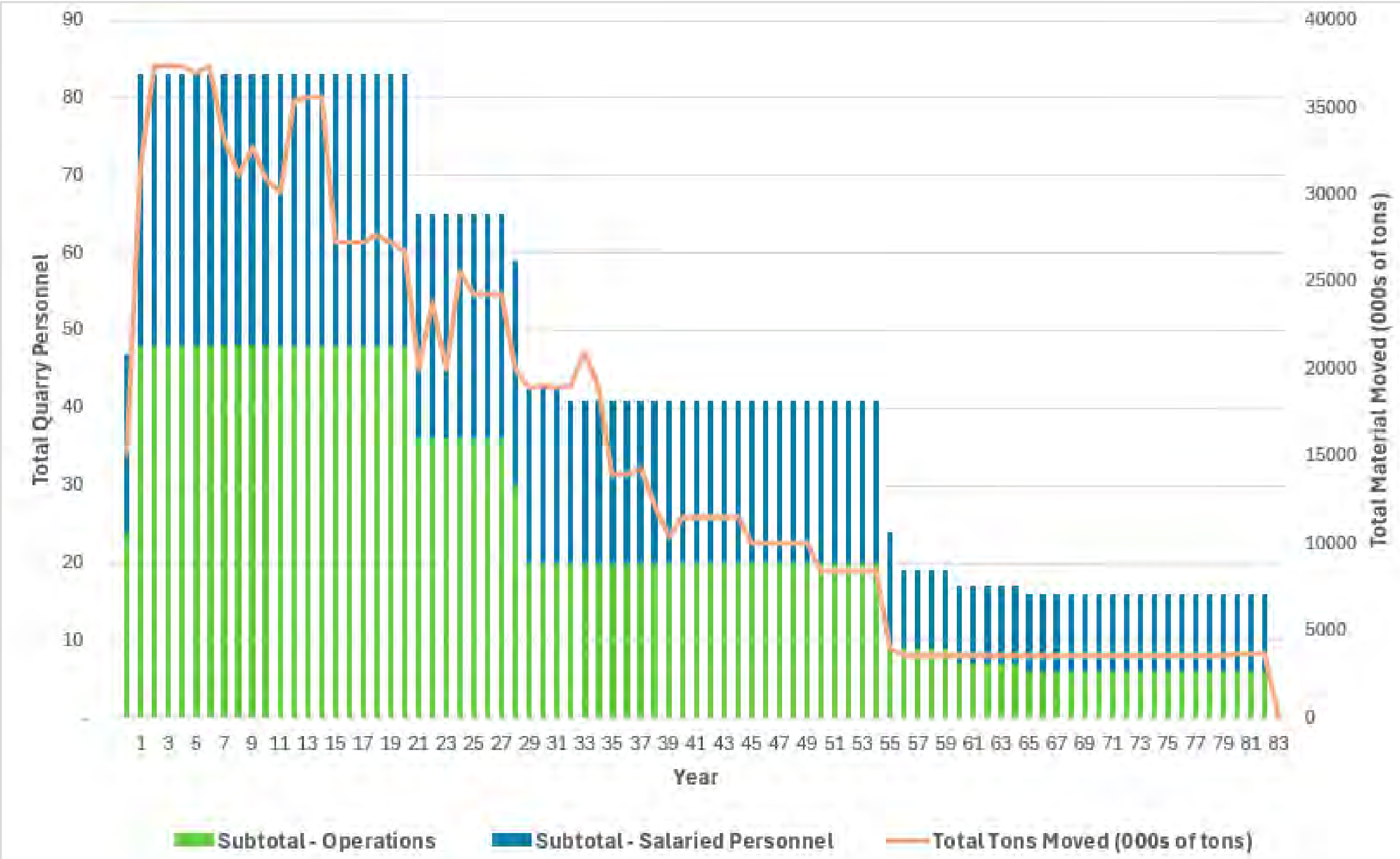


Figure 13–4 - Summary of Annual Quarry Labor Requirements

Source: ioneer, 2025

14. PROCESSING AND RECOVERY METHODS

The Rhyolite Ridge processing facilities have been designed to produce technical grades of boric acid and lithium carbonate and hydroxide (purities of 99.9-100.9%, 98.5% and 99.5% respectively) from stream 1, 2 and 3 material from the South Basin. The stream 1 material is characterized as having boron grades above 5,000 ppm, which is mostly seen in the B5, M5, and L6 mineralized units. Lithium bearing zones with boron content below 5,000 ppm and low clay content, primarily in the L6 and S5 mineralized units, are identified as stream 2. Lithium bearing zones with boron content below 5,000 ppm and high clay content, primarily in the M5 mineralized unit, are identified as stream 3.

The stream 2 and 3 material consists of low boron ore, with boron content below 5,000 ppm, primarily from the following units:

- M5 (Carbonate-clay rich marl, high-grade lithium, low-to moderate-grade boron);
- S5 (Siltstone-claystone, low to high grade lithium and low-grade boron);
- L6 (Siltstone-claystone, laterally discontinuous low-to high-grade lithium and boron mineralized horizons within a larger low-grade to barren sequence).

Additional metallurgical testwork conducted between Q4 2024 and Q2 2025 confirmed that processing and recovery methods developed for stream 1 are applicable to stream 2 & 3, provided appropriate blending ratio is ensured in earlier stages of development compared to stream 1. Blending stream 3 material with stream 1 & 2 material is limited to 10%.

The combination of processing steps selected for the extraction of lithium and boric acid was deemed suitable based on the testwork program that focused on increasing the level of understanding and developing the process technology to a level of maturity sufficient to support a feasibility study. In addition, the process plant design has utilized commercially proven unit operations, equipment types, and sizes arranged to accommodate the unique extractive metallurgy of the Rhyolite Ridge mineralization.

The following sections contain information pertaining to the processing and recovery of Rhyolite Ridge ore.

14.1. Process Description

The main processing areas designed for the planned Rhyolite Ridge processing facilities include:

The block diagram for the production of technical grade boric acid and technical grade lithium carbonate is shown in Figure 14-1.

The block diagram for the production of battery grade lithium hydroxide monohydrate (LHM) from technical grade lithium carbonate is shown in Figure 14-2. The installation of the LHM conversion facility will be post startup.

- Ore storage, handling and sizing:
  - Run-of-quarry ore will be stockpiled before entering a two-stage crushing circuit, where it will be reduced in size to approximately 1.9 cm (0.75 inches) before being conveyed to the leaching vats;
- Vat leaching:
  - Boron and lithium will be leached into solution by sulfuric acid, producing a pregnant leach solution (PLS);

- Boric acid circuit:
  - Boric acid will be crystallized by cooling the PLS past its saturation limit and filtering it;
  - Boric acid will be refined by redissolution and recrystallization, followed by dewatering via centrifugation prior to drying and packaging for sale to the market. The final product will be technical grade boric acid;
- Evaporation and crystallization:
  - The resultant solution from boric acid filtration will undergo impurity removal by chemical addition and precipitation;
  - The purified solution will undergo several stages of evaporation and crystallization. Boric acid will be recovered via flotation and returned to the boric acid crystallization circuit. The flotation tails (primarily salts of magnesium, potassium and sodium sulfate) will be dewatered via centrifugation and sent to a spent ore storage facility;
- Lithium carbonate circuit:
  - The remaining solution will undergo further impurity removal, followed by the precipitation of technical grade lithium carbonate by chemical addition. The lithium carbonate will be filtered from solution prior to product drying and packaging. The final product will be technical grade lithium carbonate.
- Lithium hydroxide circuit:
  - Lithium carbonate will undergo further processing to convert to lithium hydroxide monohydrate (LHM). The installation of the LHM conversion plant will occur post startup. The selected conversion route is the liming route.
  - Technical grade lithium carbonate is combined with lime to produce lithium hydroxide and calcium carbonate. The lithium hydroxide slurry is filtered and the resulting calcium carbonate byproduct is recycled to lithium carbonate plant to offset new lime consumption.
  - The clarified lithium hydroxide solution is subject to ion exchange.
  - The refined lithium hydroxide solution is concentrated through multiple stages of evaporation. Lithium hydroxide monohydrate is crystallized and dewatered using centrifuges. The LHM solids are redissolved in clean process condensate and filtered to remove insoluble impurities. And subject to a final stage of crystallization to produce battery grade LHM. The solids are dewatered and washed using centrifuges.
  - The wet LHM solids are direct to dryers and packaging systems.

Simplified block flow diagram of the designed process for the production of technical grade boric and technical grade lithium carbonate is shown in Figure 14-1, and the reprocessing of lithium carbonate to produce battery grade lithium hydroxide monohydrate is shown in Figure 14-2. The LHM conversion facility will be installed post startup.

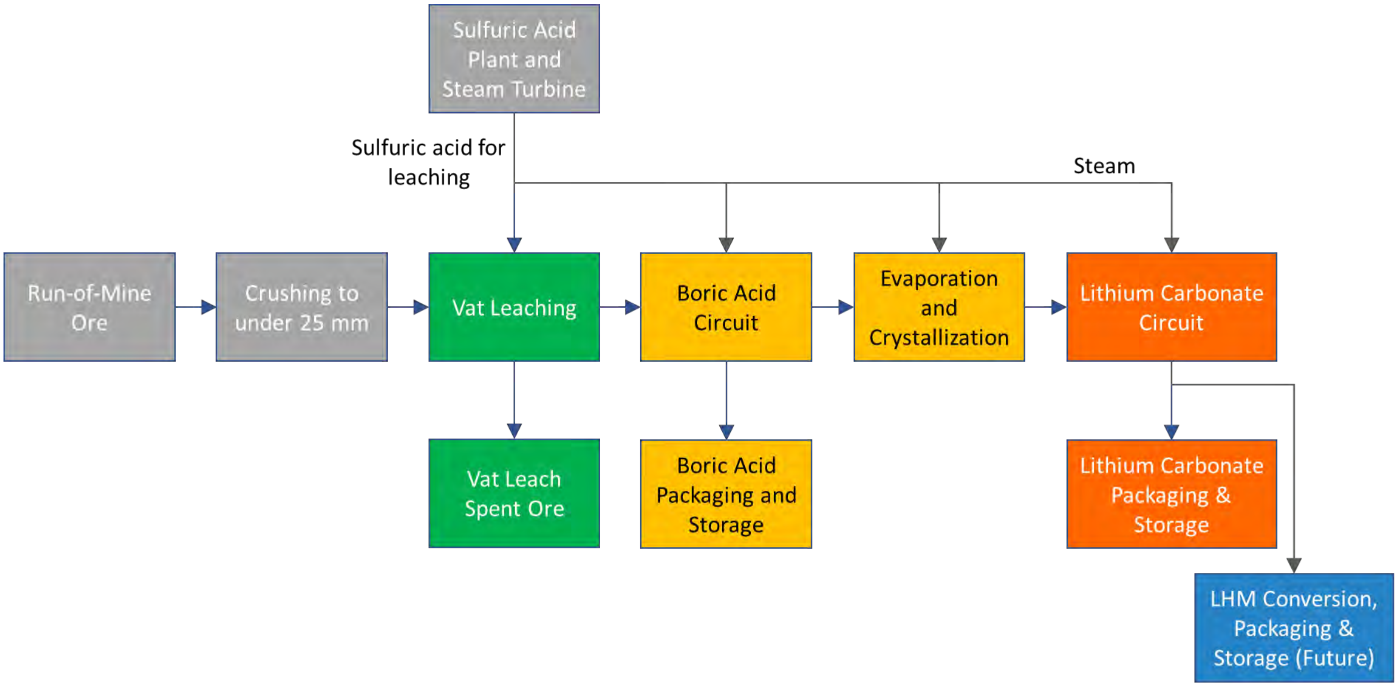


Figure 14-1 – Block Flow Diagram of the Rhyolite Ridge Processing Facilities – Production of technical grade boric acid and technical grade lithium carbonate

Source: Fluor, 2020 & ioneer, 2025

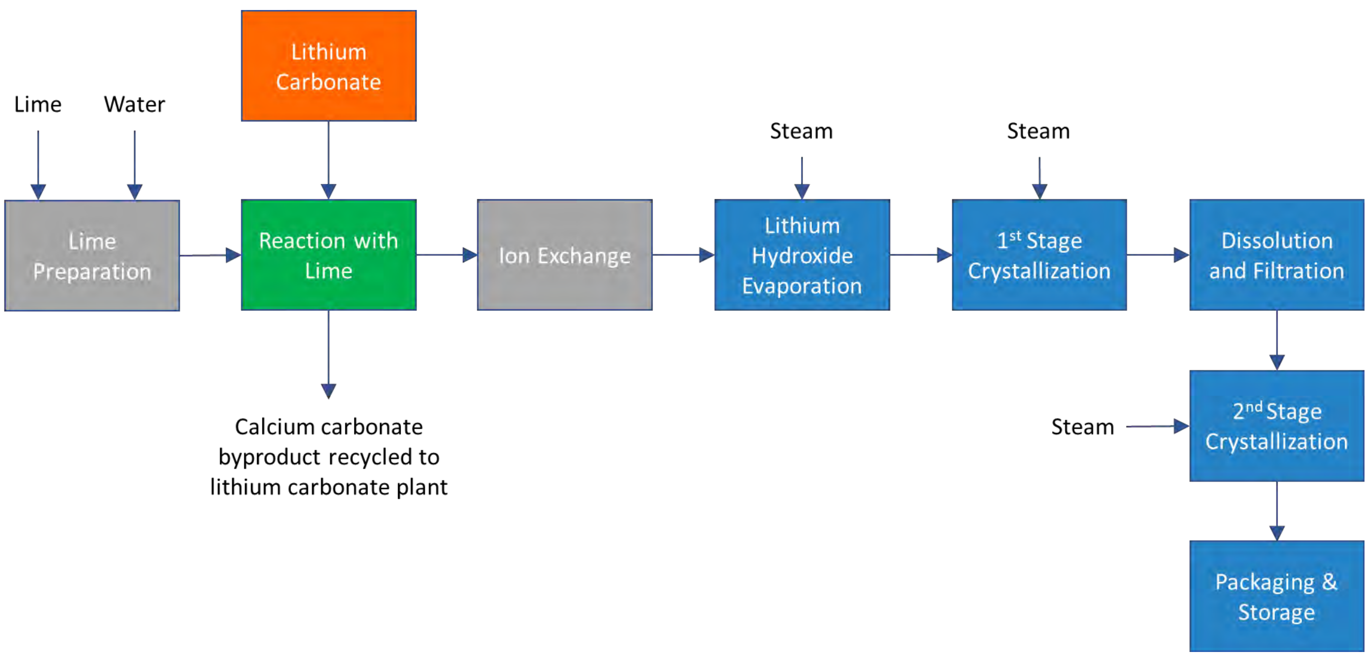


Figure 14-2 – Block Flow Diagram of the Rhyolite Ridge Processing Facilities – production of battery grade lithium hydroxide monohydrate

Source: ioneer, 2025

14.1.1. Ore Storage, Handling, and Sizing

Run-of-mine (ROM) ore will be trucked from the quarry to two surface stockpiles, located adjacent to the vat leach area. ROM will be segregated into low- and high-grade stockpiles to provide a steady boron feed grade. Haul trucks will be directed to a specific stockpile based on the production plan. Sufficient ore will be provided to the plant feed to ensure complete utilization of the available sulfuric acid. Note Blending of stream 3 (high clay) material will also be controlled, with the maximum stream 3 content limited to 10%.

Ore will be fed to a loading hopper, fitted with a grizzly screen, via front-end loader. The primary control against oversize material will be the blasting intensity. Should oversize material become an issue and increasing the blasting intensity cannot mitigate the problem, then other modifications will be pursued, which may include a rock breaker or other common industry equipment.

The grizzly screen undersize will be transported by a series of feeders and conveyors to the primary sizer. Following primary sizing, the material will be discharged into a bifurcated chute producing two equal streams that will feed two parallel secondary sizers. The discharge of the secondary sizers will be conveyed to the vat feed tripper conveyor, which will run the full length of the seven vats and transfer the crushed ore to the vat-loading transfer conveyor. The vat-loading transfer conveyor will be supported on a rail-mounted bridge, allowing it to be positioned above any of the seven vats to fill the selected vat with crushed ore. A vat-loading shuttle conveyor will move with the transfer conveyor, allowing the crushed ore to be discharged over the full width of the vat. This will provide an evenly distributed pile of ore inside each vat, ensuring complete submersion of the ore during leaching.

14.1.2. Vat Leaching

Boron and lithium will be leached from the crushed ore by sulfuric acid from the sulfuric acid plant. In essence, the vat leaching operation will comprise a counter-current flooded heap leach across seven vats. The counter-current arrangement will allow for the most leached ore to be contacted with the least saturated solution, and the least leached ore to be contacted with the most saturated solution. The concentration gradient between residual metals in the ore and the leach solution will support efficient acid consumption and metals recovery during leaching.

Each vat will have an overflow tank into which the leach solution will flow prior to getting pumped to the next stage. The vat leach cycle will comprise seven steps carried out over seven days (168 hours), as summarized in Table 14-1.

Table 14-1 – Vat Leaching Cycle

Activity	Activity Duration (days)
Ore loading and solution flooding/recirculation	1
Neutralization	1
Leaching	2
Washing	1
Draining/unloading / inspection	1

No two vats will be in the same phase at one time. This staggered configuration will allow for constant PLS generation and minimized storage requirements. Each vat will undergo all activities in sequence and will be referred to by its active phase (e.g., loading vat).

Leach solution will flow from the most leached to least leached ore. The solution will start from the washing phase, where process water and wash water from the draining/unloading vat will be used to displace any interstitial lithium and boron remaining after the vat is drained of leach solution. This solution will then proceed to the third leaching vat, where concentrated sulfuric acid will be added to leach the lithium and boron remaining within the ore. The solution will overflow to the second and then to the first leaching vats, with additional concentrated sulfuric acid added in each stage to maintain a target acid concentration. The solution leaving the first stage of leaching will be referred to as intermediate leach solution (ILS). ILS will be used as the initial leaching fluid for the fresh ore, for both the loading and neutralization stages. Contacting the ILS with the fresh ore will increase the solution concentration and reduce the free acid, negating the need for a neutralizing agent. The resulting pregnant leach solution will proceed to the boric acid crystallization circuit (CRZ1).

Following washing and draining, the spent ore will be unloaded by a clamshell reclaimer onto an unloading conveyor. An intermediate spent ore pad will be constructed for temporary storage of the spent ore, prior to being loaded into haul trucks for transportation to the spent ore storage facility, which will be located approximately one mile south of the processing facilities.

14.1.3. Boric Acid Crystallization (CRZ1)

Boric acid will be recovered from the PLS via cooling crystallization. To meet the technical grade specification this needs to be completed in two stages, first primary or crude crystallization (CRZ1), followed by dissolution and recrystallization (CRZ3).

In CRZ1, excessive sulfate salt contamination will be avoided by exploiting the solubility differences between boric acid and sulfate salts. Roughly 65-70% of the boric acid will be recovered in the first pass, with the remaining 30-35% recovered downstream in the boric acid flotation units and recycled back to the CRZ1 feed.

PLS will be fed to the first boric acid crystallizer from the PLS surge tank. It will be combined with boric acid concentrate recovered from downstream evaporation (EVP1) and crystallization (CRZ2) flotation concentrate streams. The quantity of boron being recycled from the flotation units for the design case is of the order of 30% of the total boron mass and comes with gangue sulfate salts and liquor from these unit operations. This recycle stream has been accounted for in the heat and mass balance. There will be two stages of flash-cooled crystallization to keep vessel size manageable and to achieve sufficient crystal sizing for efficient dewatering. The second stage of crystallization will be temperature-controlled to limit co-crystallization of sulfate salts, which could lead to off-specification products or purging requirements that would reduce plant efficiency.

The CRZ1 system will continue to operate within design limits with respect to mass throughput and thereafter cooling duty under the 2-day leach scenario. The total solids production will be reduced but can be accommodated by turning down the belt filter.

Solids will be collected from the second stage of crystallization. The resultant slurry will be sent to a belt filter, where the solids will be dewatered and washed with centrate from the purified boric acid crystallizer (CRZ3) dewatering centrifuges. The wash rate will be used to repulp the EVP1 flotation concentrate solids, and the filtered mother liquor will advance to the first impurity removal circuit (IR1). The solids will advance to the boric acid production circuit (CRZ3), where they will be redissolved and recrystallized for further purification.

14.1.4. Boric Acid Production (CRZ3)

The wet boric acid cake from CRZ1 will be repulped in heated product centrate from the final boric acid crystal dewatering in CRZ3. The boric acid crystals will be dissolved in a stirred tank before being filtered to remove any insoluble materials, such as gypsum and other fines carried over from the leaching circuit. The filtrate will then be fed to another two-stage, flash-cooled crystallization circuit. The crystals will be dewatered after the second stage via centrifuge and washed with process condensate to produce technical grade boric acid at a purity of >99.9%. The centrate and washate will be recycled back to CRZ3 boric acid dissolution and CRZ1 solids washing, respectively. The solids will be conveyed to a rotary dryer, which will operate by indirect drying via plant steam and electric heaters. The boric acid will then be cooled to safe handling temperature in a rotary cooler before being conveyed to a boric acid product silo, which will feed the product bagging system. Fine material from the dryer will be collected in a wet scrubber and recycled to the boric acid dissolution tank.

The crude boric acid solids production rate will be below design under the 2-day leach scenario shown. The equipment will be required to operate in partial turndown. Some minor equipment modifications such as replacing impellers, changing trim in control valve etc. are expected.

14.1.5. Impurity Removal (IR1)

The purpose of this impurity removal step will be to eliminate aluminum, fluoride, and free acid from the evaporation circuit feed (EVP1). Testwork demonstrated that the presence of aluminum and free acid in EVP1 feed can negatively impact crystal formation and dewatering properties in downstream EVP1 and CRZ2 unit operations, resulting in excessive lithium losses. The unwanted impurities will be removed through neutralization and precipitation by the addition of lime and recycled cake from the upstream calcium and impurity removal (IR2) steps in the lithium carbonate circuit. This IR2 cake will predominantly consist of magnesium hydroxide and calcium carbonate. It will be re-slurried in washate from IR1 before being fed back to the IR1 circuit.

The precipitation reactions will be carried out across five heated, stirred tanks. The resultant slurry will be fed to one of two filter presses – one for seed recycling and another for solids removal. Only cakes from solids removal filter will be washed prior to being transported to the spent ore storage facility. The filtered mother liquor from both filters may be reacidified with concentrated sulfuric acid before progressing to the EVP1 circuit.

Mass balance simulations based on the mine plan (revision 14a) confirm that the lime demand and solids generation are within the design case limits.

14.1.6. Evaporation (EVP1)

The filtered mother liquor from IR1 will be pumped to a four-effect co-current evaporation circuit to remove 70% of its water content. Evaporation effects are comparable to stages but refer to a sequence of vessels that are each held at a lower pressure than the last, to remove water from a solution using the heat of steam from a previous vessel.

Based on the pilot plant testwork, the lithium concentration at EVP1 should be at 0.51% to avoid risk of Li-K or Li-Na salt formation when considering high boron and sodium feedstock. The lithium end point on startup should be adjusted to concentrate lithium and remove sulfate salts. This would result in lower Mg to Li ratio in the CRZ2 end point and reduced overall sulfate content in the lithium precipitation step which is expected to result in improved overall product quality.

Through the circuit, the mother liquor will become saturated with both boric acid and sulfates, causing them to crystallize out of solution. The solids recovery from the mother liquor will only occur after the third and fourth evaporation effects.

Slurry from the third evaporation effect will be dewatered using centrifuges. The centrate is advanced to the fourth evaporation effect. Slurry produced in the fourth evaporation effect will be directed to a mechanical flotation system for recovery of boric acid. The flotation tailings will be dewatered via centrifugation, while the concentrate will be dewatered by filtration. The tailings centrate and concentrate filtrate will be combined and advanced to the sulfate crystallization circuit (CRZ2).

Concentrate solids recovered from flotation after the third and fourth evaporation effects will be sent to a repulp tank before being fed to the CRZ1 circuit for boric acid recovery. Tailings solids from the third and fourth evaporation effects will be repulped before dewatering and washing in centrifuges. The wash water will be circulated back as the repulping solution and will be used to wash the stage 1 solids. The washed solids will be sent to the spent ore storage facility.

The higher ROM feed rates (based on 2-day leach mine plan 14a) can be accommodated within the existing heat and energy balance. The lower boron grade materially reduces the energy demands in other areas of the process (namely boric acid and chilling units) which allows the energy to be redeployed to areas of increased consumption in the crushers, leach area and evaporation unit.

14.1.7. Crystallization (CRZ2)

The mother liquor from the fourth effect of EVP1 will be processed through four stages of cooling crystallization to concentrate lithium and achieve a target magnesium to lithium ratio, which is a key parameter governing the efficiency of the lithium carbonate precipitation circuit downstream. The first two stages of crystallization will be flash cooled, and the last two stages will be surface cooled. Solids will be removed from stages 2 and 4 as dense slurry, which will be sent to a mechanical flotation circuit similar to that of EVP1, as described in Section 14.1.6.

Downstream of stages 2 and 4 of CRZ2, the flotation concentrate will be dewatered via a belt filter. The filter cakes will be repulped in PLS before returning to CRZ1 for boric acid recovery. The flotation tails (mainly sulfate salts) will be dewatered via centrifuges and repulped in recycled centrate from the centrifuge wash (topped up with process water). After a second dewatering and washing, the sulfate salts will be sent to the spent ore storage facility. The combined flotation concentrate filtrate and the tails centrate after stage 2 will be sent to the next stage of crystallization (stage 3), while the combined filtrate and centrate after stage 4 will be sent to the next impurity removal stage (IR2). Both will have a bleed stream back to CRZ2.

Based on a 2-day leach (mine plan 14a), higher recycle rates, compared to the 2024 design, may be required in the CRZ2 block to manage the variations in the pulp density caused by distribution of solids distribution between EVP1 and CRZ2. As a result, control valve size, pump impellers, and line sizes must be evaluated. Given the line sizes in this area (10-20 cm [4-8 inches]) the complexity and cost magnitude will be small. These variations are to be considered in updating the equipment changes and piping with special attention to turn-down ratios.

14.1.8. Lithium Circuit

Technical grade lithium carbonate will be produced in a closed-loop circuit, which will include steps of brine cleaning, precipitation and evaporation.

14.1.8.1. Brine Cleaning – Impurity (IR2) and Calcium Removal

The purpose of brine cleaning will be to remove contaminants prior to lithium carbonate precipitation to achieve the desired product purity. The second impurity removal circuit (IR2) will remove magnesium, iron, aluminum, fluoride, boron, and free acid through hydrated lime addition across three cascading stirred tanks. The precipitated solids will be dewatered and washed via a filter press. The resulting cake will be repulped with wash rate from IR1 and returned to IR1 as a neutralization and precipitation agent. The brine is heated before the IR2 step, and there is a trim heater downstream of the calcium removal step, upstream of the lithium carbonate precipitation step.

The purpose of the calcium removal step will be to precipitate calcium and trace magnesium as carbonates through the addition of soda ash (Na_2CO_3). This will be accomplished by reacting the filtered mother liquor from

IR2 with a stream from the lithium carbonate reactor overflow as a source of free carbonate in a series of stirred, cascading reactors. Some lithium carbonate coprecipitation is also expected. Downstream of the calcium removal reactors, the product slurry will be pumped to a clean brine thickener/ clarifier. The clear liquor overflow is advanced to the lithium carbonate precipitation step. The thickened underflow solids are collected and split where a portion is returned to the calcium removal reactors to act as seed, and the balance is returned to the IR2 reactors to make use of the IR2 dewatering filter press. The small amount of lithium present in the thickener solids as lithium carbonate is redissolved in either IR2 or IR1 allowing for this small quantity of lithium to be recovered. The recovered solids will be combined with those from IR2 for return to IR1. The cleaned brine will be sent to lithium carbonate precipitation.

14.1.8.2. Lithium Carbonate Precipitation

After calcium removal, the heated clean brine will report to one of three parallel stirred reactors for precipitation of lithium carbonate by soda ash solution. A draft tube baffled reactor design will optimize crystal growth and limit liquor loss by entrainment in the lithium carbonate precipitate. The underflow from each reactor will deport to a belt filter where the solids will be dewatered. The resulting lithium carbonate cake will be washed with hot process condensate, dried, and cooled before getting transferred to the product bagging system. The overall first pass recovery will be around 70%. The filtrate will be combined with the overflow from the lithium carbonate reactors and the IR2 washate. The mixture will be acidified with sulfuric acid in a single stirred tank reactor to destroy residual carbonates. Sodium hydroxide will be added to the resulting slurry inline to neutralize any excess acid prior to evaporation.

14.1.8.3. Lithium Brine Evaporation (EVP2)

The purpose of evaporating the remaining brine will be to concentrate any unconverted lithium in the reactor filtrate by removing sodium, potassium and water from the circuit via evaporative crystallization. Evaporation removes water from the solution and thus concentrates the lithium. The concentrated filtrate can then be recycled back to the start of the lithium circuit to recover the 30% of lithium remaining in solution after the first pass of precipitation.

The circuit will consist of three evaporators operated under vacuum. Solution will be fed to the first effect, and the resulting slurry will advance to the second effect and then to the third. Dewatering will only occur after the last evaporation effect, where the resulting slurry will be centrifuged. The solids will be washed in a single stage with process condensate. The centrate and wash will be combined, and approximately 88% of the recovered liquor will be recirculated to IR2 via hydrated lime mixing makeup water. The remaining 12% will be bled out of the system to control the buildup of impurities.

14.2. Process Development

The Rhyolite Ridge ores differ from traditional brines and spodumene ores in terms of their mineralogy and chemistry. The processing methods proposed differ from traditional installations, and there are no existing, commercialized reference operations. However, while the application and sequencing are unique, the unit operations and equipment types selected for ore processing are not novel, and many unit operations are adopted from existing boric acid, potash, nitrate and lithium production facilities. The process technology maturity is sufficient to support the Rhyolite Ridge Project at a feasibility study level as it was backed with extensive bench scale and pilot plant testwork that resulted in successfully addressing the Project’s unique process development challenges.

Several campaigns of bench and pilot-scale testwork were conducted to support flowsheet development (Section 10). The process was simulated using METSIM to produce mass and energy balances, which allow for the impact of chemistry and process design criteria on the overall process to be assessed.

The flowsheet developed based on testwork during the DFS is presented in block format as Figure 14-3.

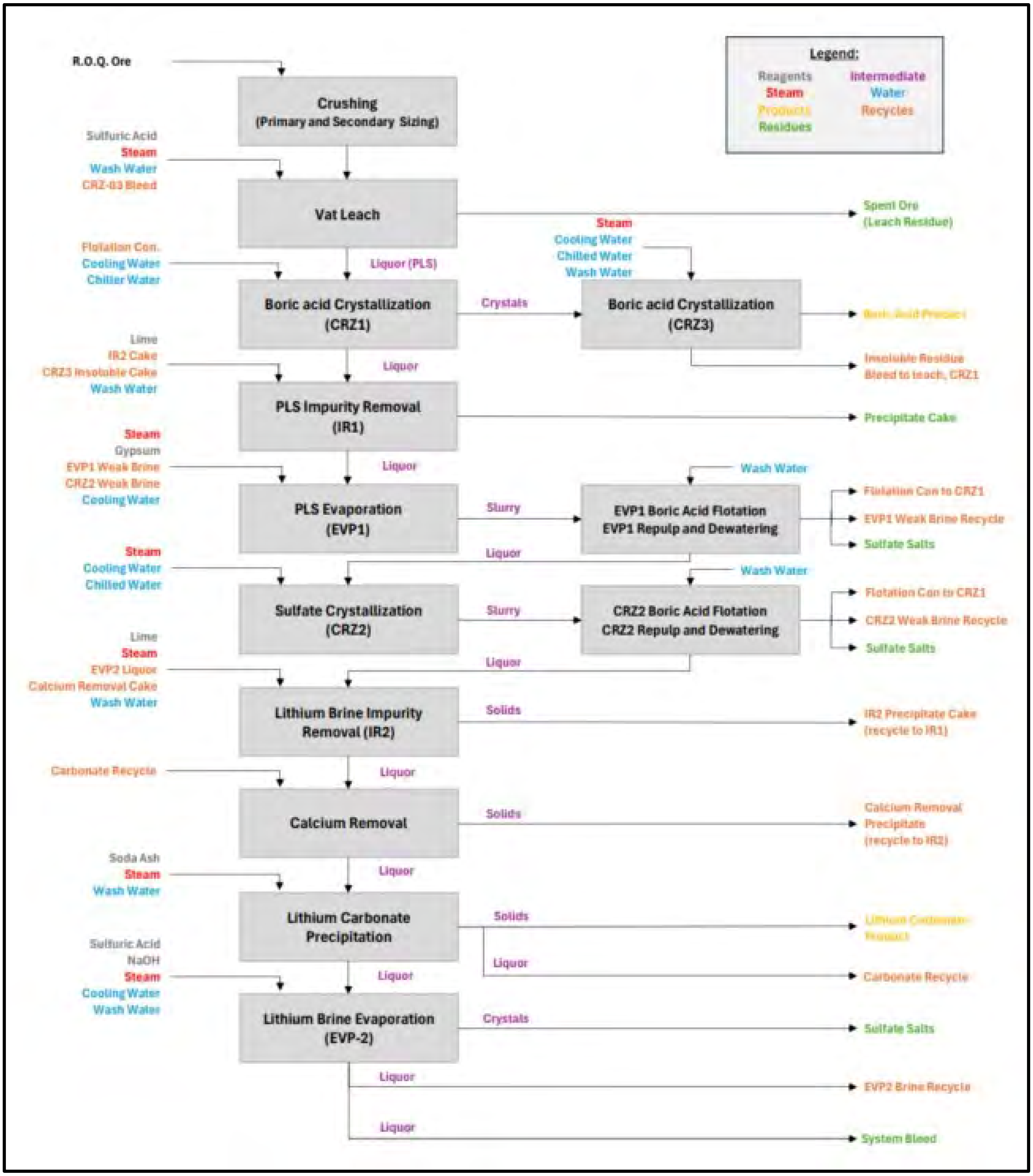


Figure 14-3 - Rhyolite Ridge Process Flowsheet Sequence – Lithium Carbonate and Boric Acid plants (Design Case)

Source: ioneer, 2024

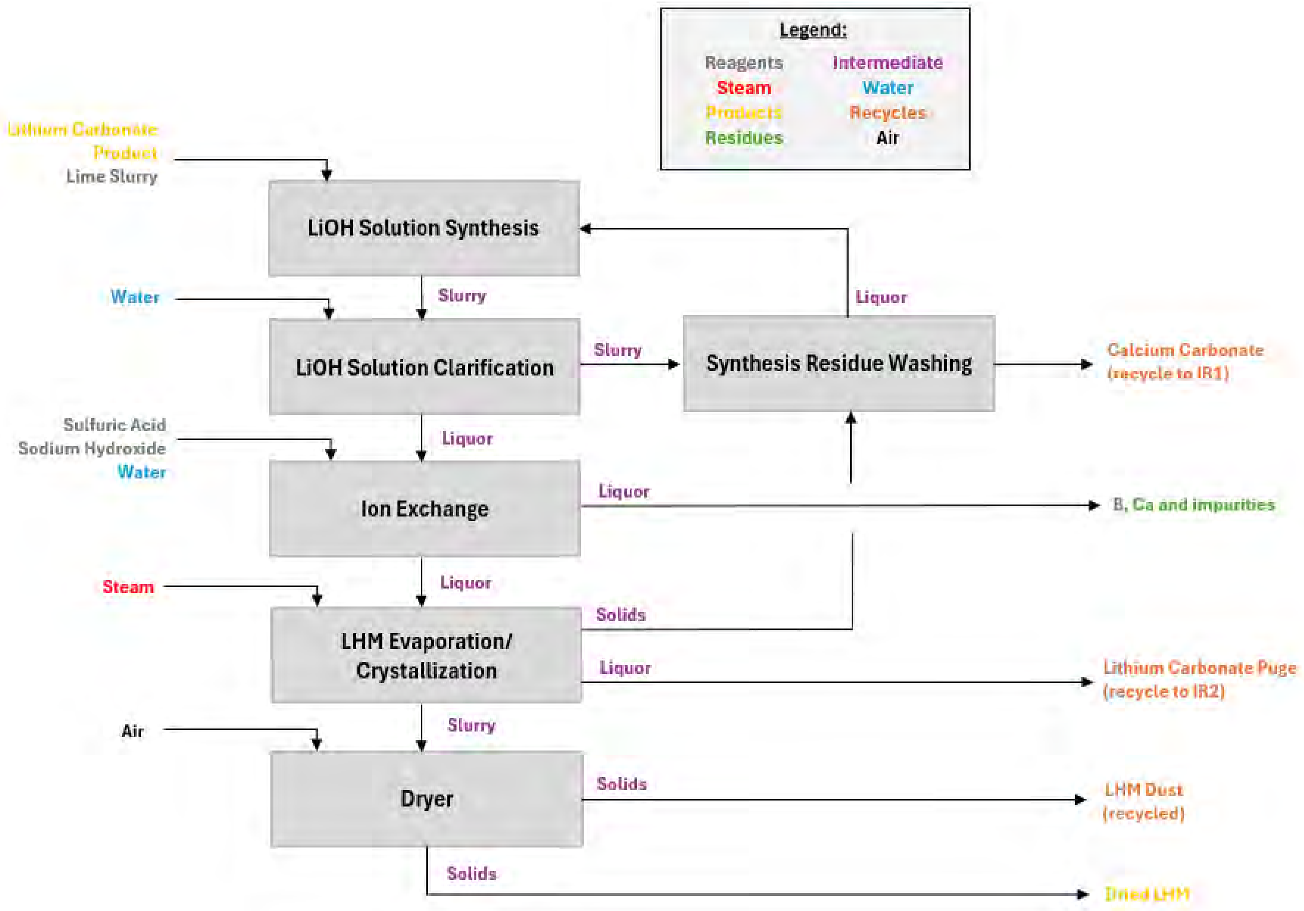


Figure 14-4 - Rhyolite Ridge Process Flowsheet Sequence – Lithium Hydroxide Monohydrate Conversion Plant (Design Case)

Source: ioneer, 2025

14.2.1. Process Development

Following bench- and pilot-scale testwork, flowsheet modifications were implemented to address any process issues identified. An example of such a modification was the addition of the IR1 step for the precipitation of aluminum and free acid from the EVP1 feed. This was completed because the quantities before treatment were shown to negatively impact crystal formation and dewatering properties, resulting in excessive lithium losses.

14.2.2. Process Development Improvements

The 2025 process optimization work focused on selecting operating conditions that maximized the output of lithium and boron products up to the design equipment capacity. It was noted that previous mine plans did not make full use of the installed equipment capacity for lithium and boron output. The updated mine plan (revision 14a) results in higher throughput.

14.2.2.1. Optimized Leach Cycle and Acid Utilization

The most meaningful of the process optimizations is the reduction in leach duration from 3 days to 2 days. Additional detailed test work was completed between Q4 2024 and Q2 2025 in Kappes, Cassiday & Associates

(KCA) in Reno, NV. The program collected leach kinetic data to determine the optimum leach duration for stream 1, 2 and 3 feedstocks.

This optimization materially increases lithium and boron chemical output compared to previous mine plans by shortening the leach time, the ore is removed from the system before over-leaching occurs. This allowed fresh ore to be introduced to the system to interact with the remaining acid to increase overall lithium and boron production. There is a small reduction in the overall recovery of lithium and boron but the increase in ROM throughput results in a net increase in pay production. The design rates of lithium and boron chemical production remain unchanged in 14.4.1 (PDC), the nominal ROM rate is increased as shown. This is possible without major equipment modification by making use of the installed equipment capacity:

For example, the crushing circuit is sized to process up to 3 million tons per year but only operates 12 hours a day. Additional ROM tons can easily be accommodated by increasing the daily and weekly run hours while still maintaining sufficient time for routine maintenance to be completed. The ability to process additional tons, without material equipment modifications is also aided by the addition heat recovery measures that were implemented post DFS to increase the overall thermal efficiency of the plant and mitigate against variability in the energy requirements.

14.2.2.2. Rhyolite Ridge Flowsheet testing with low boron feedstock

The test program was conducted at Kemetco Research in Richmond Canada between Q1 2025 and Q2 2025. The test program simulated the operation of the CRZ1, IR1, EVP1 and CRZ2 unit operations under multiple low boron feedstock compositions representative of various stream 1,2 and 3 blends. The program successfully collected the required technical information (solubility, reaction chemistry etc) to confirm that the design of the processing facility is sufficient to operate under a range of feed compositions from 100% stream 1, to a blend of stream 1,2 and 3, to 100% stream 2. Finally, the mitigations put in place to address the risks associated with unwanted lithium crystallization, dewatering challenges etc identified during the pilot plant remain relevant and effective for all compositional cases.

14.2.2.3. Energy Balance Optimization

- Inclusion of hot water system to increase overall system thermal efficiency. Heat recovery and transfer from the sulfuric acid plant to the process unit is increased and used in duties requiring low quality heat.

14.2.2.4. Pilot Plant Learnings

The major challenges encountered in the pilot plant testwork were as follows:

- Difficult crystal/liquor separation characteristics of crystal slurries generated in PLS evaporation and sulfate crystallization;
- High losses of lithium in the sulfate salts due to liquor entrainment in the fine-grained crystals;
- Formation of undesirable lithium double salts;
- Unrepresentative boric acid flotation operation resulting from fine-grained crystals generated in PLS evaporation and sulfate crystallization.

To address the challenges encountered during bench- and pilot-scale test campaigns and meet the required design criteria, the following modifications were made to the process flowsheet design during the DFS:

- The PLS impurity removal circuit (IR1) was optimized to improve crystal-liquor separations in the downstream evaporation and sulfate crystallization circuits (EVP1/CRZ2) unit operations, resulting in improved lithium recovery. This would allow the lithium brine impurity removal (IR2) filter cake to be recycled to IR1, reducing lime consumption and lithium losses;
- EVP1 and CRZ2 boric acid flotation circuits were segregated to improve crystal-liquor separations and improve lithium recovery;
- EVP1 and CRZ2 boric acid flotation circuits were located upstream of sulfate salt dewatering to improve boric acid recover and improve crystal-liquor separations and improve lithium recovery;
- The boric acid flotation concentrate was recycled to CRZ1 instead of CRZ3 to reduce impurity transfer to boric acid recrystallization (CRZ3);
- The sequence of the lithium brine evaporation (EVP2) and lithium carbonate precipitation unit operations were optimized, reducing the risk of lithium saturation in lithium brine evaporation;
- Optimization of the vat leach conditions. Leach residence time was reduced from four to three days, requiring a leach feed crush size of 100% passing 1.9 cm (0.75 inches) to optimize lithium and boron leach extraction. This resulted in a reduction of one vat to seven vats;
- The target PLS boric acid concentration was reduced from 7.5% to 6.4% to reduce the risk of boric acid crystallization in leach;
- The CRZ2 crystallization temperature was reduced from 5°C to -5°C (41°F to 23°F) to minimize the magnesium transferred to the lithium circuit, lowering the unit cost of production (lime consumption) in the lithium circuit.

14.2.2.5. Boron and Lithium Recovery

The basis for assessing the recovery of boron and lithium includes the results of testwork data analysis and industrial experience. The design case mass and energy balance determined the lithium and boron content of the PLS and their losses throughout the process to determine their overall recovery.

Boron recovery estimates for the vat leach stage are based on bench-scale and full-height vat leach testing and the analysis of partially leached leach residue. This testwork confirmed that a boron loss of about 15.5% is to be expected during the leach stage from dissolution and washing. Boron losses in the IR1 filter cake from co-precipitation and washing, evaporation and crystallization of sulfate salts and lithium circuit chloride bleed is expected to be about 6.2%. These losses were confirmed by bench-scale and pilot-scale testing, measured displacement washing performance, centrifuge performance pilot testing, integration of these results in the heat and mass balance and lithium brine cleaning testing. Overall, the testwork showed the expected recovery of boron to be 78.3%, a decrease compared to the 78.6% reported in the 2020 feasibility study primarily driven by higher losses associated with the shorter leach time. However, since the DFS the process plant recoveries have improved, the co-precipitation and soluble losses in dewatering equipment were reduced based on pilot-scale testwork.

Lithium recovery showed an improvement compared to the 2020 feasibility study. This increased recovery was determined by bench-scale and full-height vat leach testing and the analysis of partially leached leach residue. The testwork confirmed that a lithium loss of about 9.2% is to be expected during the leach stage from dissolution and washing under the optimized leach conditions. Lithium losses from the IR1 filter cake due to co-precipitation and washing, evaporation and crystallization of sulfate salts and lithium circuit chloride bleed is expected to be about 5.6%. These losses were confirmed by bench-scale and pilot-scale testing, measured displacement washing performance, pilot-scale centrifuge performance pilot testing, subsequent integration of these results in the heat and mass balance and lithium brine cleaning testing. The overall recovery of lithium is expected to be 85.2%, an improvement over the 84.6% determined by the 2020 FS report following pilot-scale test work and flowsheet optimization.

This lithium recovery is expected to be higher than brine or spodumene projects because of the following considerations:

- As vat leaching will be performed on the whole (un-beneficiated) ore, any losses associated with upgrading to a concentrate are avoided;
- The sulfate salts that will be formed in the evaporation and sulfate crystallization circuits (EVP1/CRZ2) will be subjected to two stages of crystal washing to recover entrained lithium from the brine;
- The concentrating unit operations designed to remove water and crystallize gangue salts are performed in enclosed / contained systems in specialized evaporators and crystallizers. Thus no losses due to leakage through liners, evaporative and wind losses, and encapsulation in the bottom of brine ponds are expected.
- Recycling of the lithium carbonate rich liquor within the lithium section of the plant will prevent lithium losses. This will increase the lithium recovery compared to lithium brine operations that recycle brine back to the brine ponds;
- In IR1, the solid impurities will be precipitated and removed prior to the concentration of lithium by evaporation. The recycling of the brine-cleaning filter cake back to IR1 will enable the lithium content to be recovered and will improve the total lithium recovery.

14.3. Additional Required Plant Infrastructure

Additional plant infrastructure and facilities required for the Rhyolite Ridge Lithium-Boron Project are discussed in Section 15.

14.4. Processing Plant Throughput and Design, and Equipment Layout, Characteristics, and Specifications

The engineering and design are based on:

- Process summary – overall capacities, throughputs, and product recoveries;
- Operating schedule – results of the reliability, availability, and maintenance (RAM) study, which determine the availability and utilization of the process units. The results of the RAM study were used to size equipment and determine throughput requirements in alignment with the capacity of the sulfuric acid plant;
- Unit process design criteria – reflects the unit process design parameters utilized as the basis for the process design.

14.4.1. Design Basis and Criteria

Table 14-2 provides a summary of the design criteria for the processing facilities.

Table 14-2 - Summary of Process Design Criteria

Parameter	Units	Value	Comments
Design philosophy	–	–	Constant acid production, variable ore throughput
Operating days per year	d/a	345 (based on average utilization)	Excludes acid plant catalyst change out events. Plant capacity reduced during these events; boiler inspections will result in plant downtime.
Overall utilized capacity	%	91.5	Based on RAM analysis (year A/B average)
Plant operating hours	h/a	8,287	Based on RAM analysis
Sulfuric acid plant capacity	tpd (stpd)	3,500 (3,858)	At 100% H_2SO_4
Process plant capacity	tpa (stpa)	3,265,900 (3,600,000)	Quantity of ore processed on a dry basis
Process plant capacity	tpd (stpd)	9,707 (10,700)	Dry basis
Boron feed grade - design	%	1.46	Concentration in ore
Lithium feed grade - design	%	0.21	Concentration in ore
Boron recovery - design	%	72%	
Boron recovery – MPO 14a	%	66%	
Lithium recovery - design	%	81.8%	
Lithium recovery – MPO 14a	%	78%	
Technical-grade lithium carbonate design production	tpa (stpa)	25,955 (28,610)	>98.5% purity
Battery Grade Lithium Hydroxide Production	tpa (stpa)	26,671 (29,400)	> 99.5wt% purity
Boric acid design production	tpa (stpa)	183,251 (202,000)	99.9-100.9% H3BO3 eq purity

14.4.2. Operating Schedule and Availability

All sections of the projected Rhyolite Ridge process plant are expected to have high availability ranging from 97.3% to 100% at 24 hours of operation (with the exception of crushing and grinding, which is deemed to have 100% availability at 16-18 hours of operation). The average availability is considered as 91.5% on a typical year, inclusive of planned and unplanned down time events. The system availability is reduced to 86.7% every 10 years to accommodate a longer planned maintenance period.

14.4.3. Processing Equipment Characteristics and Specifications

Specifications and characteristics for the major equipment of each circuit are provided in Table 14-3.

Table 14-3 - Specifications and Characteristics of Major Processing Equipment

Item	Measurement Type	Description
Ore Handling and Sizing		
ROQ ore feeder	Capacity (input size)	732 t/h (807 st/h) (ROQ ore <10”)
Primary sizer	Total capacity (discharge size)	732 t/h (807 st/h) (P_{80} of 2.63”)
Primary sizer discharge conveyor	Capacity (length)	732 t/h (807 st/h) (1 segment totaling 0.05 miles)
Secondary sizer	Total capacity (discharge size)	2 x 367 t/h (404 st/h) (P_{80} of 0.916” inches)
Vat Leach Plant		
Vat	Quantity (dimensions)	7 (41 m D x 7.6m) (135' D x 25' H)
Vat unloading bridge crane	Capacity (dimensions)	36 t (40 st) (48.8 m L x 6.1 m W x 21.3 m H) (160’ L x 20’ W x 70’ H)
Vat loading and unloading conveyors	Capacity (length)	730-798 t/h (805-880 st/h) (5 segments totaling 0.63 km [0.39 miles])
Boric Acid Circuit (includes evaporation and crystallization)		
CRZ1 crystallizers	Type (# of stages)	Flash cooled forced circulation (2)
CRZ1 dewatering	Type (quantity)	Vacuum belt filter (1)
CRZ3 crystallizers	Type (# of stages)	Draft tube flash cooled (2)
CRZ3 dewatering	Type (quantity)	Screen scroll centrifuge (2)
Boric acid dryer	Type (capacity)	Rotary drum steam/electric (27 t/h) (30 st/h)
IR1 reactor tanks	Quantity	5
IR1 dewatering	Type (quantity)	Filter press (2)
EVP1 evaporators	Type (# of effects)	Forced circulation (4)
EVP1 centrifuges	Type (quantity)	Screen scroll (16)
CRZ2 crystallizers	Type (# of stages)	Force circulation (2 flash cooled, 2 surface cooled)
CRZ2 centrifuges	Type (quantity)	Screen scroll (14)
EVP1 flotation tanks	Type (# of units)	Rougher flotation cell (5)
CRZ2 flotation tanks	Type (# of units)	Rougher flotation cell (10)
Lithium Carbonate Circuit		
IR2 reactor tanks	Quantity	3
IR2 dewatering	Type (quantity)	Filter press (1)
Carbonate removal tanks	Quantity	3

Item	Measurement Type	Description
Carbonate removal dewatering	Type (quantity)	Clarifier (1)
Lithium reactor tanks	Quantity	3
Lithium filter	Type	Belt filter
Lithium carbonate dryer	Type (capacity)	Rotary drum steam/electric (3.3 st/h)
EVP2 evaporators	Type (# of effects)	Force circulation (3)
EVP2 dewatering	Type (quantity)	Screen scroll (2)

14.4.4. Processing Equipment Layout

The proposed site of the Rhyolite Ridge process plant is about 2.4 km (1.5 miles) northwest of the mine on a plateau with a gentle slope. A detailed plot plan of the processing facilities is provided in Figure 14-5.

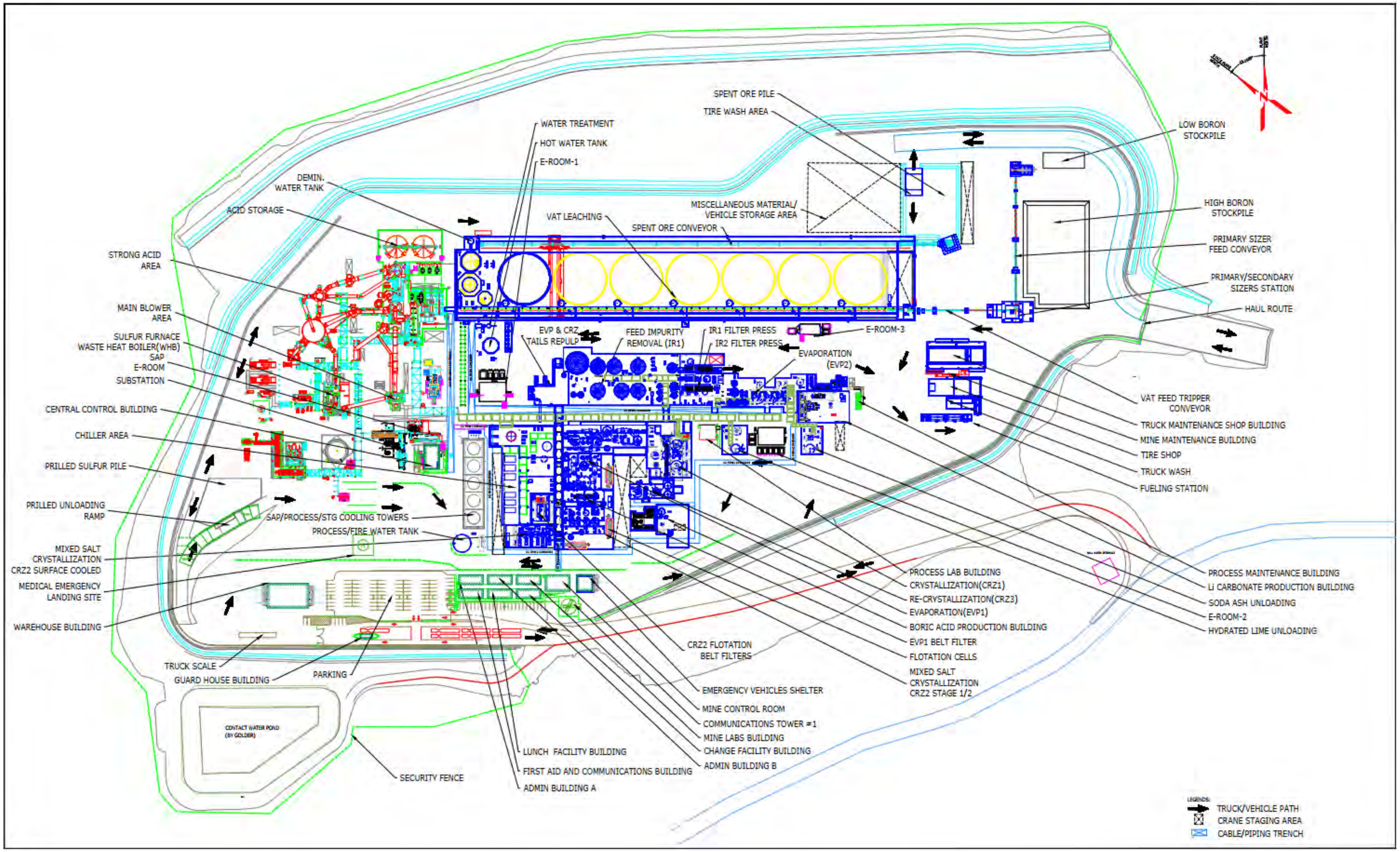


Figure 14-5 - Rhyolite Ridge Process Plant Layout

Source: ioneer, 2024

The following was considered to establish the basis to define the processing plant and ancillary facilities layout:

- Site truck unloading and loading traffic;
- Mine and spent ore heavy haul truck access and separation considerations;
- Construction and maintenance activities' space requirements;
- Process and utility equipment positioning to reduce bulk quantities (i.e., piping, electrical);
- Operating and office personnel physical access;
- Earthworks minimization;
- Environmental guidelines, objectives, and criteria compliance;
- Future space consideration for sulfur delivery.

14.5. Projected Requirements for Energy, Water, Process Materials, and Personnel

14.5.1. Energy

The power requirements for the Rhyolite Ridge Project will be met by an onsite power plant consisting of a 42 MW steam turbine generator. Power requirements for the Project exceed what is available from the nearby Silver Peak substation (operated by NV Energy, Nevada's state electrical service company), and thus the plant will be designed to operate independently from the local external power grid. Steam supply for the steam turbine generator will come from the sulfuric acid plant waste heat boiler, making economic use of the steam that is inherently produced during the sulfuric acid generation process. A diesel-driven auxiliary boiler will also be provided to maintain steam supply to the steam turbine generator in event of plant upset. Startup and emergency diesel generators will be part of the overall power generation system.

In the sulfuric acid plant, the exothermic reaction of sulfur oxidation and conversion to acid will produce a significant amount of heat that will be used to generate high pressure steam via the sulfuric acid plant waste heat boiler from sulfur burner off-gas. The heat recovery system will be highly integrated with the sulfuric acid plant via numerous economizers and superheaters upstream and downstream of the waste heat boiler. The heat recovery system is designed to maximize the thermal and conversion efficiencies of the sulfuric acid manufacturing process and will be integral in maintaining the overall heat balance. High pressure superheated steam will be produced at a pressure of 60 bar gauge (barg) and a temperature of approximately 480 ºC (896 ºF). Superheated high-pressure steam will be used to convert thermal energy into mechanical energy via a steam turbine and then to electrical energy by coupling an electrical alternator to the steam turbine. Around 42 MW is expected to be produced based on the current sulfuric acid and power plant designs, which will be sufficient to satisfy the entire facility's power requirements.

The steam turbine will be designed with two intermediate extraction ports to provide medium pressure (10 barg) and low pressure (3 barg) steam for use in the process and sulfuric acid plants for motive and thermal duties. The power and sulfuric acid plants are discussed in Sections 15.2 and 15.3, respectively.

14.5.2. Water

The average estimated water consumption rate under design conditions in 9,626 lpm (2,543 gpm), this consumption rate is based on a sitewide water balance model. The model is conservative. Cooling water makeup is the largest consumer and it is based on the worst case summer conditions. Variation in the ROM rate under the 2-day leaching plan impacts the water demand by less than 10%. The permitted water supply is 20% higher than the expected design water consumption. The planned water supply and distribution infrastructure are discussed in Sections 4.4 and 15.4, respectively.

14.5.2.1. Firewater and Process Water

Water will be sourced from existing wells located in Fish Lake Valley, and this source has been determined to be sufficient to meet the Project demands. Water will be pumped via a dedicated water transfer pipeline. The water is currently in use for irrigation and will be diverted to the Project on startup. The net withdrawal from the basin is not forecast to increase due to the Rhyolite Ridge Project.

The process water storage facility will consist of one storage tank that will be located on the southern end of the processing facilities. This tank will serve as storage for both process water and firewater, with the supply of the firewater being lower in elevation and the priority if used. Excess process condensate will be returned to the process/firewater storage tank.

Firewater will be piped to a firewater pump skid (including firewater main pump, firewater diesel pump, and firewater jockey pump) to provide firewater using buried distribution piping to surface fire hydrants and pressure indication valves. Process water will be pumped from the storage tank and distributed throughout the facilities via piping routed along pipe racks. The upper section of the process water and firewater tank will be available for the plant process water supply and piped where needed.

14.5.2.2. Process Condensate

Process condensate will originate from vapor flashed from process solution in the evaporators (EVP1 and EVP2). A very small amount of entrained process solution in the flash vapor will report to the condensate even after passing mist eliminators. Dissolved boron will be removed through boron-selective ion exchange before the process condensate blends with demineralized water for supply to the areas requiring high quality water.

The steam condensate from sulfur melting will report to the waste heat boiler blowdown sump and be recycled to the process leaching circuit, because it has a relatively small flowrate and a higher risk of being contaminated. Process condensate will be used for various washing and reagent make-up duties throughout the facilities and to feed the demineralization circuit. Process condensate will be distributed by a supply pump via piping routed along pipe racks. The process condensate from lithium evaporation will be segregated and primarily used for product washing where high temperature is advantageous.

14.5.2.3. Steam Condensate

Steam condensate will be collected from a steam turbine generator exhaust condenser and various low pressure steam consumers in the sulfuric acid plant and processing plant. Steam condensate is expected to be of sufficiently high quality to be returned to the sulfuric acid plant as boiler feedwater. Condensate quality will be guaranteed by a conductivity sensor on the return lines, so that off-specification condensate can be diverted away from the boiler feedwater tank. Steam condensate from the steam turbine generator condenser will report to the deaerator drum. Steam condensate from the processing plant consumers will be collected in a dedicated steam condensate collection drum before being combined with makeup boiler feedwater from the demineralization package and pumped back to the deaerator drum.

14.5.2.4. Cooling Water

The process cooling water system will consist of a single cooling tower that will provide a continuous flow of cooling water at supply temperatures specified in the design. Cooling water will be distributed by two supply pumps via piping routed both underground and above ground to process plant areas requiring cooling water.

Cooling water will be returned to the cooling tower cells via piping on the pipe rack. The cooling tower will be equipped with both fixed speed and variable speed fans to manage cooling water supply temperature.

14.5.2.5. Process Chilled Water

Two closed loop chiller systems will be required for heat removal from the crystallization systems to meet the required operating temperatures, as cooling water will be insufficient. System 1 will supply chilled water at 4.4 ºC (40°F) and glycol at -3.9ºC (25°F) to flash- and surface-cooled crystallization units. System 2 will supply glycol at -12.2ºC (10°F) to surface-cooled crystallization units.

Each chiller system will consist of N+1 packaged water-cooled chilling units, heat exchangers and distribution pumps. Chilled water and glycol will be distributed via piping routed along pipe racks. Chilled water will be returned to the chilling units via piping on the pipe rack.

14.5.2.6. Demineralized Water

Demineralized water will serve as make-up to the sulfuric acid plant boiler systems. The demineralized water system will consist of filtration and an ion exchange unit which will treat the incoming water stream, made up of cooled process condensate. Water will be treated to the American Society of Mechanical Engineers (ASME) recommended standards for boiler feedwater service based on 900 psig steam drum pressure. Regeneration of the ion exchange system will be via sulfuric acid and caustic soda by a specialist vendor. Waste discharge from the demineralized water system will be routed to the leaching vats.

14.5.2.7. Potable Water

Potable water will be derived from the process water supply system. Process water will be treated to potable water standards and distributed to restrooms, break rooms, eye wash stations, and safety shower units. Chlorinated bottled water will be brought in from offsite.

14.5.2.8. Hot Water System

Hot water will be generated from the sulfuric acid plant main acid cooler at 80ºC (176°F). The hot water will be used in the processing facility for preheating low temperature brines exiting the CRZ1, CRZ2 and CRZ3 crystallizer systems and will reduce the overall low-pressure steam demand. The hot water system will be closed loop and use high quality water that will be supplied by the process condensate and demineralization system. Heat not used in the processing facility will be rejected to the cooling water system via indirect heat exchange to ensure the feed temperature to the main acid cooler is on specification. Hot water will be distributed and collected via piping routed along the pipe racks.

14.5.3. Other Utilities

14.5.3.1. Steam

Superheated steam will be delivered from the sulfuric acid plant at 870 psig and 465ºC (869°F). The steam turbine generator will receive high-pressure steam for electricity generation. Low- and medium-pressure steam will be let down from the steam turbine as utilities for usage in the processing plant, at 50 and 145 psig, respectively. The low- and medium-pressure steam will be routed from the battery limits of the steam turbine generator plant and routed along pipe racks. Any remaining steam exiting the turbine will be indirectly condensed to liquid via heat exchanger and routed back to the sulfuric acid plant via the condensate return system. Condensate recovered will also be returned to the sulfuric acid plant boiler system. Condensate pH will be monitored to protect process equipment against accidental sulfuric acid contamination of the steam system.

14.5.3.2. Compressed Air

The compressed air system will consist of one air compressor, one air dryer, coalescing filters, particulate filters, and air receiver tanks for instrument air service in the process areas of the plant. The entire compressed air stream will be dried to instrument air quality and distributed via pipe racks. This service will be primarily for instrument usage. Per zero-based design, there will be no utility station for maintenance use within the processing facilities. Backup compressed air service will be provided through an auxiliary compressed air connection to allow for use of a portable rental unit to be delivered to the site in the event of compressor maintenance.

Low pressure compressed air (air blower) will be required for process use, namely for the flotation units and filter presses. The filter press air compressors have been specified as dry-type air compressors suitable for instrument air service. As such, they will be able to provide temporary supply of instrument air in turndown state if required. This compressed air system will not be able to meet demand at 100% production rates.

14.5.3.3. Fuels

Diesel will be delivered by bulk tanker truck and will be pumped into the process plant diesel fuel storage tank. Diesel will be used as fuel for mine vehicles and equipment.

Gasoline will be delivered by bulk tanker truck and will be pumped into the process plant gasoline storage tank. Gasoline will be used as fuel for operator trucks and mine equipment.

14.5.4. Reagents

Reagent systems will provide elemental sulfur, hydrated lime, soda ash, and caustic soda and other minor reagents to the applicable process facilities and ancillaries. Such systems include storage bins, conveyor systems, mixing tanks, pumps and piping for distribution. Expected annual consumption rates for the design case (i.e. 100% availability) and life of mine average by the major reagents are provided in Table 14-4.

Table 14-4 - Reagent Consumption Data

Reagent	Design Annual Consumption tpa (stpa)	Average Annual Consumption over Life of Mine tpa (stpa)
Sulfur (prill)	412,769 (455,000)	367,410 (405,000)
Hydrated lime	72,303 (79,700)	70,760 (78,000)
Soda ash	63,684 (70,200)	54,431 (60,000)
Caustic soda (50% NaOH)	29 (32)	29 (32)
Gypsum	11,703 (12,900)	10,886 (12,000)

14.5.4.1. Hydrated Lime

Hydrated lime ($Ca(OH)_2$) will be trucked to the site and pneumatically conveyed to the lime silos. From the silos, the lime will be metered into the lime mixing tanks using rotary valves and screw conveyors.

Lime will be used in both impurity removal unit operations (IR1 and IR2) to precipitate the impurities. For IR1, the lime will be mixed with the IR1 washate and pumped to the IR1 lime storage tank. This lime slurry will be diluted to 12% concentration by weight before will be pumped to the IR1 reactors. For IR2, the lime will be mixed with mother liquor from EVP2 and pumped to the IR2 lime storage tank. The lime will be diluted to 12% concentration by weight for distribution to the IR2 precipitation tanks.

Lime will be constantly recirculated in both circuits through ring mains to prevent scaling in the piping distribution networks.

14.5.4.2. Soda Ash

Soda ash will be delivered to site via bulk transport truck and will be pneumatically conveyed to a soda ash silo. From the silo, two process streams of soda ash solutions will be prepared: one for the acid plant and the other for the lithium circuit. Two separate makeup systems will be required to permit the use of different makeup solutions and concentrations. Soda ash will be metered into the respective solution preparation tanks from the soda ash silo via rotary valve and screw conveyors.

For the sulfuric acid plant soda ash stream, batches of dry soda ash will be mixed with hot process condensate in an agitated solution preparation tank. From this tank, the mixed solution will be pumped to a sulfuric acid plant soda ash solution storage tank and then pumped to the acid plant for tail gas scrubbing. The system will be designed to operate between 10-20 wt% soda ash, which is suitable for winter and summer conditions.

For the lithium circuit soda ash stream, the dry soda ash will be batch mixed with washate from the lithium carbonate belt filter in the preparation tank. The soda ash solution will be filtered to remove impurities. The filter cake will be repulped and transferred to the IR2 system for recovery of precipitated lithium carbonate and use in the IR2 solids handling systems. The clean soda ash solution will be sent to storage before being pumped to the three lithium carbonate reactors.

14.5.4.3. Gypsum

Gypsum ($CaSO_4$-$2H_2O$) will be used as a seeding material to mitigate scaling of the 1st and 2nd effect heat exchanger tubes to prevent the loss of heat transfer efficiency and evaporation capacity. To be an effective seeding material, gypsum must be converted to hemihydrate form. Gypsum will be delivered to site via super sacks and unloaded intermittently into the seed re-slurry tanks where it will be slurried in IR1 mother liquor and held at temperature for 24 hours to convert to calcium sulfate hemihydrate ($CaSO_4$-$0.5H_2O$). Calcium sulfate hemihydrate will be pumped to the EVP1 system to seed the 1st and 2nd effects.

14.5.4.4. Caustic Soda

Caustic soda (NaOH) will be used in the demineralized water plant for the treatment package resin regeneration and to neutralize any free acid after carbonate destruction of the EVP2 feed. For the demineralized water treatment plant, caustic soda at 50 w/w% concentration will be pumped from totes and diluted to 20% prior to transfer. For free acid neutralization in the EVP2 feed, caustic soda will be pumped from a tote and delivered in-line.

14.5.4.5. Sulfuric Acid

Concentrated sulfuric acid (98.5%) will be produced onsite for use throughout the processing plant.

For the regeneration of the water demineralizing treatment package resin, a local tote will be refilled via a pipeline from the sulfuric acid storage tank onsite. It will be diluted to 20% concentration for use in the demineralized water plant. A separate tote will be used for the dilution make-up system and will be supplied through metering pumps to the user.

For hot commissioning and start-up of the sulfuric acid plant, concentrated sulfuric acid (will be delivered using tanker trunks and will be pumped to the sulfuric acid storage tanks. The acid will be pumped from the storage tanks to the sulfuric acid plant pump tanks for circulation within the plant’s absorption towers.

14.5.4.6. Cooling Tower Chemicals

Cooling tower chemicals will be delivered in totes and stored in the cooling tower area or warehouse. The chemicals will be used as is or diluted with potable water to the required concentration as advised by the cooling tower water treatment vendor for use in the cooling tower. A separate tote will be used as dilution make-up system and supplied via metering pumps to the cooling tower. Cooling tower chemicals will include:

- Corrosion inhibitor;
- Biocide;
- Anti-scalant.

Cooling tower blowdown will be directed to leach wash water tanks for reuse in the leaching system.

14.5.4.7. Boiler Chemicals

Boiler and boiler feed treatment chemicals will be delivered in totes and stored in the warehouse. The chemicals will be used as such or diluted with potable water to required concentration as advised by the boiler vendor for use in the boiler system. A separate tote will be used as dilution make-up system and supplied via metering pumps to the boilers. Boiler chemicals will include:

- Corrosion inhibitor;
- Liquid phosphate;
- Oxygen scavenger.

14.5.4.8. Elemental Sulfur

The sulfuric acid plant is designed to receive both liquid and prilled elemental sulfur feedstock. The system is designed to operate on 100% prill, 100% liquid, or a combination of both sources. The overall energy balance will be able to accommodate either feedstock.

Liquid sulfur will be delivered using specialty liquid sulfur tanker trucks and be unloaded via pumps to the liquid sulfur storage tanks. From these storage tanks, the liquid sulfur will be pumped to the sulfuric acid plant for use. Prilled sulfur will be received in specialty sulfur prill trucks and unloaded into dedicated sulfur prill pile. Prilled sulfur will be loaded into specialized brick lined pits where steam will be used to melt the prills into liquid sulfur. Lime will be added as required for neutralization. The liquid sulfur will be filtered and pumped to a common liquid sulfur storage tank.

Elemental sulfur will be one of the main consumables contributing to the plant operating costs. The sulfuric acid plant production rate will be fixed at 3,500 t/d (3,858 st/d) (on a 100% sulfuric acid basis), which corresponds to a consumption of about 1,143 t/d (1,260 st/d) of liquid sulfur. The produced acid concentration is 98.5 wt%. Acid consumption will be dependent on the ore leaching characteristics, and thus the throughput of run of quarry ore will be adjusted to ensure that 100% of the acid produced is consumed.

A sulfuric acid consumption model was developed and verified based on leach testing as shown in Figure 14-6. This figure demonstrates a reasonable prediction of sulfuric acid consumptions based on leach test results and the ore geochemical characteristics.

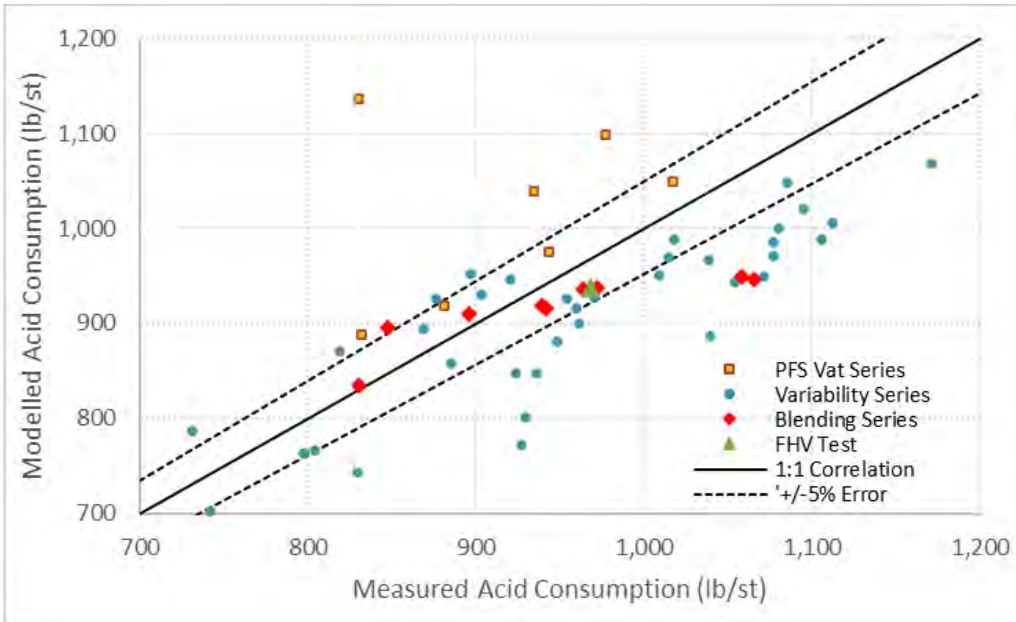


Figure 14-6 - Rhyolite Ridge Acid Consumption Model Verification

Source: Fluor, 2020

14.5.4.9. Laboratory Chemicals

Laboratory chemicals will be supplied to the site in bottles and small bags based on supplier packaging and requirements. They will be stored in the metallurgical laboratory chemicals storage area. These chemicals will be used as is or diluted with deionized water to the required concentration, as needed for lab analyses. The laboratory chemicals include:

- Hydrochloric acid;
- Hydrogen peroxide;
- Nitric acid;
- Sodium peroxide;
- Soda ash.

Byproducts from the laboratory (e.g., ore and byproduct residues and solutions) will be reintroduced to the leaching area as part of the overall waste minimization management strategy. The chemical composition of the laboratory wastes will be in general comparable to those present in the planned processing facility.

14.5.5. Personnel

While the mine is operating, ioneer estimates a staff of approximately 100 workers for the planned processing facility. The number of staff in the processing facility is expected to remain mostly unchanged throughout the plant operation. The staff will include a mix of skilled workers plus several management personnel.

15. INFRASTRUCTURE

The Project is a greenfield project remote from existing infrastructure.

Key infrastructure required to support the Project will include the following:

- Process plant;
- Assay and metallurgical lab;
- Access through paved state and local county roads;
- Haul roads;
- Pit dewatering and monitoring wells;
- First aid and communications building;
- Explosives storage area;
- Steam turbine generator power plant;
- Spent ore storage facility;
- Switchgear and electrical distribution system;
- Emergency facilities;
- Water systems;
- Sedimentation and contact water ponds;
- Truck shop;
- Fueling station;
- Lunch facility building;
- Administrative building.

The overall proposed site plan is shown in Figure 15-1. A layout plan for the process plant is provided in Figure 15-2. The mill site claims boundary map is displayed in Figure 15-3.

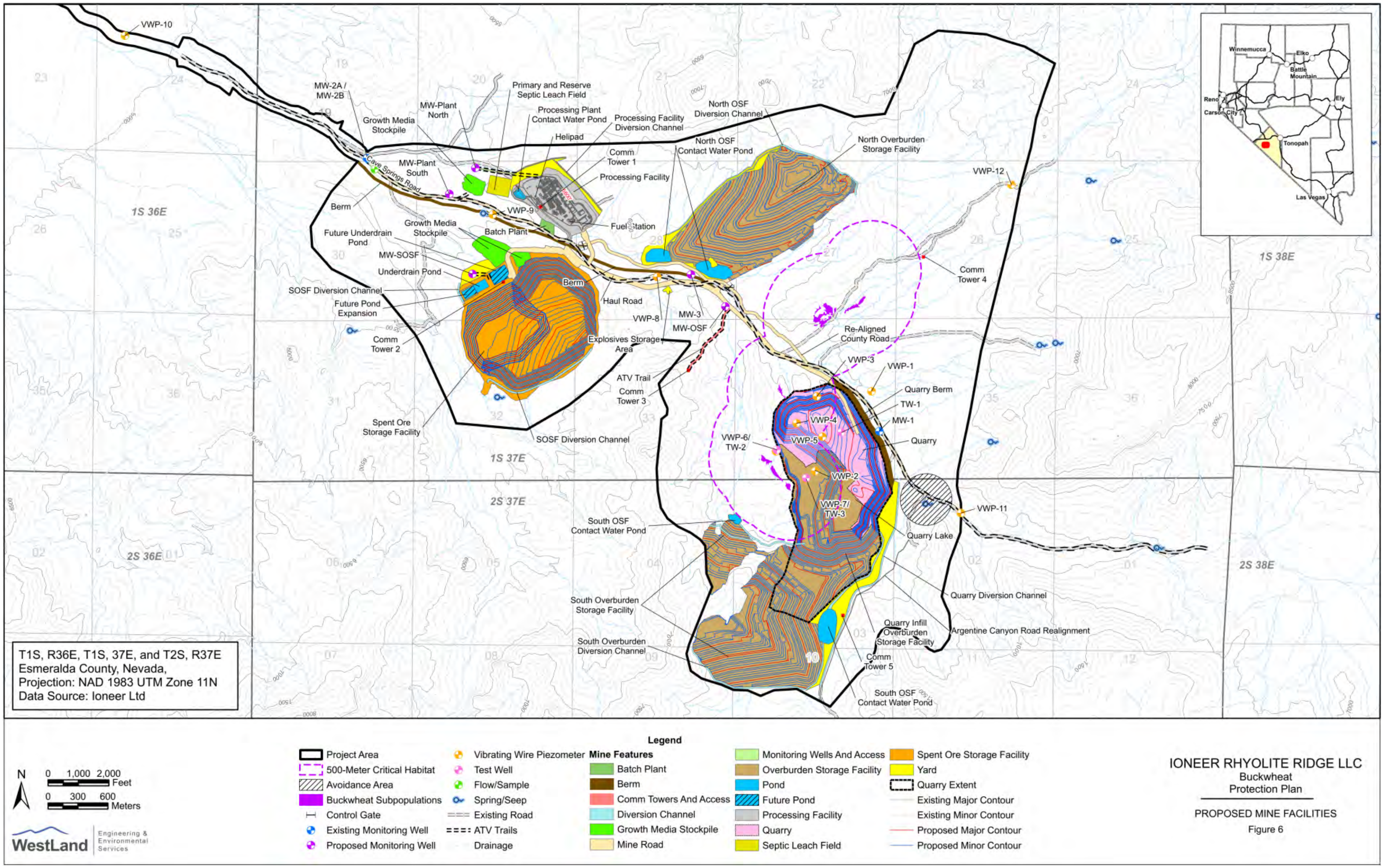


Figure 15-1 - Overall proposed site plan

Source: Ioneer, 2024

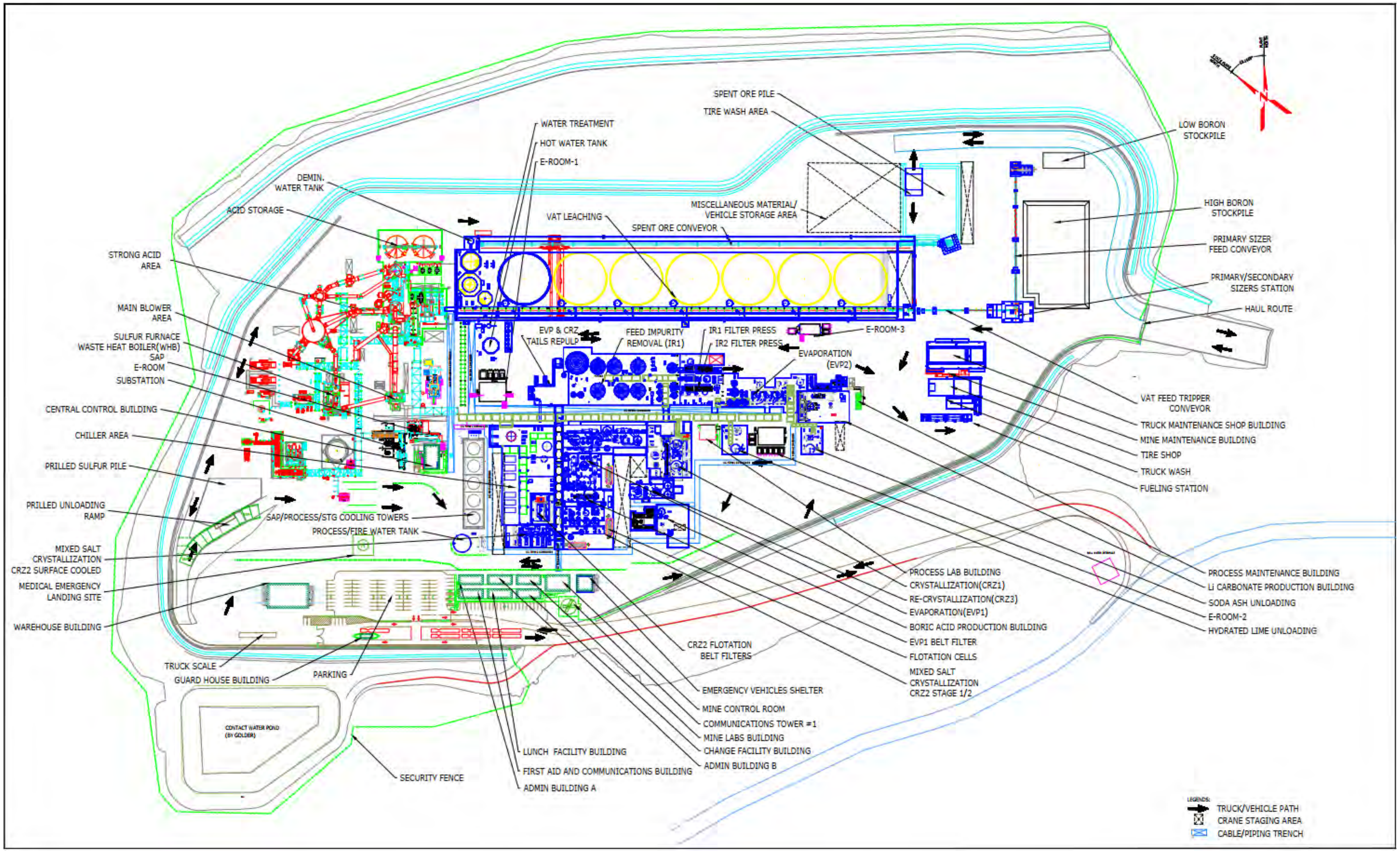


Figure 15-2 – Process Plant Area Schematic

Source: Ioneer, 2024

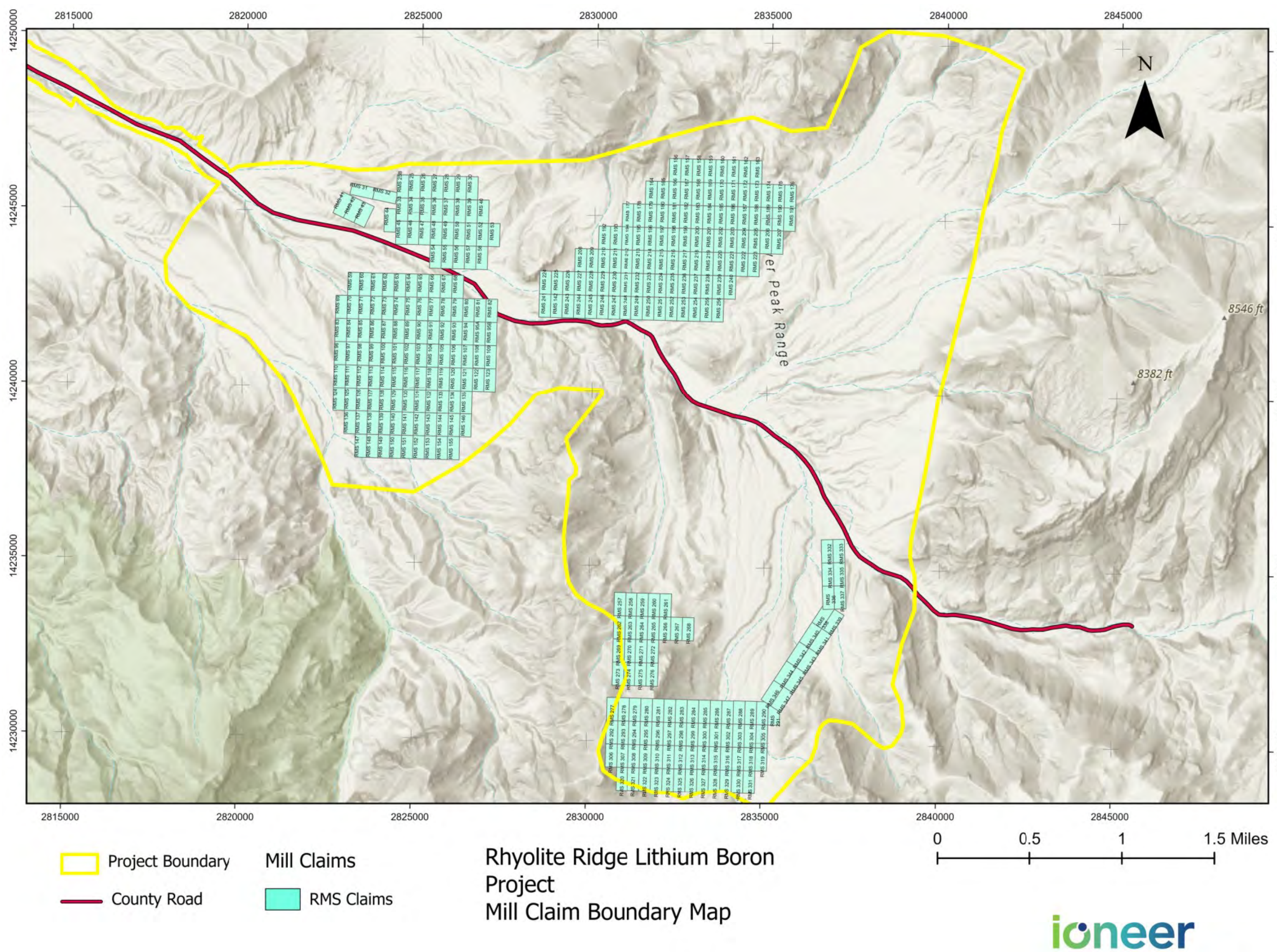


Figure 15-3 – Mill Site Claims Boundary Map

Source: Ioneer, 2024

15.1. Roads and Logistics

15.1.1. Site Access

The Project site can be accessed from Dyer via Highway 264 or from Tonopah via Highways 95 and/or 265. Each of the highways are connected to unpaved county roads that lead directly to the Project site. ioneer is responsible for road maintenance for the access road/ other small roads per an agreement with Esmeralda County officials.

15.1.2. Roads and Logistics

The Project will upgrade the existing county road from Highway 264 allowing this to serve as the main access road to the facility. The site access road will be sized to accommodate two-way traffic of plant personnel vehicles and semi-trucks making regular deliveries to the site. The Project is anticipating 24-hour delivery/shipment schedule. It is estimated that approximately 115 round-trips per day will be made by trucks bringing needed materials and supplies to the site and transporting product from the site. It is anticipated the trucks transporting these goods will range in size from single- to double-axle tractor trailers and will operate every day, to the extent possible. Portions of the existing county road will be re-aligned within the Project area to improve separation with the haul road.

Service roads and haul roads are two primary types of roads that will be constructed within the operational Project area. Appropriate drainage controls for runoff and sediment are incorporated into roadway designs. Service roads are designed to not exceed an 8 percent grade (nominal) and will be constructed to move equipment and supplies between the various Project components as well as to provide for light vehicles. The service roads will be approximately 6 m (20 ft) (nominal) wide plus shoulders, sufficient to safely pass equipment and supplies.

Haul roads, constructed with a maximum grade of 10 percent (nominal), will be maintained on a routine basis to ensure safe, efficient haulage operations and to minimize fugitive dust and diesel emissions. These roads will be constructed as close to natural ground as possible, with balanced cut/ fill widening as necessary. Haul roads will allow haul trucks to transport ore, overburden, and spent ore between the mine, processing plant area, ore storage facility (OSF), and spent ore storage facility (SOSF). There will be enough space for safe passage of two 150-ton haul trucks, safety berms and surface water runoff control systems.

Haul roads constructed along the side of the mine to form a ramp for overburden and ore transport and access will be a maximum of 32 m (105 ft) wide (including a berm and drainage) and will allow for two-way haul truck traffic. If required, periodic pullouts will be built into the wall. Both the ramp out of the mine and the ramp onto the ore storage facility will include one turnaround or switchback to allow sufficient driving distance to maintain ramp grade.

All roads will be constructed using in-situ material; inert overburden rock may be used as supplemental material as necessary, either during construction or as part of subsequent maintenance activities

All service and haul roads will be maintained according to Mine Safety and Health Administration standards, including safety berms at least half the wheel height of the largest vehicle utilizing the road. Roads will also be built in a manner that accommodates drainage and sediment controls. Dust will be controlled with water trucks and/or an approved chemical binding agent such as magnesium chloride. The haul roads will cross existing county roads. A traffic control system will be installed between the two intersections that will be created as a result of the road realignment in order to maintain safety of the public as well as Project employees. The two intersections will be located at the haul road/Cave Springs Road crossing near the processing facility and at the haul road/ Cave Springs Road crossing for the north ore storage facility access. The proposed traffic control system includes the installation of two "railroad-style" crossing gates; one at the intersection of Cave Springs Road and haul road near the processing facility (West Gate), and the other at Cave Springs Road and the north ore storage facility haul road (East Gate). The gates will always be closed and all traffic on Cave Springs Road will be stopped. The West Gate will have a guard station that will be staffed 24-hours per day. The East Gate will have a call box that is connected to the gate station. When traffic arrives at the gates, the traffic will be escorted by a pilot car. A two-way stop sign will be installed on Cave Springs Road at its intersection with the service road to the explosives storage area.

In addition to service and haul roads, several overland all-terrain vehicle trails will be present during operations to access communication towers and environmental monitoring sites. Other ancillary roads will be constructed to reach monitoring wells and planned resource exploration sites within the operational Project area. These roads will range from overland travel routes to roadways approximately 4.6 m (15 ft) wide and will be designed for occasional use. They are not expected to require safety berms and will be signed and closed when not in use.

Rail and rivers are not relevant to the Project. Project infrastructure does not include port facilities.

15.2. Onsite Power Plant

Electrical power necessary to operate the process plant will be supplied by the onsite steam turbine generator (power plant, as the Project facilities will not be connected to Nevada power grid. The steam turbine generator has a design capacity of 42 MW although actual power output will vary depending on the operation conditions. Two 3 MW diesel generator units (producing power at 4.16 kV) and a high-pressure auxiliary boiler are included to facilitate the black start of the sulfuric acid plant, as well as to support emergency and critical power requirements when the steam turbine generator is offline.

The power plant will consist of a steam turbine generator with high-pressure and low-pressure steam control valves, safety valves, silencers, and supporting equipment. The power plant will be designed to receive high pressure steam from the waste heat boiler of the sulfuric acid plant during normal operation, or from the auxiliary boiler during black start operation. The steam turbine will be capable of providing extraction of low pressure and medium pressure steam to process end users. A water-cooled condenser will receive and condense steam loads. The condensate will be collected and pumped back to the sulfuric acid plant battery limit by condensate pumps.

The electrical system consists of a steam turbine generator that will feed the main 13.8 kV switchgear. This switchgear will feed the process plant and the sulfuric acid plant. There will be a sulfuric acid plant substation (E-house) which will have a 4.16 kV switchgear, a 480 V switchgear and MCCs that will feed all the medium voltage and low voltage loads. The process plant will have three (3) substations (E-houses).

The E-houses will be equipped with HVAC system and will be ventilated and pressurized with filtered outside air to maintain an adequate temperature for the equipment located inside the room. The E-houses will also have a fire detection alarm system and fire extinguishers.

Safety grounding networks and connections, modern feeder protection relays, and interlocking systems are included in the designs to provide a high level of safety to operation and maintenance staff. The utilities area, the power plant, and the sulfuric acid plant will normally be monitored and controlled from a control room. A power management system (PMS) will be provided in order to monitor and control the onsite power plant and distribution network substations. The remote communication towers are planned to be powered by solar and/or wind with battery back-up.

Majority of electrical cables will be placed in trays and will be located on the top level of pipe racks. Directly buried cables will only be located in areas of no or light vehicle traffic.

15.3. Sulfuric Acid Plant

A 3,858 short tons per day (stpd) (100% H_2SO_4 basis) double absorption, sulfur-burning sulfuric acid plant will produce sulfuric acid at a concentration of 98.5% to be used for the vat leaching of the ore.

Clean molten sulfur will be delivered to site with special purpose tanker trailers and unloaded by gravity into the sulfur unloading/ receiving pit. Two tanker trailers can park, one on each side of the pit and simultaneously unload the molten sulfur. Level control instruments are installed on the receiving pit. The sulfur transfer pump is used to transfer the sulfur into the molten sulfur storage tank.

In case of limited availability of molten sulfur supply chain capacity, the plant can also process solid (prilled) sulfur as a feedstock. Sulfur will arrive to site via covered dump trucks which will unload onto a designated area, an outdoor storage area with bund walls for containment. A front-end loader will place prilled sulfur into the receiving hopper and it will be transported by conveyor to the sulfur melter. The melter is stirred by agitators and is heated by steam coils which supply enough heat to melt the sulfur at the required rate. The molten sulfur is then pumped through the sulfur filters which remove all dirt and impurities. The filters are leaf type units and use diatomaceous earth as a filtration medium. The clean sulfur is then sent to the clean sulfur storage tank.

Liquid sulfur will then be burned (1,265 stpd) in the sulfur furnace with an excess of dry air, producing sulfur dioxide (SO_2) gas. A waste heat boiler will be used to extract excess heat from the combustion gas and produce high pressure steam, which will be used in the steam turbine in the onsite power plant (see Section 15.2).

The SO_2 gas will report to a four-pass catalytic converter of vanadium penta-oxide catalyst, which will convert approximately 99.7% of the SO_2 to SO_3. The SO_3 will then be absorbed into sulfuric acid in the interpass and final strong acid towers, and the sulfuric acid will report to two product acid storage tanks. The process gas from the final absorption tower will pass to a tail gas scrubber to remove most of the remaining SO_2. Tail gas to the atmosphere will contain less than 11.5 ppm SO_2 and 15 ppm NO_x, allowing the sulfuric acid plant to meet an emissions limit of 80 short tons per annum SO_2. If the NO_x guarantee is not met, an eNO_x system will be installed between the final acid tower and the tail gas scrubber.

The plant has a design life of 10 years, and with proper maintenance and spare parts available an acid plant can operate for 2-3 years in between shutdowns, 24 hours per day with a plant utilization of 98% (excluding a three-week major shutdown every 2–3 years).

An overview of the sulfuric acid plant is shown in Figure 15-4.

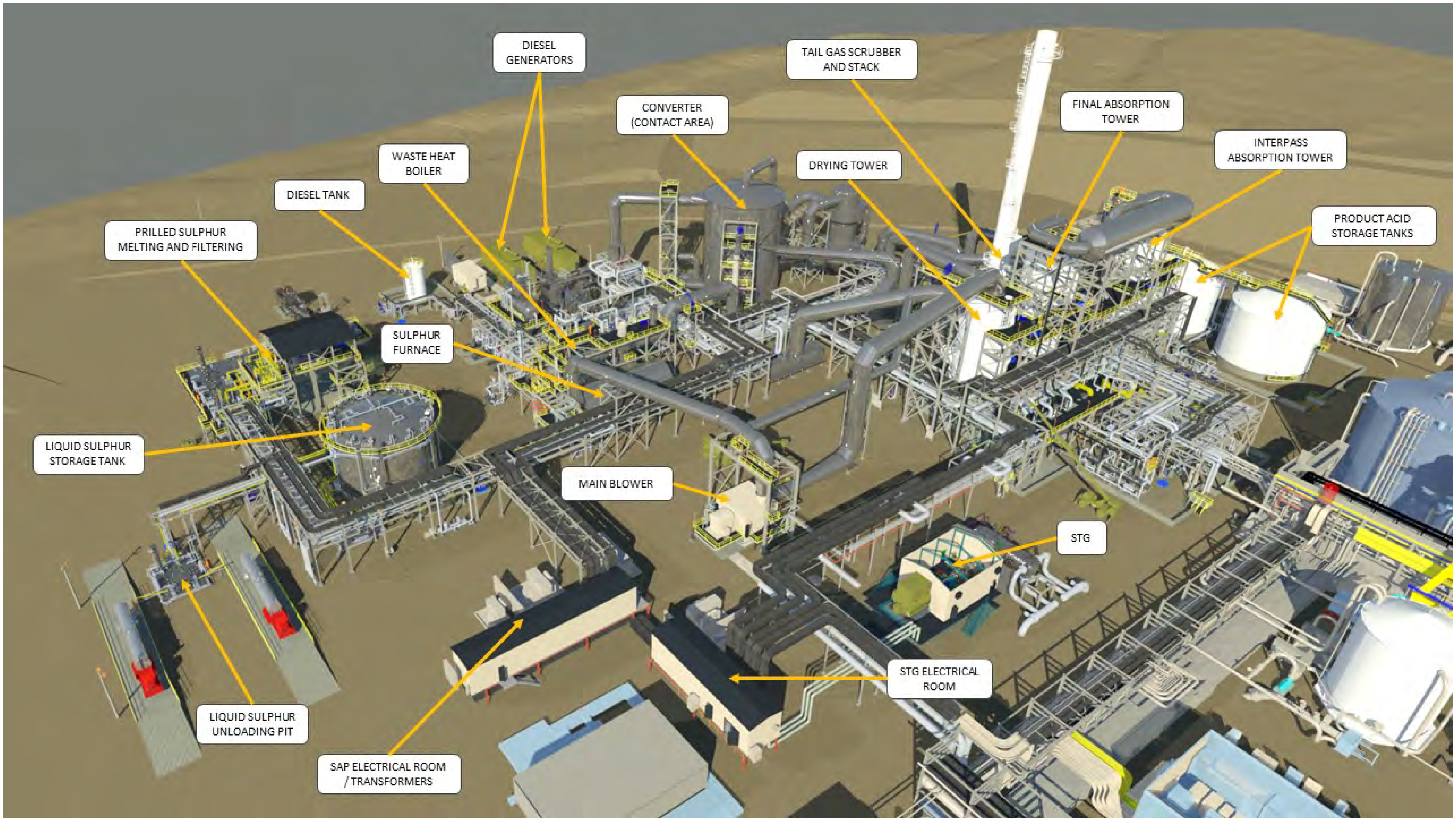


Figure 15-4 Schematic View of Sulfuric Acid Plant

Source: AtkinsRéalis, 2024

15.4. Water Usage

The primary source of water supply to the processing facilities will be ground water from wells located in the Fish Lake Valley agricultural area at White Mountain ranch (4830 ft ASL) and piped to the process and fire water tank in the processing plant (5644 ft ASL). The proposed pipeline is shown on Figure 15-5. The well pumps will be connected to the local grid and the booster pumps will be powered from the process plant via overhead electrical lines. Secondary sources of water supply will be from contact water from captured storm water that has been diverted to contact water ponds as well as water from dewatering the mine.

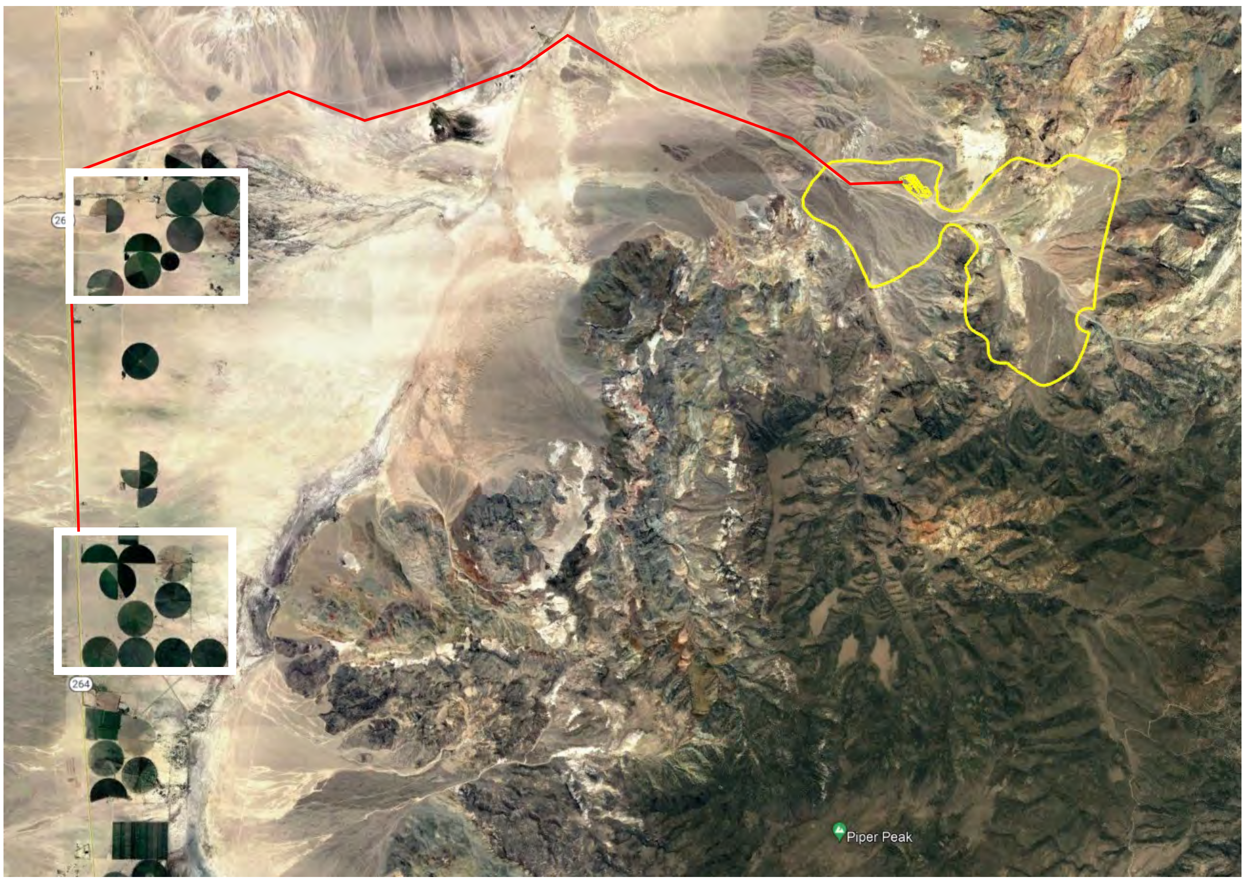


Figure 15-5 – Proposed Water Supply Pipeline from White Mountain Ranch to the Processing Facility

Source: Ioneer, 2024

There will be contact ponds in the processing area, spent ore storage facility, and the overburden storage facility. Water from the spent ore storage facility contact pond will be trucked to the processing area contact pond. The water from the contact ponds will be tested and recycled if contaminants are within acceptable levels. Water with suitably low contamination levels will be combined with ground water from on-site wells and integrated into the process water distribution system using pipelines to provide water for site needs (i.e., make-up process water, dust control, fire suppression etc.), with water recycling and reuse systems in place where possible. Total nitrates, oil content, and organic matter will be monitored as it can potentially disrupt process operations. Total nitrates will be managed by controlling the recycle rate from the ponds to limit total nitrate content in the leach system to < 10 mg/L. Limits on oil is expected to be similar to API separator discharge specifications of 10-15 mg/L and organic matter will be assessed on a case-by-case basis. If the water is unsuitable for immediate return, temporary oil water separators to skim oil, chemicals to promote precipitation, or biocides to sterilize growth will be utilized. Approximately 50% of the processing facility water used will be recycled.

Process water used with the process area for the tire shop, tire wash, wash-down bay, and other ancillary buildings are expected to be recycled with continuous oil skimming. Any disposal necessary will be done offsite.

Process water used for process, fire, and domestic uses will be distributed with adequate flow and pressure at all points of usage and will meet requirements of American Water Works Association Standards and local codes. A process & fire water storage tank and pumps will be provided for all required process uses and firewater demand. Hydrants are proposed for covering the whole process plant area for fire protection. Potable water will be derived from the process water supply system and will be treated as required. During construction, temporary distribution service for raw water, potable water and wastewater will be set up. Sanitary sewer holding tank with plumbing for officer trailers will be provided as well as toilet trailers for construction team.

A site-wide operational water balance model was developed to evaluate the Project water demand and water availability. It is anticipated that this water balance model will serve as a long-term and operational tool that will be updated as additional information becomes available. A significant portion of the Project's water usage will be derived from external sources (i.e., not reclaimed from on-site sources). The water usage for construction and operations are estimated at 300 gpm and 2500 gpm, respectively. Ioneer has agreements in place with three owners for water rights. Ioneer has a lease secured with one property and options on the other two.

15.5. Accommodation

No accommodation facilities are planned. Specific considerations regarding accommodations for the workforce are outlined in Section 4.4.2.

15.6. Spent Ore Storage Facility

Byproducts from the leaching and mineral extraction process including spent ore, sulfate salts, and precipitation filter cake will be stored in the spent ore storage facility. The spent ore storage facility is designed to be a zero-discharge facility and includes the necessary environmental containment, drainage, and collection systems to support these criteria. The waste material will be in solid form and thus suitable for dry stacking (mechanical haulage and placement). Since the waste materials will be in solid form throughout the operational life of the structure, there is no need for a conventional tailings dam.

The spent ore storage facility will be constructed in two phases (Figure 15-6), with each phase storing approximately 12 million short tons of composite material at an average dry unit weight of 65 pounds per cubic foot. An 80-mil, double-sided textured high-density polyethylene (HDPE) geomembrane liner will provide containment. To protect the geomembrane and facilitate long-term drainage of the composite materials, a granular layer is specified over the geomembrane liner. The location of the spent ore storage facility is in the southwest portion of the Project area, approximately one mile south of the processing facilities with the spent ore and composite materials trucked from the processing plant and spread onto the spent ore storage facility by dozer.

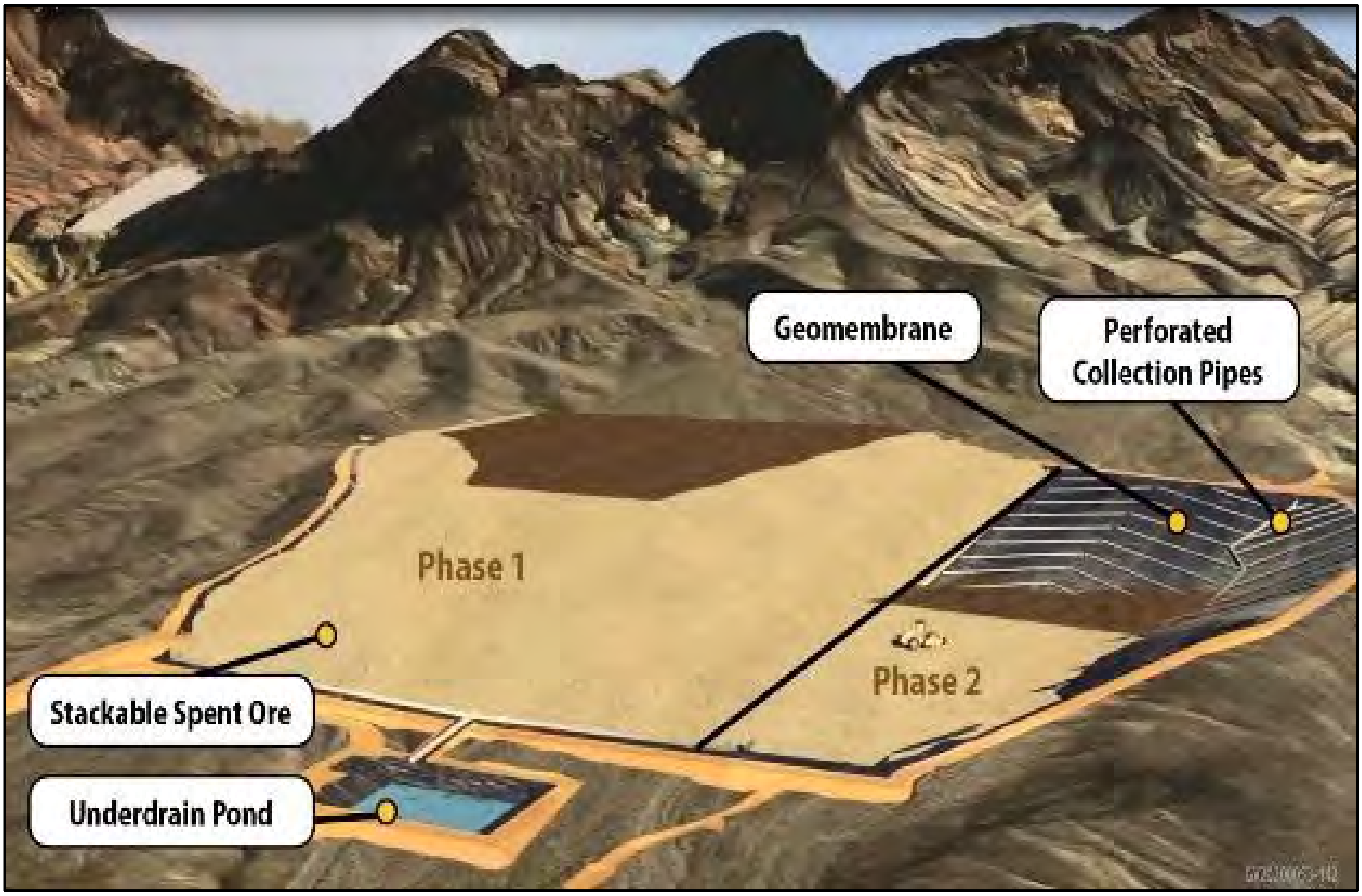


Figure 15-6 – Spent Ore Storage Facility Phases and Main Components

Source: NewFields, 2019a

The spent ore storage facility will include an underdrain pond and a perimeter road for light vehicle access. In its ultimate configuration, the spent ore storage facility will cover an area of approximately 135 acres and will provide permanent storage of approximately 24 million short tons of composite material. The maximum stacking height will be about 76 m (250 ft) above the geomembrane liner with an overall slope of 3H:1V.

The design of the spent ore storage facility includes the following components:

- Grading the base of the spent ore storage facility to provide a stable surface on which to stack spent ore and composite materials to a height of 76 m (250 ft) above the geomembrane lining system and promote collection of drain down solution;
- Lining the base of the spent ore storage facility with HDPE geomembrane;
- Installing a solution collection system over the geomembrane involving an overliner (comprising of a sand and gravel mixture developed from local borrow) with an integrated network of drainage pipe to enhance solution flow and route flow to the underdrain pond. The drainage system is intended to provide hydraulic relief to reduce the hydrostatic head on the geomembrane liner;
- Installing an underdrain pond to store runoff from the design storm event and drain down fluids from the spent ore storage facility;

A summary of operational parameters for the spent ore storage facility and properties of composite materials are provided in Table 15-1 and Table 15-2, respectively.

Table 15-1 – Spent Ore Storage Facility Operational Parameters

Description	Configuration	Comment
Yearly Waste Production Rate (Amount of dry material delivered to spent ore storage facility annually)	4.1 million short tons	
Composite Materials Ratios (dry)	12.8 : 6.4 : 1	Spent ore : sulfate salt : precip. filter cake
Composite Materials Dry Unit Weight (for sizing facility)	65 lb/ft^3	Value is estimated from existing laboratory data; moist unit weight = 85 lb/ft^3
Loading method for Structural Zone	Truck end dumped, spread by dozer, compacted	Structural zone to be compacted based on technical specifications
Loading method for Non-Structural Zone	Truck end dumped, spread by dozer, compacted	Compaction not required for stability; some compaction may be required for trafficability

Table 15-2 – Properties of Composite Materials

Description	Configuration	Comment
Spent Ore Properties		
Specific Gravity of Solids	2.33 – 2.55	Measured for B5 Stream 1 & 2, S5, L6, and M5
Compacted Dry Unit Weight	75 lb/ft^3	Compacted spent ore for structural zone
Permeability	1.0 x 10^{-6} cm/s	
Draindown	0.1 L/h/m^2	Kappes Cassiday Associates draindown results
Optimum Moisture content for compaction	38%	Moisture content sensitive to drying temperature
Spent Ore Moisture Content	26 – 43% (process definition)	
	35 – 75% (geotech definition)	
Temperature when placed on spent ore storage facility	60°C	Maximum
Sulfate Salts Properties		
Specific Gravity of Solids	Not measured	
Bulk Unit Weight	48 – 74 lb/ft^3 @ 32% moisture	Jenike & Johanson
Moisture Content	32%	Jenike & Johanson
Precipitate Filter Cake Properties		
Specific Gravity of Solids	2.42 – 2.65	EB6 and IR1 samples
Bulk Unit Weight	Not measured	
Moisture Content	56 – 67% (process)	

A geotechnical evaluation was completed to assess the overall stability of the composite materials disposed in the spent ore storage facility and estimate potential settlements in the foundation. In order to assess the spatial extent of the structural zone (i.e., where composite materials will require controlled placement and compaction), the stability evaluation was completed iteratively and was based on the material properties in Table 15-3 and seismic criteria presented in Table 15-4.

Table 15-3 - Properties Used in Stability Analysis

Material	Unit Weight (lb/ft^3)	Friction Angle (°)	Cohesion (lb/ft^3)
Spent Ore Storage Facility Structural Zone (compacted spent ore)	100	40 [1]	0
Spent Ore Storage Facility Non-Structural Zone (Uncompacted Composite Material)	85	25 [1]	0
Geomembrane Liner Interface	100	Nonlinear strength envelope [2]	
Common Fill	120	34	0
Foundation (Alluvium)	120	40	0

Notes:

2. Shear strength reduced by 20% for pseudostatic evaluation.
3. Nonlinear strength envelope is the power curve fit from the alluvium versus geomembrane interface shear test.

Table 15-4 - Summary of Seismic Criteria

Description	Configuration	Comment
Seismic Site Class	C	NewFields Geotechnical Data Report
Operational Basis Earthquake (OBE)	475 Year Recurrence Interval	10% Probability in 50 years
Peak Horizontal Ground Acceleration	0.31 g	USGS Unified Hazard Tool
Maximum Design Earthquake (MDE)	2,475 Year Recurrence Interval	2% Probability in 50 years
Peak Horizontal Ground Acceleration	0.63 g	USGS Unified Hazard Tool
Mean Magnitude Earthquake	6.48	
Mean Earthquake Distance	7.9 miles (12.6 kilometers)	

16. MARKET STUDIES

16.1. Lithium

16.1.1. Lithium Carbonate Price Basis for the Project

ioneer plans to produce technical-grade lithium carbonate during the first two years of Rhyolite Ridge operation, transitioning to battery-grade lithium hydroxide starting in year three. The price of lithium carbonates has experienced significant fluctuations over the last decade. Figure 16-1 indicates the historical spot price (median) of lithium carbonate from 2015 to 2024, along with a forecast for 2025, and includes the spot price of lithium hydroxide for comparison. As shown in the Figure 16-1, the carbonate price was lower than the hydroxide price from 2015 to 2025, except in 2021, and in the short term, it is expected to be higher. This is due to the increasing global adoption of lithium-iron phosphate (LFP) batteries, which offer lower costs and improved performance. For the financial model of the Project, price forecasts rather than the current or historic prices were used. This approach allows for better account for future market conditions and potential price trends, providing a more accurate financial assessment for the Project.

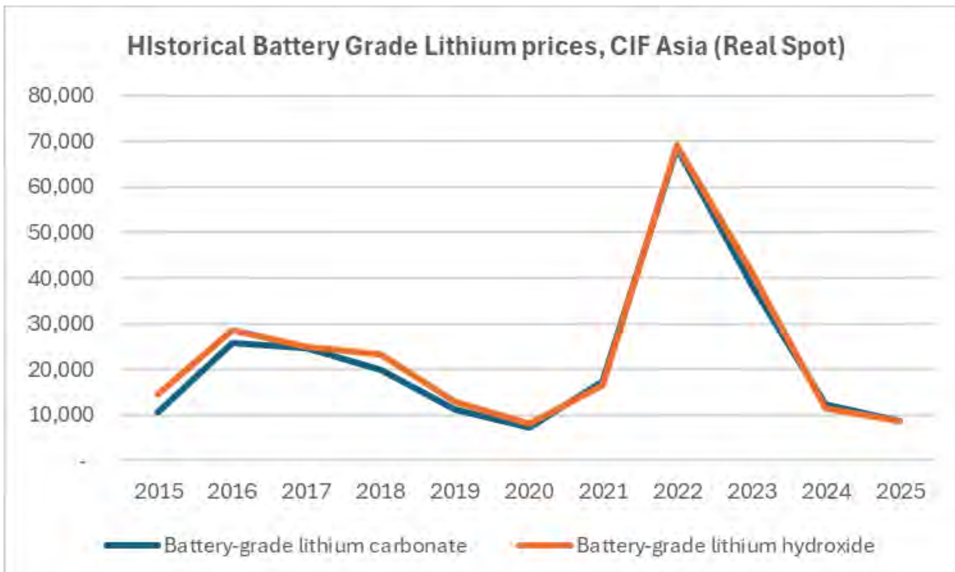


Figure 16-1 - Historic Spot Average Price of Lithium Carbonate and Lithium Hydroxide, CIF/Asia (US$/t)

Source: Wood Mackenzie, Argus Media Group, Global Trade Tracker, Fastmarkets, 2025
Notes: x-axis US$/metric tons

All offtake agreements for the Project have a price index formula for battery-grade lithium hydroxide and the Benchmark Minerals battery-grade lithium hydroxide price forecast (Q1, 2025) was used by ioneer to calculate the delivered price of lithium sold.

For market analysis and modelling, ioneer considers other third-party data sources as well, including Wood Mackenzie lithium carbonate and lithium hydroxide price forecasts and market commentary (Q2, 2025).

Since the offtake customers required battery-grade lithium hydroxide for cathode production for lithium cells, both parties agreed to use the battery-grade lithium hydroxide spot price index, on a 3-month average, as a basis. This technical-grade lithium carbonate price is then calculated using the agreed formula (shown in **Error! Reference source not found.**), which incorporates the agreed conversion cost and discounts.

The offtake agreements are negotiated with individual parties where prices of technical-grade lithium carbonate and battery-grade lithium hydroxide are based on a delivered price formula using a battery-grade lithium hydroxide index price (56.5%, CIF Asia, Japan, Korea, and North America) published on agreed upon third-party websites (e.g., Fastmarkets, Benchmark Minerals) within the timeframe of three months before the invoice date.

The delivered price incorporates negotiated terms between ioneer and offtake partner and represents the amount received for material that is delivered to the conversion or battery materials plant in North America and Cost, Insurance, and Freight (CIF) or Carriage and Insurance Paid To (CIP) for exports (until the US conversion plants are built and approved). Negotiated terms between ioneer and each offtake partner include some, or all of the following: 1) reductions to accommodate the offtake partner's additional conversion costs, 2) floor and ceiling price mechanisms, 3) discounts to third-party index prices, and 4) freight costs adjustments.

16.1.2. Lithium Supply and Demand

16.1.2.1. General Market

The current market demand for lithium is substantial, driven primarily by the increasing adoption of electric vehicles (EVs) and the growing use of lithium-ion batteries in various applications, including consumer electronics and energy storage systems. While the lithium market is currently experiencing some price pressures due to supply and demand dynamics, the long-term outlook remains positive, driven by the ongoing shift towards electric mobility and renewable energy storage solutions.

Lithium, which is extracted from primary or secondary sources, can be used to produce lithium carbonate, lithium hydroxide, lithium chloride, lithium sulfate, butyl lithium, and lithium metal. Lithium carbonate will be the primary form of lithium product from the Rhyolite Ridge Project. Lithium carbonate can be produced in different qualities, including industrial grade (typically 98.5% purity), technical grade (99% purity), and battery grade (≥ 99.5% purity). Some industrial-grade lithium carbonate (i.e., from brines in China) has a lower purity than 95%. Industrial-grade and technical-grade lithium carbonate are typically used in glass, as fluxing agents, for ceramics, and in lubricants. Battery-grade lithium carbonate is used to produce cathodes for lithium-ion batteries.

Different applications of lithium have varying quality requirements, including the type and content of impurities. For example, magnetic impurity specification (<50 ppb) is critical for battery-grade lithium hydroxide.

ioneer intends to produce technical-grade lithium carbonate for the first two years, and battery-grade lithium hydroxide from year 3 onwards, with the specifications of both products shown in Table 16-1.

Table 16-1 - ioneer Technical-Grade Lithium Carbonate and Battery Grade Lithium Hydroxide Specification

Battery Grade Lithium Carbonate		
Li_2CO_3	wt%	≥98.5%
Al	mg/kg	≤30
B	mg/kg	≤200
Ca	mg/kg	≤400
Fe	mg/kg	≤20
K	mg/kg	≤250
Mg	mg/kg	≤300
Na	mg/kg	≤600
SO_4	mg/kg	≤4000
LOI (550°C)	wt%	0.75

Battery Grade Lithium Hydroxide		
LiOH	wt%	≥56.5
Na	ppm	≤50
K	ppm	≤30
Fe	ppm	≤10
Ca	ppm	≤50
SO_4	ppm	≤200
Cl	ppm	≤20
Mg	ppm	≤30
Silica	ppm	≤50
CO_2	wt%	0.5

16.1.2.2. Lithium Supply

Lithium supply saw significant growth from 2023, following expansions driven by a shortage from 2021 to 2022. The surplus is expected to peak in 2027, after which supply growth will slow down, with demand growth surpassing supply and leading to a deficit from the early 2030s. (Wood Mackenzie, 2025). Spodumene (mineral concentrate) will remain dominant in the minerals market, while lepidolite is projected to grow robustly by 2025. In August 2025, Contemporary Amperex Technology Co. Limited (CATL) suspended its lepidolite mine due to the expiration of its permit, which accounts for approximately 3% of the global supply volume, thereby reducing oversupply slightly. Beyond Australia and China, new regions such as Zimbabwe, Mali, the US, and Canada are expected to enter the mineral supply market.

As shown in Figure 16-2, lithium supply (production-based, measured as lithium carbonate equivalent, LCE) is expected to increase from 2.01 million short tons (1.82 million metric tons) in 2025 to 3.38 million short tons (3.06 million metric tons) by 2035 to 4.49 million short tons (4.07 million metric tons) by 2040 and 5.24 million short tons (5.58 million metric tons) by 2050. Although China's production of refined lithium products is expected to continue outpacing the rest of the world until 2025, its share of the global supply is anticipated to decline, dropping from 61% in 2025 to 52% in 2035, to 48% by 2040, and further to 33% by 2050.

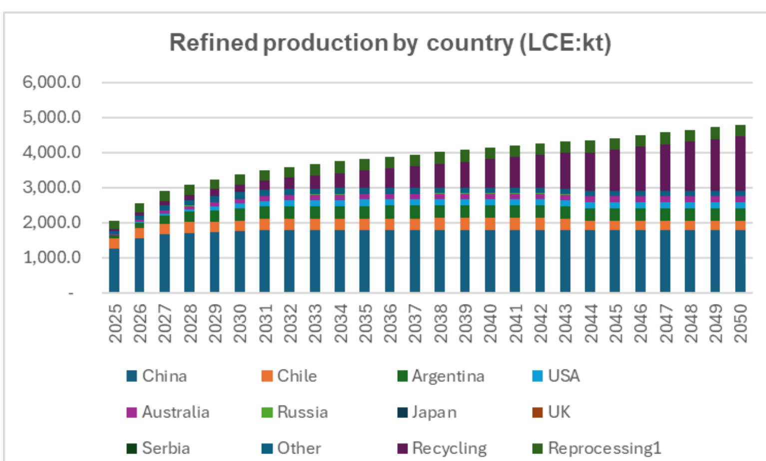


Figure 16-2 - Lithium Chemical Supply by Final Product (Counted as LCE), kt

Source: Wood Mackenzie, 2025

Notes:

1. x-axis in kt = thousand metric tons
2. Supply means production
3. 1 = carbonate, chloride, and sulfate reprocessing

16.1.2.3. Lithium Demand

The need for rechargeable batteries primarily drives demand for lithium. As illustrated in Figure 16-3, lithium demand (measured as lithium carbonate equivalent, LCE) is projected to grow rapidly from 1.66 million short tons (1.51 million metric tons) in 2025 to 2.76 million short tons (2.51 million metric tons) by 2030, to 3.98 million short tons (3.61 million metric tons) by 2035, to 4.89 million short tons (4.44 million metric tons) by 2040, and 6.42 million short tons (5.82 million metric tons) by 2050. The lithium demand from electric vehicles (EVs) alone is expected to increase from 962 thousand short tons (872 thousand metric tons) in 2025 to 3.61 million short tons (3.27 million metric tons) by 2040.

The demand for battery-grade lithium carbonate is underpinned by LFP increasing its market share in cathode chemistries. Driven by Chinese demand and broader global adoption, due to its cost-effectiveness and superior safety performance, as well as the US OEM shift from nickel-rich NCM (nickel, cobalt, and manganese) using battery-grade lithium hydroxide to mid-nickel NCM using battery-grade lithium carbonate to reduce cost. Furthermore, technological advancements in incorporating manganese into Lithium Iron Phosphate (LFP) and manganese-rich NCM offer higher density, providing a strong outlook for carbonates.

The demand for battery-grade lithium carbonate is expected to grow at a forecasted compound annual growth rate (CAGR) of 7.91% between 2025 and 2035 and is then projected to slow down to 3.02% between 2035 and 2040. This demand is projected to increase from 949 thousand short tons (861 thousand metric tons) in 2025 to 2.04 million short tons (1.85 million metric tons) by 2035 and 2.37 million short tons (2.15 million metric tons) by 2040.

The demand for battery-grade lithium hydroxide is expected to grow faster from 2030, primarily driven by high-nickel cathode chemistries, which are favored in Western countries where consumers prioritize long-distance driving and require more reliable, high-energy-density batteries.

The demand for battery-grade lithium hydroxide is anticipated to increase from 525 thousand short tons (476 thousand metric tons) in 2025 to 1.65 million short tons (1.50 million metric tons) by 2035 and 2.18 million short tons (1.98 million metric tons) by 2040, with a CAGR of 12.2% between 2025 and 2035, and 5.74% between 2035 and 2040.

In 2025, battery-grade lithium carbonate is expected to account for 57% of total lithium demand, decreasing gradually to 55.35% in 2030, 51.29% in 2035, 48.42% in 2040, and 43% by 2050, while battery-grade lithium hydroxide is expected to account for 31.53% in 2025, increasing gradually to 35.94% in 2030, 41.51% by 2035, 44.64% by 2040, and 44.77% by 2050.

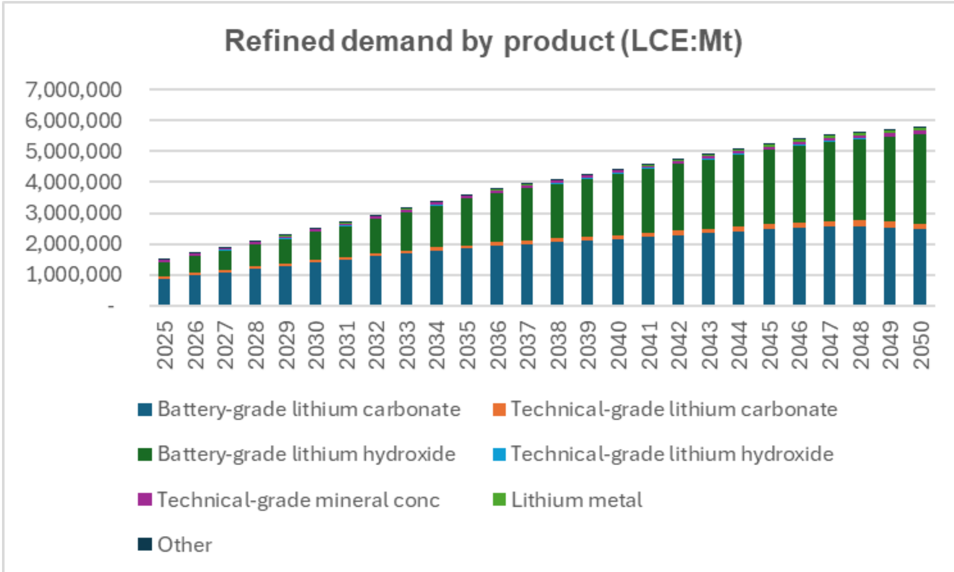


Figure 16-3 - Lithium Demand (LCE), Mt

Source: Wood Mackenzie, 2025
Notes: x-axis in Mt = metric tons

According to the base case presented by Benchmark Mineral Intelligence (Benchmark, 2025), BEV (battery electric vehicle) and PHEV (plug-in hybrid electric vehicle) sales totaled 17.5 million units across all vehicle types, showing a 26% year-over-year (y-o-y) increase, and are projected to reach 21.6 million units in 2025.

The growing EV market is responding to stricter carbon emissions rules, which are likely to significantly reduce internal combustion engine vehicle sales over time. Several countries and jurisdictions have developed plans or implemented regulations to phase out internal combustion engine vehicles, with some starting as early as 2025. In response, major automakers have also committed to fleet electrification and reaching carbon neutrality. These goals include reducing the use of internal combustion engine models and electrifying entire fleets. However, the Trump administration reduced EV incentives and subsidies, slowing EV adoption in the US. Some OEMs, such as Ford and General Motors, delayed their EV expansion plans in 2023 for several reasons, as stated below, and revised their battery chemistry to lower costs.

- Large financial losses;
- Poor sales performance due to higher EV prices compared to internal combustion engine vehicles; and
- Insufficient charging infrastructure.

The OEMs adopted LFP and shifted from nickel-rich to mid-nickel NCM battery chemistry, changing lithium requirements from battery-grade lithium hydroxide to battery-grade lithium carbonate.

These OEMs are expected to introduce more fleet types by 2026, achieving lower prices through technical innovation and expanding charging infrastructure to meet consumer needs. The impact of EV adoption on the lithium market is significant, with increased demand for Energy Storage Systems. A deep understanding of these trends will help ioneer to anticipate future demand and develop its production plan accordingly.

According to Wood Mackenzie, the production of refined lithium carbonate is projected to reach 1.02 million short tons (928 thousand metric tons) in 2025, 2.16 million short tons (1.96 million metric tons) by 2035, and 2.52 million short tons (2.29 million metric tons) by 2040.

Based on Wood Mackenzie's revised Q2 2025 forecast, the lithium market, which entered an oversupply in 2024, is expected to remain oversupplied until the early 2030s, due to an increased supply and lower-than-expected EV adoption in “Western” markets, with the surplus peaking in 2027. Then, the supply growth rate slows, and the demand growth rate will exceed the supply rate, leading to a shortage in the early 2030s, as shown in Figure 16-4.

In contrast, the Benchmark revised Q1 2025 forecast anticipates a surplus of 60,000 tons in 2026, followed by balanced market conditions in 2027–2028, and the deficit is expected to develop in 2029–2030.

It is essential to pay attention to the new supply risks in market balance forecasting. Discounting for possible and probable projects, Wood Mackenzie estimates that the surplus will decrease from 285 thousand short tons (258 thousand metric tons) in 2025 to 259 thousand short tons (235 thousand metric tons) in 2030, and reach market balance by 2032, and shift to a deficit of 561 thousand short tons (509 thousand metric tons) by 2035 with deficit continuing to increase. (Wood Mackenzie, 2025).

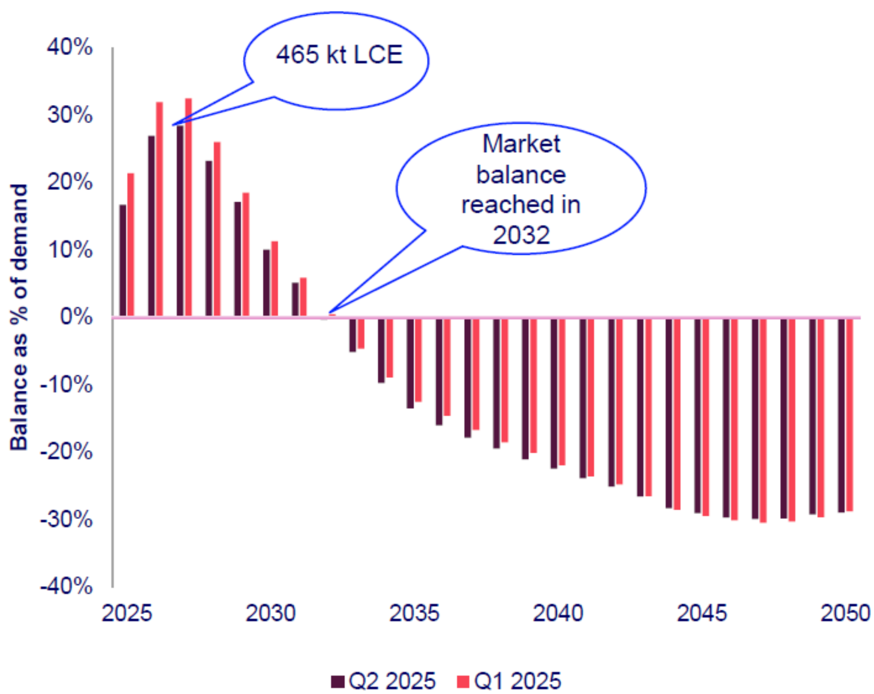


Figure 16-4 - Lithium Chemical Balance, %

Source: Wood Mackenzie, 2025

Notes:

1. X-axis is shown in % of lithium chemical balance
2. Refine lithium means chemical lithium

16.1.3. Lithium Customers and Competitor Analysis

For most of the volumes produced, ioneer will target customers in the EV sector. Suppose excess volume, with comparable prices to those of the EV sector, is available. In that case, small volumes will be sent to industrial market segments, specifically lithium glass and ceramics, to provide synergy to boric acid sales. The strategy is to diversify into different sectors of the battery supply chain. These market segments are expected to show significant growth rates, especially for battery-grade lithium.

Offtake agreements have been secured with four customers in the lithium-ion battery sector, who will further process the carbonate for their specific battery chemistry and battery supply chain needs.

The offtake agreements are entered into with diversified customers in various industrial sectors, such as cathode manufacturers, battery makers, and OEMs. These agreements are based on price formulas indexed by battery-grade lithium hydroxide, as indicated in Figure 16-1, and a total offtake volume of 22,322 short tons (18,250 metric tons) of technical-grade lithium carbonate a year. This offtake volume represents 88% of the planned average annual production volume up to 2040, which is approximately 23,862 short tons (21,647 metric tons) per year.

All the offtake agreements have a ramp-up risk clause, provisions to minimize the risks associated with increased and decreased production. Among these offtake agreements, two have ceiling and floor pricing mechanisms to diversify price opportunities, and all offtake agreements include the option to sell an additional 10% volume or less at ioneer's discretion. This enables the company to sell the entire planned production volume and mitigate production shortage risks.

Mineral concentrate (spodumene and lepidolite) is the largest mineral source for refined lithium products, of which spodumene is significantly the largest of all. Mineral concentrate production (counted as LCE) is expected to increase from 1.28 million short tons (1.16 million metric tons) in 2025 to 2.09 million short tons (1.90 million metric tons) in 2030, 2.17 million short tons (1.97 million metric tons) in 2035, and 2.17 million short tons (1.97 million metric tons) by 2040 (Wood Mackenzie, 2025).

Brine is another source of refined lithium products. Production from brine (measured as LCE) is expected to grow from 649 thousand short tons (589 thousand metric tons) in 2025 to 1.05 million short tons (949 thousand metric tons) in 2030, 1.11 million short tons (1.01 million metric tons) in 2035, and 1.12 million short tons (1.02 million metric tons) by 2040. The remaining refined lithium will come from secondary sources, such as recycling.

Major producers of lithium concentrates and brine, such as Albemarle, Sociedad Química y Minera de Chile (SQM), and Rio Tinto, continue to push for expanding their production capacity (Wood Mackenzie, 2025). Albemarle is currently undertaking a major expansion project to increase its capacity from 197.5 thousand short tons (179.1 thousand metric tons) in 2025 to 311.7 thousand short tons (282.8 thousand metric tons) in 2035, representing a 57% increase. SQM plans to raise its capacity from 266.7 thousand short tons (242.8 thousand metric tons) in 2025 to 302.5 thousand short tons (274.4 thousand metric tons) in 2035, a 13% increase. Rio Tinto's capacity is expected to grow significantly, from 102.2 thousand short tons (92.8 thousand metric tons) in 2025 to 260.4 thousand short tons (236.2 thousand metric tons) in 2035, representing a 255% increase. The largest Chinese producer, Ganfeng Lithium, is also expected to increase its capacity from 209.7 thousand short tons (190.2 thousand metric tons) in 2025 to 341.4 thousand short tons (309.7 thousand metric tons) in 2035, marking a 63% increase and potentially making it the world's largest lithium supplier. Existing producers have already faced significant price swings in recent years and are expected to actively work toward stabilizing and influencing the lithium market in the future.

16.1.4. Lithium Price and Volume Forecasts

According to Wood Mackenzie's estimates (2025), the lithium supplies experienced significant growth in 2023, following expansions driven by the shortage from 2021 to 2022. The surplus is expected to peak in 2027, after which supply growth will slow down, with demand growth surpassing supply and leading to a deficit from the early 2030s. (Wood Mackenzie, 2025). The market is expected to reach a balance in 2032, with a slight deficit of 30.3 thousand short tons (27.4 thousand metric tons). The deficit is projected to increase to 561.3 thousand short tons (509.2 thousand metric tons) by 2035, 1.13 million short tons (1.02 million metric tons) by 2040, and 1.89 million short tons (1.71 million metric tons) by 2050.

Benchmark Minerals Intelligence (2025) estimates a surplus of 66 thousand short tons (60 thousand metric tons) in 2026, followed by balanced market conditions in 2027–2028. During this period, macroeconomic challenges and the potential impact of tariffs will limit demand growth. Despite these short-term struggles, fundamentals indicate a resurgence of bullish sentiment later in the decade, and a deficit is expected to develop in 2029–2030. By 2031, the market is likely to rebalance as supply growth temporarily outpaces demand, although a widening supply gap is projected to re-emerge further down the line.

The graph below (Figure 16-5) shows the deficit increasing significantly from 2032 onwards, supporting the prices.

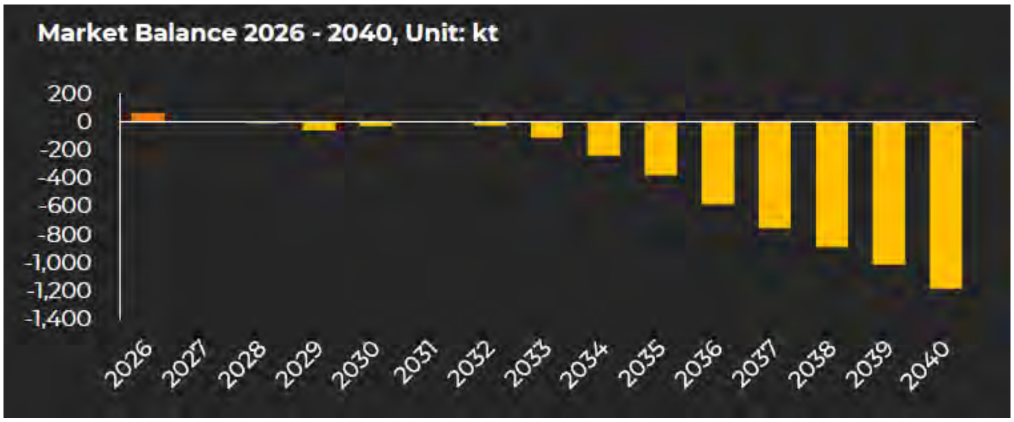


Figure 16-5 - Lithium Market Balance, kt LCE

Source: Benchmark Minerals Intelligence, 2025
Notes: x-axis in kt = thousand metric tons

Battery-grade lithium carbonate spot prices (CIF) rose sharply from 2021 to 2022 as the market entered a supply shortage, peaking at the yearly average of US$62,104/st (US$68,459/t) in 2022. Since then, CIF spot prices have been under pressure as new supplies have been added to the market. Asian CIF spot prices began to decline to a yearly average of US$11,147/st (US$12,288/t) in 2024. However, the decline was much more moderate compared to the oversupply of 2019 to 2020, when the battery-grade lithium carbonate spot average price was US$6,449/st (US$7,109/t) in 2020 (Wood Mackenzie, 2025). According to Fastmarkets' daily spot average price as of August 21, 2025, the average price of battery-grade lithium carbonate was reported to be US$8,709/st (US$9,600/t), and the average price of battery-grade lithium hydroxide was US$7,983/st (US$8,800/t). Supply shortages may begin earlier than expected as upcoming project development and commissioning are halted or delayed, and with stronger demand from the Energy Storage System (ESS) sector, leading to expectations of another price climb (Benchmark, 2025, and Wood Mackenzie, 2025).

The spot price forecast of technical-grade lithium carbonate in real terms ranges from US$7,703/st (US$8,491/t) to US$19,785/st (US$21,810/t) between 2025 and 2040, as shown in Figure 16-6. The average price from 2025 to 2040 is US$14,244/st (US$15,702/t).

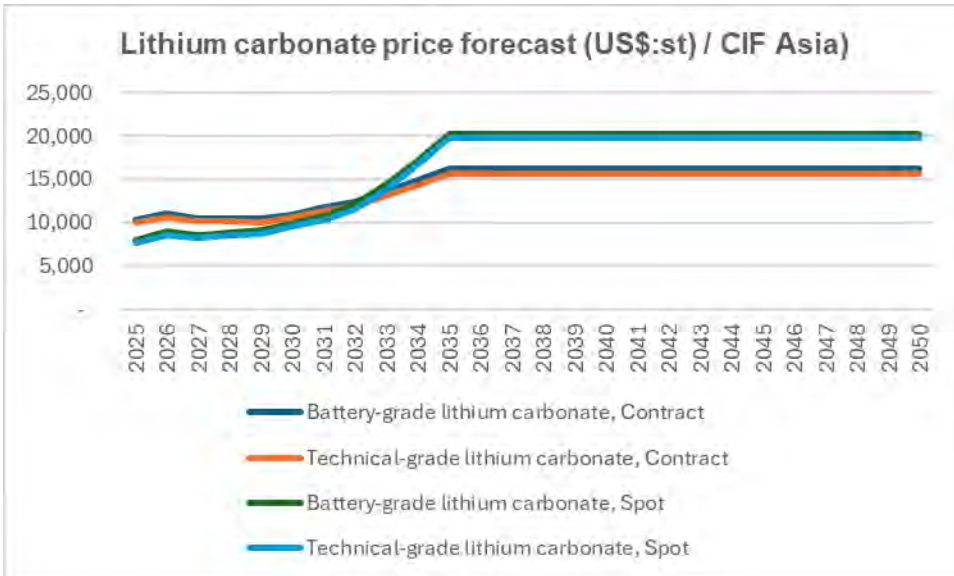


Figure 16-6 - Lithium Carbonate Price Forecast, US$/st, CIF Asia (Real, Spot)

Source: Wood Mackenzie, 2025

Notes:

1. x-axis in US$/st = short tons
2. Real: Spot price

The spot price forecast of battery-grade lithium hydroxide in real terms ranges from US$7,859/st (US$8,664/t) to US$21,019/st (US$23,170/t) between 2025 and 2040, as shown in Figure 16-7. The average price from 2025 to 2040 is US$14,625/st (US$16,122/t).

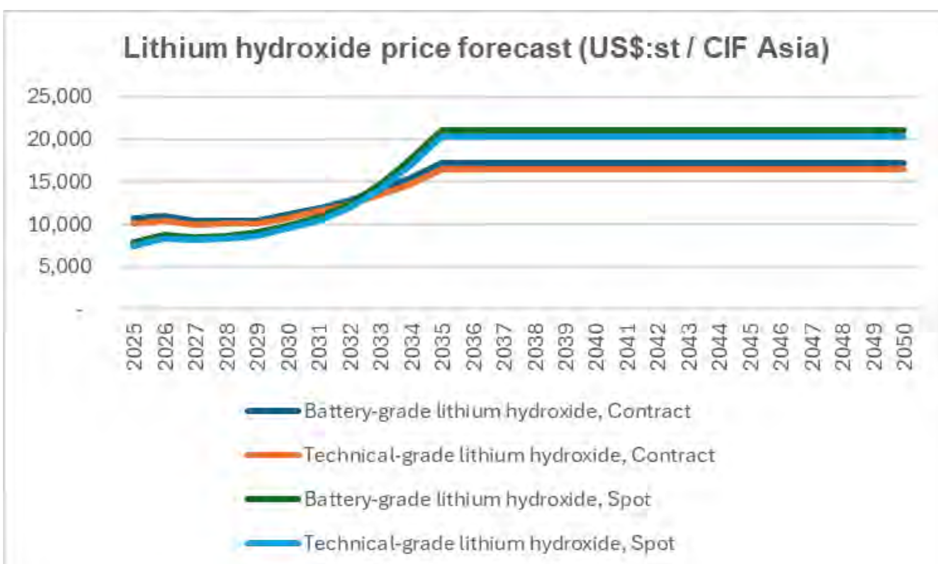


Figure 16-7 - Lithium Hydroxide Price Forecast, US$/st, CIF Asia

Source: Wood Mackenzie, 2025

Notes:

1. X-axis in US$/st = short tons
2. Real: Spot price

Table 16-2 is a summary of price forecasts for lithium carbonate and hydroxide. Benchmark (Q1 2025) forecasts are used. The ioneer sales forecasts are based on the offtake price formulas that were described in Section 16.1.1, and from Year 3 onwards, the Benchmark Minerals spot (real terms) price of battery-grade lithium hydroxide applying offtake contract provisions for the duration of the agreement and management assumptions for periods beyond existing contract duration.

Table 16-2 - Summary of Price Forecasts (US$/t) / Real Terms

Calendar Year	Production Year	Product	ioneer Sales Forecast[1-3]	Benchmark Minerals Forecast[4]	Wood Mackenzie Battery Grade forecast[5]	Wood Mackenzie Technical Grade forecast[6]
2028	1	TG Lithium Carbonate	$16,591	$19,051	$8,479	$8,756
2029	2	TG Lithium Carbonate	$18,116	$20,865	$8,733	$9,109
2030	3	BG Lithium Hydroxide	$21,270	$19,958	$9,506	$9,875
2031	4	BG Lithium Hydroxide	$20,673	$19,051	$10,354	$10,715
2032	5	BG Lithium Hydroxide	$20,673	$19,051	$11,540	$12,076
2033	6	BG Lithium Hydroxide	$21,624	$19,051	$13,881	$14,407
2034	7	BG Lithium Hydroxide	$21,606	$19,051	$16,620	$17,135
2035	8	BG Lithium Hydroxide	$21,862	$19,051	$19,785	$20,291
2036	9	BG Lithium Hydroxide	$22,132	$19,051	$19,785	$20,291
2037	10	BG Lithium Hydroxide	$22,136	$19,051	$19,785	$20,291
2038	11	BG Lithium Hydroxide	$22,241	$19,051	$19,785	$20,291
2039	12	BG Lithium Hydroxide	$22,244	$19,051	$19,785	$20,291
2040	13	BG Lithium Hydroxide	$22,316	$19,051	$19,785	$20,291
2041	14	BG Lithium Hydroxide	$22,317	N/A	$19,785	$20,291
2042	15	BG Lithium Hydroxide	$22,316	N/A	$19,785	$20,291
2043	16	BG Lithium Hydroxide	$22,317	N/A	$19,785	$20,291
2044	17	BG Lithium Hydroxide	$22,317	N/A	$19,785	$20,291
2045	18	BG Lithium Hydroxide	$22,317	N/A	$19,785	$20,291
2046	19	BG Lithium Hydroxide	$22,317	N/A	$19,785	$20,291
2047	20	BG Lithium Hydroxide	$22,318	N/A	$19,785	$20,291
2048	21	BG Lithium Hydroxide	$22,319	N/A	$19,785	$20,291
2049	22	BG Lithium Hydroxide	$22,317	N/A	$19,785	$20,291
2050	23	BG Lithium Hydroxide	$22,317	N/A	$19,785	$20,291

Notes:

1. ioneer Sales Forecast = Offtake price formula based on Benchmark Minerals battery-grade lithium hydroxide Q1 2025 spot price (in real terms) forecast average for Years 1 and 2.
2. Benchmark Minerals spot (in real terms) battery-grade lithium hydroxide with management assumptions for offtake discount (or premium) for Years 3 onwards and for uncontracted volumes.
3. ioneer Sales Forecast based on the Mine Plan supported by the August 2025 Mineral Resource (Chapter 11) and Mineral Reserve (Chapter 12).

4. Benchmark Minerals battery-grade lithium hydroxide Q1 2025 price (in real terms) forecast.
5. Wood Mackenzie battery-grade lithium hydroxide Q2 2025 price (in real terms) forecast.
6. Wood Mackenzie technical-grade lithium hydroxide Q2 2025 price (in real terms) forecast.
7. All prices in metric tons.

- Benchmark Minerals and Wood Mackenzie are internationally recognized research organizations that focus on lithium supply and demand studies. Suppliers and customers use their information/data sets to make pricing decisions; and
- Benchmark Minerals and Wood Mackenzie periodically update their short-term and long-term forecasts. The latest available datasets, for Benchmark Q1 2025 and Wood Mackenzie Q2 2025, are referenced.

The product quality will be consistent with the specifications of the offtake agreements.

According to Wood Mackenzie's 2025 baseline and Benchmark 2025 forecasts, the market will require ioneer's average production of approximately 25,118 metric tons (27,688 short tons) over its first 20 years by 2029 to 2030, and demand is expected to absorb its capacity.

16.2. Boric Acid

16.2.1. Boric Acid Price Basis for the Project

The boric acid market is less clear, and there are no reliable market intelligence providers. In line with major borate supplier, Rio Tinto Minerals, ioneer boric acid price forecasts were based on internal analysis of historical prices and volumes extracted from Datamyne's trade data, import prices and volumes from Japan, South Korea, Southeast Asia, and China, Customers and dealers' interviews, China Boron Association data, and Internal market equilibrium assumptions.

16.2.2. Boron Supply and Demand

The term "borate" describes commercial sources of boron oxide (B_2O_3). These sources may include:

- Sodium borate compounds or other minerals that may be refined (i.e., sodium borate and non-sodium-boric acid) or calcine (anhydrous sodium borate and boric acid);
- Other downstream specialty forms, including high-purity boric acid such as nuclear grade and pharmaceutical grade, borate-derived compounds such as zinc borate, etc.

Borates are usually refined, but some manufacturers sell raw minerals or concentrate at lower prices when higher levels of impurities can be tolerated.

Borates have more than 300 applications, including specialty glasses (i.e., borosilicate and TFT glasses), fiberglass, ceramics, insulation, agricultural products, industrial/chemical applications, pesticides, cleaning products, cosmetics, and pharmaceuticals. Boric acid demand may fluctuate as customers switch between various borate products, considering factors such as price, product availability, and technological advancements.

The major borate products (excluding high-purity and specialty grades) are shown in Table 16-3.

Table 16-3 - Major Borate Products

	Material	Formula	B_2O_3 (%)
Refined chemicals			
Sodium borates	Borax pentahydrate	$Na_2O·2B_2O_3·5H_2O$	49
	Borax decahydrate	$Na_2O·2B_2O_3·10H_2O$	37
Non-sodium borates	Boric acid	$B(OH)_3$	56
Anhydrous, fused	Anhydrous borax	$Na_2O·2B_2O_3$	69
	Boric oxide	B_2O_3	99.9
Mineral products			
Sodium borates	Ulexite	$Na_2O·2CaO·5B_2O_3·16H_2O$	36-38
Calcium borates	Colemanite	$2CaO·3B_2O_3·5H_2O$	33-42

ioneer intends to produce boric acid with technical grade specifications as shown in Table 16-4, which are comparable to those of Rio Tinto Minerals' product. Technical-grade boric acid is the highest-grade boric acid, accounting for the majority of volumes used in the industry, excluding specialty grades with minor volume shares.

Table 16-4 - Targeted Boric Acid Specifications

Analysis and Unit of Measure	Expected Specification
Boric oxide (B_2O_3), %	56.25-56.80
Boric acid (H_3BO_3), %	99.9-100
SO_4, ppm	≤240
Chloride, ppm	<8
Iron, ppm	<5

The boric acid products' specifications by major suppliers are shown in Table 16-5.

Table 16-5 - Boric Acid Technical Specification by Major Supplier

Specification	ioneer	Rio Tinto	QuiBorax	Eti Maden	BOR
Boric oxide (B_2O_3), %	56.25 – 56.80	56.25-56.80	≥56.25	≥56.25	≥56.25
Boric acid (H_3BO_3), %	99.9 - 100.9	99.9-100.9	≥99.9	>99.9	≥99.9
SO_4, ppm	≤ 240	≤250	≤300	≤500	≤80
Cl, ppm	≤ 8	≤10	≤200	≤10	≤10
Fe, ppm	≤ 5	≤4	≤4	≤7	≤5

ioneer intends to produce coarser products to mitigate product lumping that may occur due to the material's hygroscopic characteristics. Additionally, coarser products are preferred in melting applications, as volatilization during the melting process can be reduced.

The annual growth in boric acid demand has ranged from 4% to 6% between 2015 and 2019. Before the COVID-19 pandemic, global boric acid supply and demand were in near balance, with utilization at 82%. Based on our understanding of historical data, a borate capacity production utilization rate of 85% can be set as the maximum sustainable production rate. Supply shortages occurred during the pandemic due to logistical and operational disruptions. Supply did not recover until the first half of 2022. The demand dropped by approximately 119,000 short tons per annum (108,000 metric tons), or 8.7%, between 2019 and 2021, due to the pandemic lockdown and logistical disruptions. In 2024, the demand was 1,254,000 short tons per annum (1,138,000 metric tons), corresponding to a 78% utilization rate of the nameplate capacity of 1,604,000 short tons (1,455,000 metric tons). The nameplate capacity utilization rate decreased in 2024 due to Eti Maden's 44 thousand short tons (40 thousand metric tons) expansion through de-bottlenecking. Demand is expected to grow at a minimum of 3% CAGR through 2040. The growth of borate demand is relative to the growth of global gross domestic product (GDP). The utilization rate is expected to increase through 2032 and enter a deficit in 2035, based on an 85% utilization rate cap. ioneer plans to produce 45,104 short tons per annum (40,917 metric tons) from Y1 or around 2028, increasing production to 184,942 short tons per annum (167,775 metric tons) by 2040, which will be needed/consumed by the market demand. Additional boric acid will be required from 2035, in addition to the estimated ioneer and 5E volume entry, with a deficit increasing from 116 thousand short tons (105 thousand metric tons) in 2035 to 362 thousand short tons (328 thousand metric tons) in 2040.

In addition to sales and distribution agreements, market intelligence and customer relationships are crucial for successful sales, given the market's opaque nature. ioneer's sales team comprises former Rio Tinto Minerals personnel and experts with established customer relationships. The current boric acid market is dominated by major suppliers such as Eti Maden and Rio Tinto Minerals, creating demand for new, alternative suppliers. This market dynamic presents a significant opportunity for ioneer as a newcomer and potential disruptor in the industry.

Figure 16-8 and Figure 16-9 show the global boric acid demand by region and suppliers' market share.

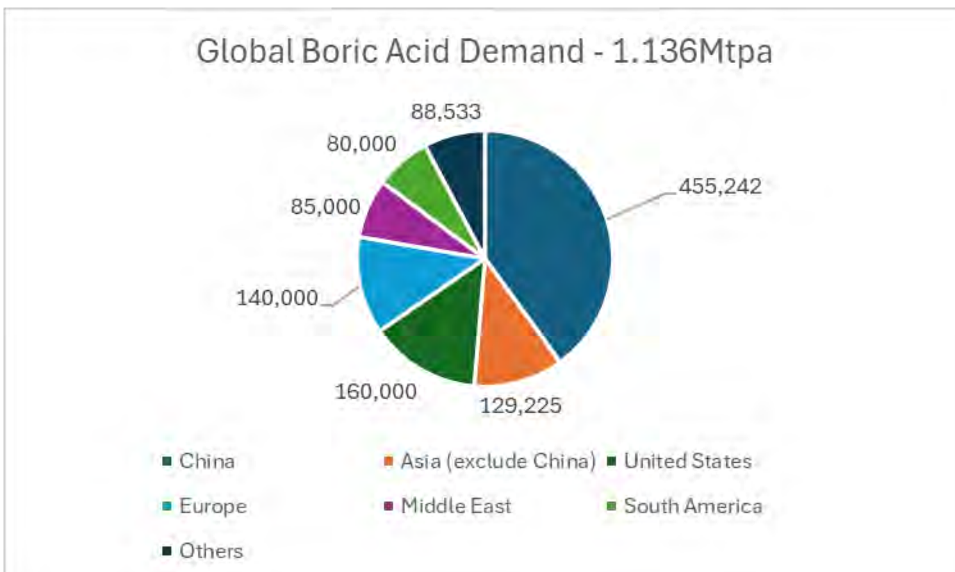


Figure 16-8 - Global Boric Acid Demand by Region

Source: ioneer, 2025
Note: Volume is in metric tons

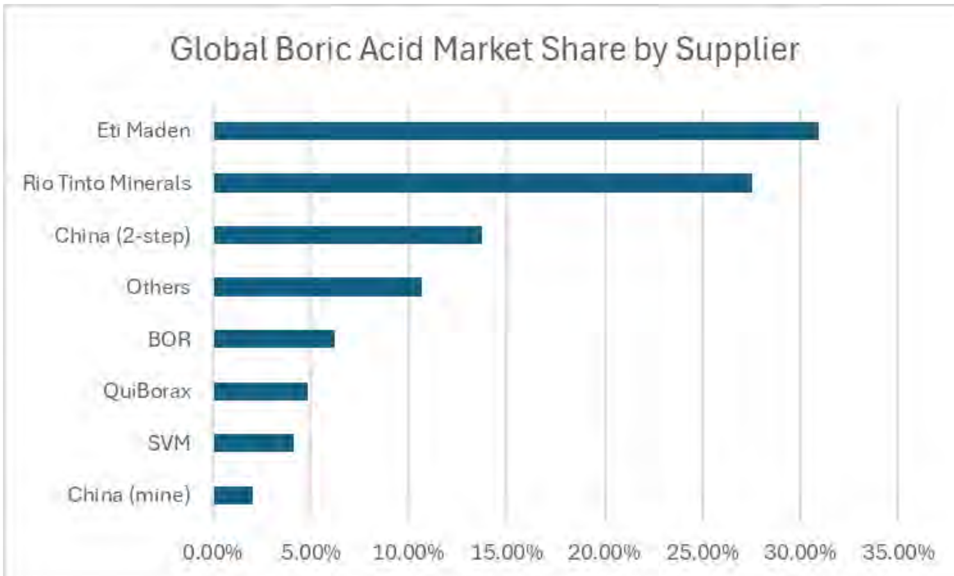


Figure 16-9 - Global Boric Acid Market Share by Suppliers

Source: ioneer, 2025
Notes: y-axis in market share percentiles

Figure 16-10 shows borate application by market share.

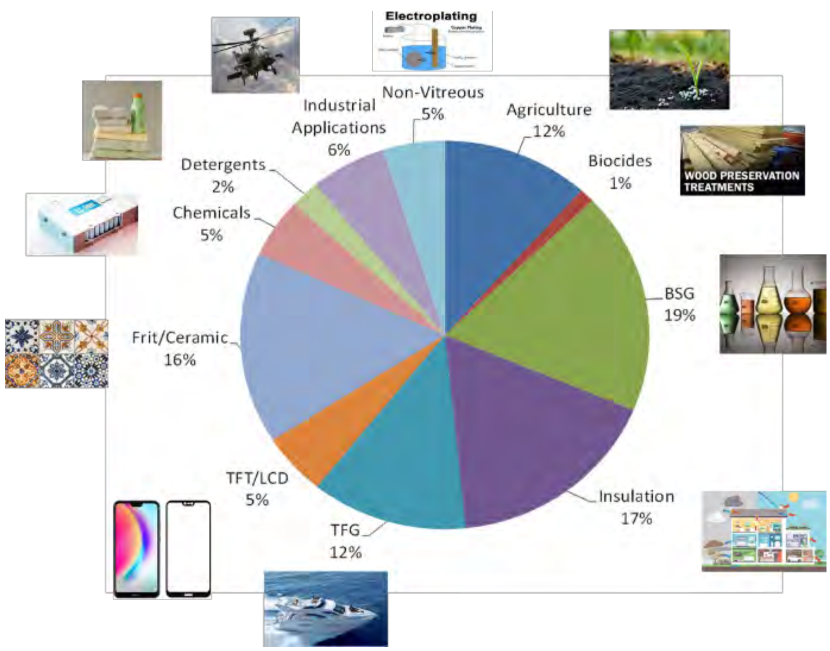


Figure 16-10 - Borate Application by Market Share

Source: ioneer, 2024
Notes: market share percentile

16.2.3. Boron Customer and Competitor Analysis

Large-scale commercial borate production is confined to four primary areas of the world:

- Turkey: Kirka, Balıkesir, and Kestelek;
- The southwestern region of the US;
- The Andes belt of South America;
- China: Liaoning and Qinghai; and
- The eastern region of Russia.

Eti Maden, with a boric acid market share of 31%, and Rio Tinto, with a market share of 27%, are the two most prominent suppliers in the global borates market. Eti Maden, a Turkish state-owned mining and chemicals company, has the world's largest estimated borate reserves (holding 72% of worldwide borate reserves). Rio Tinto Minerals has an extensive borate product portfolio, but has not announced any plans to expand borate production at its site in Boron, California. MCC Russian Bor CJSC (BOR) in southeastern Russia supplies 6% of the global boric acid demand and is of the best quality in terms of impurities. However, BOR has been struggling with production due to financial issues and employee relations issues for decades. Their sales to Western countries and their allies have been affected by Russian sanctions; as a result, the majority is exported to China.

In addition to Rhyolite Ridge, there are five other boron greenfield projects worldwide that are at various stages of exploration and engineering development. These greenfield projects are the Rio Tinto Jadar project, the 5E/Fort Cady project in California, the Magdalena Basin project in Mexico, the Pobrdje project in Serbia, and some exploration work in the Balkans. The Fort Cady project is expected to commence production in 2028, while production of the other projects is delayed or cancelled.

Table 16-6 and Figure 16-11 provide the supply-demand balance scenarios based on ioneer's assumptions.

Table 16-6 - Boric Acid Supply-Demand Balance

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Supply + ioneer + Fort Cady, kt	1,415	1,415	1,415	1,415	1,415	1,415	1,455	1,455	1,455	1,455	1,525	1,584
Supply + ioneer + Fort Cady @85% utilization, kt	1,203	1,203	1,203	1,203	1,203	1,203	1,237	1,237	1,237	1,237	1,296	1,347
Additional expansion (Etimine, Rio, ioneer), kt	0	0	0	0	0	0	40	0	0	0	70	129
Demand, kt	1,108	1,158	1,050	1,050	1,130	1,162	1,138	1,115	1,149	1,183	1,219	1,255
Market balance in % based on 85% utilization	92%	96%	87%	87%	94%	97%	92%	90%	93%	96%	94%	93%
Market balance in % based on 100% utilization	78%	82%	74%	74%	80%	82%	78%	77%	79%	81%	80%	79%
Market balance in kt based on 85% utilization, kt	95	45	153	153	73	41	99	122	88	54	77	92
Market balance in kt based on 100% utilization, kt	307	257	365	365	285	253	317	340	306	272	306	329
	2030	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	
Supply + ioneer + Fort Cady, kt	1,615	1,598	1,638	1,635	1,617	1,639	1,666	1,588	1,638	1,643	1,658	
Supply + ioneer + Fort Cady @85% utilization, kt	1,373	1,358	1,392	1,390	1,374	1,393	1,416	1,350	1,392	1,396	1,409	
Additional expansion (Etimine, Rio, ioneer), kt	160	143	183	180	162	184	211	133	183	188	203	
Demand, kt	1,293	1,332	1,372	1,413	1,455	1,499	1,544	1,590	1,638	1,687	1,738	
Market balance in % based on 85% utilization	94%	98%	99%	102%	106%	108%	109%	118%	118%	121%	123%	
Market balance in % based on 100% utilization	80%	83%	84%	86%	90%	91%	93%	100%	100%	103%	105%	
Market balance in kt based on 85% utilization, kt	80	26	21	-23	-81	-105	-128	-240	-245	-290	-328	
Market balance in kt based on 100% utilization, kt	322	266	266	222	162	140	122	-2	0	-44	-80	

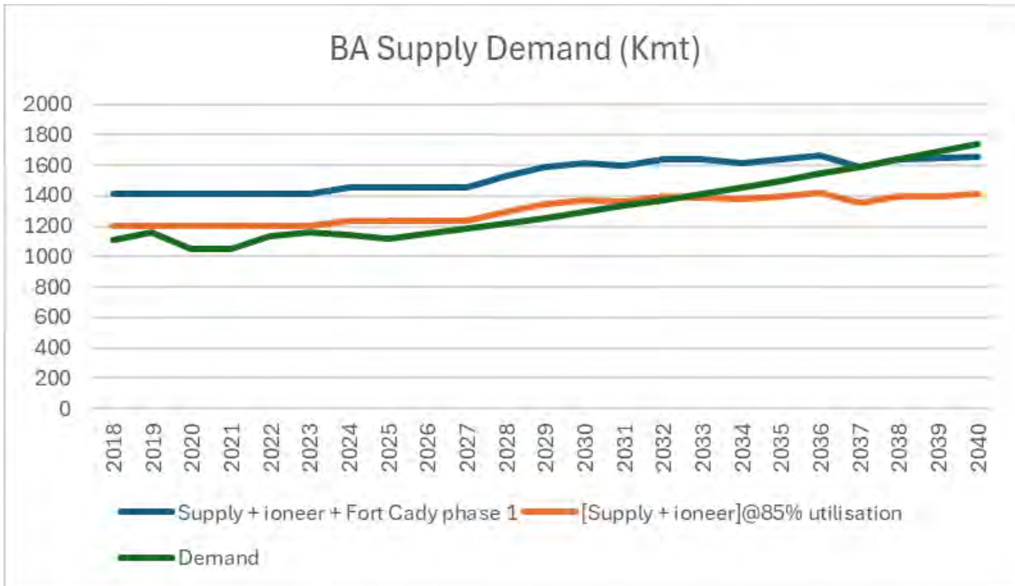


Figure 16-11 - Boric Acid Supply-Demand Balance

Source: ioneer, 2025

Notes:

1. The average annual production of boric acid for the Rhyolite Ridge Project is 101,975 short tons per annum (92,510 metric tons) between 2028 and 2040, and 74,992 short tons per annum (68,031 metric tons) over the life of the mine.
2. Fort Cady to commence phase 1 production with 49,604 short tons per annum (45,000 metric tons) in 2028 and 90,389 short tons per annum (82,000 metric tons) onwards. ioneer does not expect Fort Cady to implement phase 2 onwards. This assumption is based on the fact that the borate market is opaque and challenging to enter successfully without robust market intelligence and expertise. Fort Cady initiated pilot production in H2 2024, utilizing unproven commercial technology and achieving outstanding milestones from the prefeasibility study, including funding and customer offtake agreements. The challenge is to finance their commercial plant, as it is extremely rare and difficult to obtain a bankable offtake agreement to support the financing.
3. Rio Tinto Jadar project boric acid production was excluded as the project does have the permit, with challenges to persuade the local stakeholders of the environmental impact, which stalled the project in the past.
4. The assumption is that additional volume equal to the deficit volume is added from 2035 onwards, potentially by ioneer, Eti Maden, or Rio Tinto.
5. For demand, the compound annual growth rate (CAGR) from 2024 onwards will be 3% (historically, borate demand growth is relative to long-term global GDP and typically higher than 3%). A conservative CAGR rate was applied for the demand forecast, as there were anomalies in the historical growth rate due to technology and economic disruptions.
6. Volume is in metric tons, and kt in this figure means 1000 metric tons.

16.2.4. Boron Price Forecast

Boric acid prices ranged from US$454/st (US$500/t) to US$651/st (US$718/t) before the pandemic and increased from US$907/st (US$1,000/t) to US$1,089/st (US$1200/t) from 2020 to 2021 during the pandemic. The global industrial sector slowed down in 2022 but began to recover slowly in 2023, as logistics and supply chains started to improve. Suppliers maintain prices to offset increases in operating and logistics costs. Other factors affecting the global market include:

- The increase in operating costs caused by the increased price of the European Union's natural gas (as a result of the conflict in Ukraine);

- Increased freight rates due to the reduced capacity of the Panama Canal and longer shipping routes to avoid the Red Sea;
- Eti Maden is entering higher-profitability downstream applications, such as boron carbide production;
- US import tariff global impact, affecting exports to the US and from the US to China.

In 2024, the average delivered boric acid price (CIF and FOB West Coast) ranged between US$753/st (US$830/t) and US$998/st (US$1100/t). There is a regional and customer size (volume) price arbitrage, resulting in wider price ranges.

Table 16-7 and Figure 16-12 indicate historical average prices and ioneer’s price forecast based on demand and supply assumptions. Trend analysis was used as the methodology for the price forecasting. The price forecast ranges from US$839/st (US$925/t) to US$1,270/st (US$1,400/t) between 2028 and 2040, with an average price of US$1,089/st (US$1,200/t).

Table 16-7 – ioneer Boric Acid Price Assumptions

	Units	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Historical	US$/st	517	454	496	578	585	640	744	825	739	694	627	638
	US$/t	570	500	547	637	645	705	820	909	815	765	691	703
Forecast	US$/st												
	US$/t												
	Units	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Historical	US$/st	635	652	590	553	829	807	769					
	US$/t	700	719	650	610	914	890	848					
Forecast	US$/st							769	753	771	816	839	885
	US$/t							848	830	850	899	925	976
	Units	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	
Historical	US$/st												
	US$/t												
Forecast	US$/st	885	975	975	1,043	1,134	1,157	1,179	1,270	1,270	1,270	1,270	
	US$/t	976	1,075	1,075	1,150	1,250	1,275	1,300	1,400	1,400	1,400	1,400	

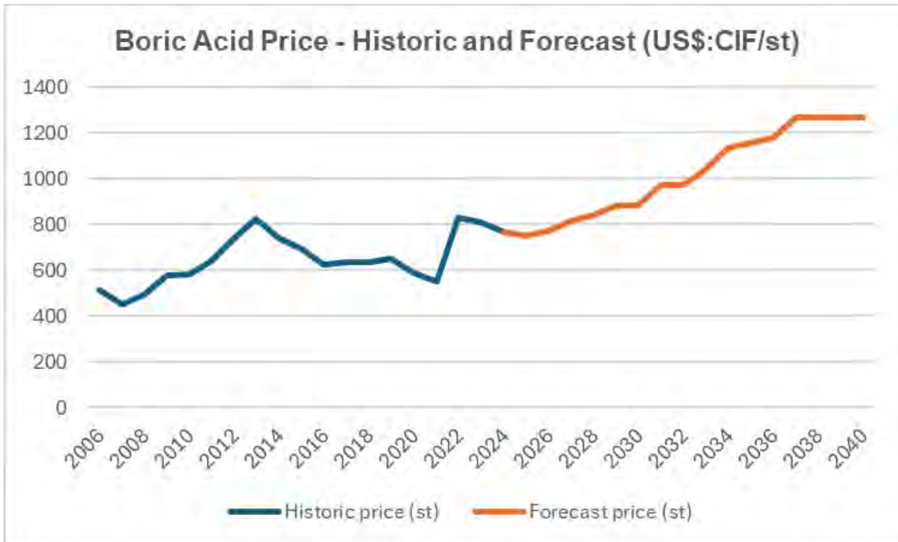


Figure 16-12 – Boric Acid Price – Historical and Forecast

Source: ioneer, 2025

Notes:

1. ioneer price forecast (2024 to 2040) was based on supply and demand assumptions and shown as average prices.
2. Regardless of supply shortages, price forecasts beyond 2037 are capped at US$1,270/st (US$1,400/t) and will not be revised upwards as ioneer cannot predict unannounced expansions from existing and new suppliers that impact prices.
3. x-axis in US$/st = short tons

The following data sources were used in the price forecast:

- Datamyne data (global trade statistics) for prices and volumes;
- Country-specific import trade statistics (China, Korea, Japan, and Southeast Asia) for prices and volumes;
- Customer and distributor visits and surveys; and
- China Boron Association data.

16.3. Contracts

ioneer has signed offtake agreements with Ford Motor Company and PPES (a joint venture between Toyota and Panasonic) in 2022, Korea's EcoPro Innovation in 2021, and Dragonfly Energy in 2023.

Table 16-8 outlines the offtake and sales distribution contracts secured by ioneer for Rhyolite Ridge.

Table 16-8 – Contracts for Technical-Grade Lithium Carbonate and Boric Acid

Company	Product	Duration (years)	Volume (st)/year				
			Y1	Y2	Y3	Y4	Y5
Ford Motors	TG Li-carbonate	5	8,819	8,819	8,819	8,819	8,819
PPES	TG Li-carbonate	5	4,409	4,409	4,409	4,409	4,409
EcoPro Innovation	TG Li-carbonate	3	8,819	8,819	8,819		
Dragonfly Energy	TG Li-carbonate	3	276	276	276		
Total contracted volume	TG Li-carbonate		**22,322**	**22,322**	**22,322**	**13,228**	**13,228**
Dalian Jinma Boron Technology	Boric acid	5	11,574	11,574	11,574	11,574	11,574
Kintamani Resources	Boric acid	3	10,031	14,551	19,731		
Boron Bazar	Boric acid	3	3,307	3,996	4,519		
Iwatani Corporation	Boric acid	3	5,842	12,787	20,944		
Total contracted volume	Boric acid		**30,755**	**42,908**	**56,769**	**11,574**	**11,574**

Source:

- Lithium agreements:
  - EcoPro Innovation Co. Ltd.'s offtake agreement dated June 30th, 2021, and volume amendment agreement dated February 14, 2022;
  - Ford Motor Company offtake agreement dated July 21, 2022;
  - Prime Planet Energy & Solutions, Inc. offtake agreement dated August 1, 2022; and
  - Dragonfly Energy Corporation offtake agreement dated May 9, 2023.
- Boric acid agreements:
  - Dalian Jinma Boron Technology Group Co., Ltd offtake agreement dated December 16, 2019;
  - Iwatani Corporation sales/distributor agreement dated July 15, 2020, and Korean territory addition amendment in September 2024;
  - Kintamani Resources Pte Ltd sales/distributor agreement dated April 20, 2020; and
  - Boron Bazar Ltd sales/distributor agreement dated April 20, 2020.

ioneer plans to secure additional boric acid distributor sales agreements in North America and Taiwan following the financial investment decision to increase sales. ioneer's contracts embed a volume adjustment clause to mitigate the risk of increased or decreased volume. Even in oversupplied markets, ioneer can increase sales across all contracts through market intelligence, existing customer relationships, and conversion plans.

17. ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDIVIDUALS OR GROUPS

17.1. Environmental Studies

17.1.1. Baseline Studies

Several baseline studies were conducted within portions of the Project area to characterize existing environmental and social resources to support mine permitting and development for Phase 1 of the Project (the facilities that are currently approved under the Record of Decision [ROD]). Phase 2 of the Project contemplates additional expansions to the quarry, overburden storage facilities (OSFs), and spent ore storage facility (SOSF). Baseline investigations were performed on behalf of ioneer by six consulting firms: EM Strategies, Inc. (EMS) (now WestLand Resources [WestLand]), HydroGeoLogica, Inc. (HGL), Piteau Associates (Piteau), NewFields Companies, LLC (NewFields), Stantec Consulting Services, Inc. (Stantec), and Trinity Consultants (Trinity).

Findings from these studies are presented in a series of baseline reports as follows:

- Air quality impact assessment;
- Aquatic resources;
- Biological resources;
- Cultural resources;
- Geochemistry;
- Geology and mineral resources;
- Groundwater;
- Land use, transportation, and access;
- Paleontology;
- Recreation;
- Socioeconomics;
- Soils and rangeland;
- Surface water resources;
- Visual resources.

These baseline studies were conducted from 2012 through 2019, except for biological resources which have continued into 2025, and are intended to support project design and establish a basis from which potential impacts can be assessed.

Each baseline study was conducted with a resource-specific geographic area where information was gathered (i.e., study area), which were coincident with, or centered around the Project area. The study area for each of the baseline studies is summarized in Table 17-1 and the Project area is shown in Figure 17-1. Based on the future designs for overburden and spent ore storage and if the location of those facilities under Phase 2 of the Project are located outside of the current Project area, additional baseline studies will likely be necessary. These include, but may not be limited to, biological resources, cultural resources, geochemistry, and groundwater.

Table 17-1 - Summary of Baseline Studies

Baseline Report	Prepared By	Study Area
Air quality impacts assessment	Trinity	Project area and adjacent airsheds potentially impacted by emissions associated with Project construction and operation
Aquatic resources delineation	Stantec	Land in the northern portion of the Fish Lake Valley, heading southeast into the Silver Peak Range, bounded along its eastern edge by Rhyolite Ridge and including land within the Project area
Biology	WestLand and EMS	Land encompassing and within various distances from the Project area including: Botanical (Project area), General wildlife (0.25-mile radius), Nesting raptor (1-mile radius), Nesting golden eagle (10-mile radius). Land along the access road
Cultural resources	WestLand and EMS	Land encompassing and immediately surrounding the Project area, including land along the access road
Geochemistry	Piteau	Land encompassing and immediately surrounding the Project area
Geology and mineral resource	NewFields	Land encompassing and immediately surrounding the Project area
Groundwater	Piteau	Land encompassing and immediately surrounding the Project area
Land use, transportation, and access	NewFields	Land encompassing and immediately surrounding the Project area, including the main access points to the Project area
Paleontological resource	Noble, P. (submitted to EMS)	Land encompassing immediately surrounding the Project area including: formerly proposed powerline route extending west from the town of Silver Peak to Cave Spring, and a 7-square mile area on the West side of Rhyolite Ridge
Recreation	NewFields	Land encompassing immediately surrounding the Project area including: Silver Peak wilderness study area, lands with wilderness characteristics, and two recreational management areas
Socioeconomic	NewFields	Esmeralda, Mineral, and Nye counties in Nevada and Inyo County in California
Soils and rangeland	NewFields	Land encompassing immediately surrounding the Project area including land along the access road
Surface water resources	NewFields	Land encompassing immediately adjacent to and downstream of the Project area, as well as land within a 5-mile radius of the Project area and land along the access road
Visual resources	NewFields	Land encompassing immediately surrounding the Project area

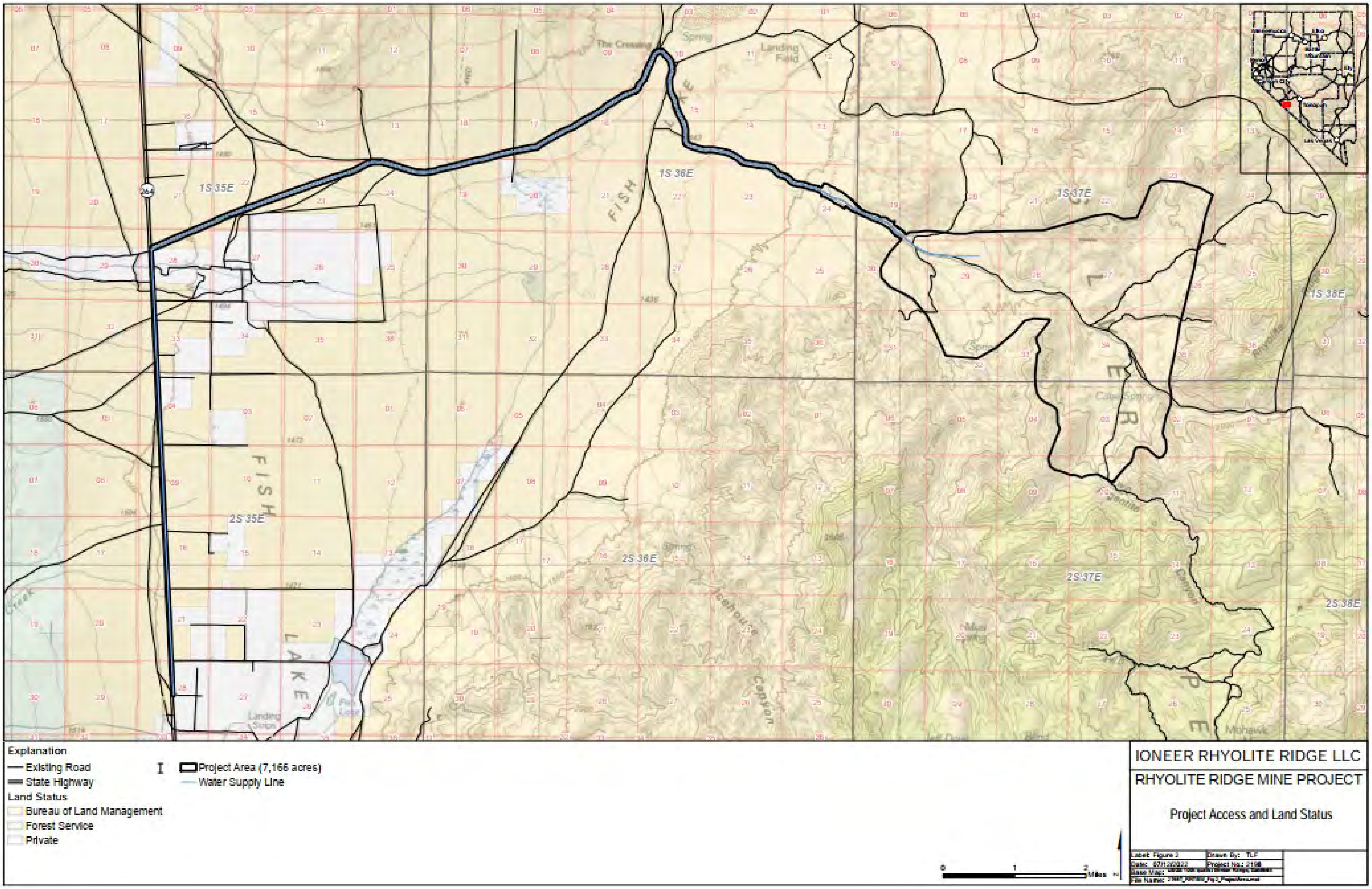


Figure 17-1 - Rhyolite Ridge Project Area Map

Source: ioneer, 2024

17.1.2. Environmental and Social Impact Assessment

An environmental evaluation using an Environmental Impact Statement (EIS) was completed by Nexus Environmental Consultants, a Bureau of Land Management BLM-approved third-party contractor, culminating in the Record of Decision issuance in October 2024. Through the ROD, the BLM approved the North and South OSFs Alternative for the development of Phase 1 of the Project.

17.1.2.1. Air Quality and Climate Change

Total Hazardous Air Pollutant emissions would be 3.56 tons per year (tpy) for up to 17 years, and less emissions for six years of reclamation. PM_{30}, PM_{10}, and $PM_{2.5}$ emissions would be 2,881.03, 1,129.68, and 197.64 tpy, respectively, for up to 17 years, and less emissions for 6 years of reclamation. Nitrogen oxide, carbon monoxide, sulfur dioxide, volatile organic compound, hydrogen sulfide, and sulfuric acid emissions would be 469.14, 251.92, 82.62, 12.93, 2.84, and 24.41 tpy, respectively, for up to 17 years and less emissions for 6 years of reclamation. On-site greenhouse gas (GHG) emissions would be 545,834 tpy of direct and 40,471 tpy of indirect. Off-site GHG emissions would be 5,447.20 tons carbon dioxide equivalent for up to 17 years, and less emissions for 6 years of reclamation. Mercury emissions of 4.7×10^{-4} tpy for up to 17 years, and less emissions for 6 years of reclamation. There would be a maximum 8-hour impact of 0.69 parts per billion for ozone.

17.1.2.2. Cultural Resources

Up to 16 cultural resource sites would potentially be impacted by surface disturbance, with three additional cultural resource sites within 30 m (100 ft) of disturbance. Up to 28 cultural resource sites would potentially be impacted by auditory, vibrational, and/or visual impacts. Sites would be avoided to the extent possible or mitigated.

17.1.2.3. Environmental Justice

Impacts to environmental justice populations of concern may include air quality, visual, noise, water, traffic, hazardous material transportation, and social and economic values. Impact could occur for up to 23 years.

17.1.2.4. Geology and Minerals

There would be up to 2,266 acres of new surface disturbance of which 211 would be permanent. There would be permanent removal of 25 million tons (Mt) of lithium-boron ore from the quarry. Approximately 406 Mt of overburden would be removed from the quarry and placed in the designated OSFs. Final slope configuration would result in a post-closure Factor of Safety close to or greater than 2.0, and 1.72 with the quarry lake. There is no anticipated significant damage to facilities for the life of the Project from faulting. Subsidence may occur within the groundwater drawdown cone with up to 25 cm (10 inches) in the vicinity of pumping wells and less than 5 cm (2 inches) anticipated in areas more than a quarter mile from pumping wells. About 80 percent of the overburden is classified as non-potentially acid generating and presents a low risk of acid rock drainage.

17.1.2.5. Hazardous Materials and Solid Waste

There would be a diesel fuel release probability of 1223 in 1609 km (760 in 1,000 miles) and 281.3 for reach 370-km (174.8 for each 230-mile) transportation route from Las Vegas to the Operational Project Area (OPA) and Reno to the OPA. There would be a corrosion inhibitor 3DT129 release probability of 49.1 in 1609 km (30.5 in 1,000 miles) and 11.3 for each 370-km (7.0 for each 230-mile) transportation route. There would be a liquid phosphate release probability of 40 in 1609 km (25 in 1,000 miles) and 9.3 for each 370-km (5.8 for each 230-mile) transportation route. Up to two loads of solid waste would be produced and shipped off site annually for up to 17 years.

17.1.2.6. Land Use and Realty

Cave Springs Road (NVN 62084) and Argentite Canyon Road (N 54404) ROWs would be impacted from realignment to avoid Project features. Coordination with holders of ROWs, geothermal leases, and mining claims off Hot Ditch Road and in the OPA would be required for access. There would be up to 2,266 acres of new surface disturbance, of which 211 would be permanent. Approximately 719 acres of Tiehm's buckwheat designated critical habitat would be fenced with locked gates, with approximately 51 acres of Tiehm's buckwheat subpopulations fenced within.

17.1.2.7. Livestock Grazing

Impacts would be the disturbance of 140 acres (83 that provide livestock forage) of the Red Spring Allotment, 2,105 acres (1,885 that provide livestock forage) of the Silver Peak Allotment, and 21 acres (none that provide livestock forage) of the Fish Lake Valley Allotment. This would result in impacts to four AUMs in Red Spring Allotment, 79 AUMs in Silver Peak Allotment (eight of which would be permanent), and no impacts to AUMs in the Fish Lake Valley Allotment. Fencing of 719 acres (591 that provide livestock forage) of Tiehm's buckwheat designated critical habitat would impact an additional 25 AUMs in the Silver Peak Allotment. This could result in up to $10,844 in annual economic impacts from reduction of 108 BLM permitted AUMs for up to 23 years.

17.1.2.8. Native American Traditional Values

Three areas of concern have been identified, and direct surface impacts would be avoided by the proposed layout through Project design. Vegetation communities and wildlife species important to Native American Traditional Values may be impacted. There could be impacts to water supply at 32 surface water sites (including Cave Spring) if sourced from the aquifer proposed for dewatering. During consultation, tribes have indicated that some unevaluated sites in the general vicinity of sacred sites identified by tribal representatives may be associated with those sacred sites. Unevaluated sites potentially associated with sacred sites and that cannot be avoided would be mitigated under the HPTP.

17.1.2.9. Recreation

Impacts would be a total of 2,266 acres of surface disturbance (211 acres would be permanent). Up to 719 acres of Tiehm's buckwheat designated critical habitat would be fenced from some recreational uses (e.g., OHV use). There would be disturbance to 1,902 acres of OHV use restricted land including, 1,076 acres (155 permanent) limited to existing roads and trails and 826 acres (48 permanent) limited to existing roads and trails and closed to competitive events. There would be surface disturbance to 531 acres (28 permanent) of LWC328 and 1,151 acres (114 permanent) of LWC338. Some Project components would be visible from some areas of the Silver Peak WSA. There would likely be an increased human presence and demand for recreation resources and opportunities from an increased population in the area. There would also be increased noise, traffic congestion, fugitive dust and emissions from vehicle traffic, and lighting from vehicles and operation from additional recreationalists.

17.1.2.10. Social and Economic Values

There would be a construction workforce of 500 people for four years, plus 113 indirect and induced jobs, and there would be a quarrying and processing workforce of 350 people for 14 years, plus 79 indirect and induced jobs. Additional employment would result in an annual calendar year direct labor income of $54,141,401 and annual calendar year indirect and induced labor income of $2,619,995 for construction, and annual calendar year direct labor income of $125,142,545 and annual calendar year indirect and induced labor income of $18,709,469 for quarrying and processing. The total estimated annual calendar year direct value added would be $102,788,237, and total annual calendar year indirect and induced value added would be $10,028,255 from construction. The total estimated annual calendar year direct value added would be $71,951,766, and total annual calendar year indirect and induced value added would be $7,019,778 from quarrying and processing. Total tax generation would be $25,069,752 annual calendar year (direct, indirect, and induced), including $11,819,628 annual calendar year in federal taxes, $4,183,588 in state taxes, $5,911,690 annual calendar year in county-level taxes, and $3,154,846 annual calendar year in sub-county special district taxes during construction. Total tax generation would be $17,548,826 annual calendar year (direct, indirect, and induced), including $8,273,740 annual calendar year in federal taxes, $2,928,511 annual calendar year in state taxes, $4,138,183 annual calendar year in county-level taxes, and $2,208,392 annual calendar year in sub-county special district taxes during quarrying and processing. There would be potential for increased property tax to Esmeralda County. Housing demand during construction would be 328 units during construction and 230 units during quarrying and processing. There would be an increased need for improvements/modifications to the public utilities infrastructure, and additional requirements for law enforcement, fire protection, and emergency medical services. There would be an increased demand for healthcare services and practitioners, as well as grocery stores, retail stores, and other convenience and commodity needs. Increased school enrolment in Dyer, Silver Peak, Tonopah, Hawthorne, and Bishop would be approximately 140 additional students during construction and 98 additional students during quarrying and processing, likely spread throughout these communities. Additional disturbance, employment, and traffic generation may impact social values and cultural landscapes in the nearby communities. The communities could expect to see increased use of facilities and public lands. Water rights secured or leased from current agricultural water users in the Fish Lake Valley could reduce the level of agriculture in the area. There could be impacts after closure including housing market and economic declines.

17.1.2.11. Soil Resources

There would be up to 2,266 acres of new surface disturbance of which 211 would be permanent. There could be potential impacts to biological soil crusts if present.

17.1.2.12. Threatened and Endangered Species

For Bi-State Sage-grouse (BSSG) (*Centrocercus urophasianus*), there would be surface disturbance of up to 776 acres (132 permanent) of potential habitat. For monarch butterfly, there would be up to 2,266 acres (211 permanent) of new surface disturbance of potential habitat that may support milkweed and nectar sources. For Tiehm’s buckwheat, there would be 191 acres (45 permanent) of designated critical habitat disturbed. Up to 719 acres of designated critical habitat would be fenced. There would be up to 2,266 acres of total new surface disturbance within the Plan boundary, of which 211 would be permanent. There would be no direct disturbance to individuals or within the eight Tiehm’s buckwheat subpopulations under the Phase 1 Project operations. Under Phase 1 Project operations, pollinator communities could be impacted by new surface disturbance. Surface disturbance could change overland flow patterns potentially affecting pollinator species communities or Tiehm’s buckwheat designated critical habitat. Fugitive dust could impact Tiehm’s buckwheat, Tiehm’s buckwheat designated critical habitat, and pollinator species communities from reduced photosynthesis and decreased water-use efficiency.

17.1.2.13. Transportation and Access

Approximately 7.6-km (4.7-miles) of Cave Springs Road and 1.9-km (1.2-mile) of Argentite Canyon Road would be realigned to avoid Project facilities. The realigned Cave Springs Road would have two new crossings with Project roads. There would be an additional estimated 186 to 248 vehicle passes per day during construction, an additional 230 to 288 vehicle passes per day during operations, and an additional 40 vehicle passes per day during closure on the access road. Traffic control systems on Cave Springs Road would temporarily stop public traffic at two autonomous haul road intersections to the processing facility and North OSF causing delays. A pilot car would guide the public through the OPA.

17.1.2.14. Vegetation Resources

There would be up to 2,266 acres (211 permanent) of new surface disturbance of vegetation communities and ecological communities. Disturbance during construction, operation, and reclamation results in increased potential for establishment and spread of noxious species. There would be potential impacts to sagebrush cholla (Opuntia pulchella) and Tecopa birdbeak (Cordylanthus tecopensis) from fugitive dust or sedimentation. Because the extent of Mojave fishhook cactus (Sclerocactus polyancistrus) in the area is unknown, it could be impacted by disturbance. Plant species of ethnobotanical importance could be impacted by surface disturbance as well as fugitive dust.

17.1.2.15. Visual Resources

From Key Observation Points (KOPs) 1, 2, and 4, there would be no conflict with the Visual Resource Management (VRM) Class IV objectives. From KOP 3, there would be no conflict with the VRM Class III objectives. Visible portions from the Silver Peak WSA (VRM Class I) are not anticipated to change the overall quality of views. Nighttime lighting could cause an urban sky glow over the OPA. The brightness of the lights and darkness of the nearly black background would create a strong contrast and thus make the lights visible.

17.1.2.16. Water Resources

There would be groundwater drawdown of up to 91 m (300 ft) near the quarry, followed subsequently by groundwater recovery over a period of approximately 60 years. A 66-acre (surface size) quarry lake would form post-quarrying and after groundwater recovery. Nevada Division of Environmental Protection Profile III reference values in the quarry lake would be in exceedance for arsenic from 50 to 200 years post-closure, boron from five to 200 years post-closure, fluoride from five to 200 years post-closure, and molybdenum from five to 200 years post-closure. An ecological risk assessment indicated a low probability that risks to wildlife would occur based on the predicted water quality for the post-quarrying quarry lake. Impacts to 32 surface water sites are not anticipated because they are thought to be perched. If the springs are sourced from upwelling groundwater on the upgradient side of a low permeability fault zone, decreased amounts of spring flow may occur. Surface disturbance may cause erosion and sedimentation during construction and operation. Four surface water stock rights within the predicted 3 m (10 ft) drawdown contour associated with the maximal drawdown prediction (SP-01, SP-03, SP-06, and SP-07), one surface stock water right, one groundwater stock right, and nine groundwater irrigation rights could be impacted by groundwater drawdown. There are no impacts predicted to groundwater quality because evaporation of the quarry lake would cause it to be a terminal sink.

17.1.2.17. Wetland and Riparian Resources

There would be direct disturbance to up to 0.16 acre of wetlands within the Access Road and Infrastructure Corridor where the Fish Lake Valley Hot Springs cross the access road and 54.87 acres of riverine, freshwater emergent wetland, and freshwater pond National Wetland Inventory (NWI)-mapped wetlands. The riparian area near Chiatovich Creek could be impacted from the water supply pipeline.

17.1.2.18. Wildlife Resources

There could be impacts to water sources used by various wildlife species. Up to 32 surface water sites could have reduced or removed flow if sourced from the aquifer proposed for dewatering. One guzzler would be relocated away from Project features. Additionally, a quarry lake would form with a predicted low probability of risk to wildlife. Human presence and noise could cause wildlife avoidance and displacement in the area. Vehicles, vertical facilities, and lights may cause collisions, and there could be increased competition between wildlife species for available resources. Access road travel, construction activities, and operation could result in vehicle strikes or crushing of wildlife and/or burrows resulting in fatality. There would be removal of 2,266 acres (211 permanent) of avian nesting and foraging habitat and insect species, mammal species, and reptile/amphibian species habitat. There would be surface disturbance to 2,096 acres (211 permanent) of year-round mule deer habitat, 2,089 acres (211 permanent) of year-round desert bighorn sheep habitat, 2,011 acres (203 permanent) of Brewer's sparrow habitat, 896 acres (140 permanent) of pinyon jay habitat, 120 acres (eight permanent) of black-throated gray warbler habitat, and 2,266 aces (211 permanent) of potential habitat for Cassin's finch, common nighthawk, loggerhead shrike, ferruginous hawk, and western burrowing owl habitat. There would be removal of 2,266 acres (211 permanent) of potential golden eagle foraging habitat. There would be surface disturbance to 1,050 acres (66 permanent) of suitable soils for Botta's pocket gopher and desert kangaroo rat, and 1,106 acres (62 permanent) of suitable habitat for pale kangaroo mouse. There would be disturbance to 10 acres (none permanent) of cliff and canyon habitat and 120 acres (eight permanent) of pinyon-juniper habitat used by bat species. The creation of a quarry lake may attract foraging bats, and the quarry walls could potentially provide bat roosting habitat.

17.1.2.19. Wild Horses and Burros

There would be disturbance to 2,164 acres (211 permanent) in the Silver Peak HMA, and 719 acres of Tiehm's buckwheat designated critical habitat fenced. There would be Increased traffic on the access road that could lead to fatalities or injuries to wild horses or burros from collisions. Effects from human disturbance and noise could reduce the areas in the HMA utilized by wild horses and burros, causing increased use in other portions of the HMA.

17.1.3. Air Quality Impact Assessment

An air quality impact assessment was performed by Trinity in 2022 and 2023 (Trinity, 2022 and 2023) 3. The area of analysis includes the local airshed, which is defined as a 50-km (31-mile) radius buffer of the OPA. As ioneer controls all access to the facilities at the fence along the Project area boundary, other than the public access road, this boundary was used to determine ambient air (i.e., the portion of the atmosphere, external to buildings, to which the general public has access) for air dispersion modeling analysis. All land inside the Project area boundary is not considered ambient air; and therefore, not included in the modeling analysis (Trinity, 2023). As the result of a BLM review of the assessment in 2023, Trinity has updated the assessment to include Project-related indirect sources of emissions and the BLM has accepted the update. The results of the assessment show that the Project emissions comply with the National Ambient Air Quality Standards.

17.1.4. Biology

Baseline biological survey reports were prepared by EMS in 2020 and 2022 (EMS, 2020a, 2020b, & 2022), supported by surveys conducted during the 2018, 2019, and 2022 field seasons. The baseline biological survey reports involved an evaluation of the land encompassing and within various distances from the Project area (Table 17-1).

The main objectives of the baseline biological surveys performed by EMS were to document baseline conditions of existing vegetation (i.e., botanical survey) and fauna (i.e., wildlife surveys) within the Project area (EMS, 2020a), along the access road (EMS, 2020b), and the expanded portions of the Project area (EMS, 2022). Additionally, concurrent with baseline biological surveys, all water features within the Project area were recorded and conditions were noted.

A habitat suitability model using ArcGIS and remote sensing data stored within a geographic information system geospatial database was developed to identify potential habitat for Tiehm's buckwheat, a BLM sensitive species listed endangered species by the United States Fish and Wildlife Service (USFWS) in December 2022, within a 10-mile radius of the Project area.

From 2021 to 2025, additional biological studies were completed on golden eagles and Tiehm's buckwheat.

The following summarizes the major findings and aspects of the baseline biological survey and access road report (EMS, 2020a, 2020b, & 2022) and a census study on Tiehm's Buckwheat (WestLand, 2023):

- The U.S. Geological Survey National Southwest Regional Gap Analysis Project vegetation communities within the botanical survey areas were field verified and reclassified as five vegetation communities comprising 96 percent of the surveyed areas: Inter-Mountain Basins Mixed Salt Desert Scrub; Great Basin Pinyon-Juniper Woodland, Great Basin Xeric Mixed Sagebrush Shrubland; Inter-Mountain Basins Cliff and Canyon, and agriculture.
- Five dominant ecological sites were field verified within the Project areas: Cobbly Loam 5-8" P.Z.; R029XY036NV; Shallow Calcareous Loam 8-12" P.Z.; R029XY008NV; Loamy 5-8" P.Z.; R029XY017NV; Loamy Slope 3-5" P.Z.; R029XY033NV; and Shallow Calcareous Slope 8- 12" P.Z.; R029XY014NV.
- Eight subpopulations of Tiehm's buckwheat were mapped within the Project area. Subpopulation 8 consists of four individuals (WestLand, 2023). There was an herbivory event in 2020 that impacted individual plants in all subpopulations. The total number of plants was estimated to be 24,916, during the 2023 field investigation. Collectively, the subpopulations occupy approximately 10 acres. The distribution of plant size classes indicates a stable demographic structure across all subpopulations. The viability of the seeds obtained during seed collection was 16 percent. Genetic analysis indicated a small degree of genetic distinction between Tiehm's buckwheat, and the three other buckwheat species sampled. No other BLM sensitive species or USFWS endangered species plants were observed within the Project area.
- No pygmy rabbits or pygmy rabbit signs (i.e., burrows, scat, tracks, dust baths, runways) were found in the Project area. No potential pygmy rabbit habitat is present within the Project area.
- No burrowing owls responded to the broadcast calls. No burrowing owls or their signs (i.e., pellets, feathers, whitewash, scat, and tracks) were observed in the Project area. Potentially suitable nesting habitat is present in the lower elevations of the westernmost portion of the Project area, primarily below 1,829 m (6,000 ft) in elevation.
- No springsnails, a Nevada Natural Heritage Program at-risk species, were present in the springs within the Project area.
- A total of 11 BLM sensitive species were observed during the general wildlife surveys: Brewer's sparrow; loggerhead shrike; greater sage-grouse; pinyon jay; Merriam's kangaroo rat; pale kangaroo mouse; juniper titmouse; long-nosed leopard lizard; desert horned lizard; Great Basin collared lizard; and bighorn sheep. Golden eagles were observed during the aerial raptor surveys.
- Nine species of bats were recorded within the Project area, all of which are BLM sensitive species. The Project area provides both foraging and day-roosting habitat for bats. The springs and associated riparian vegetation within 0.4 km (0.25 mile) of the Project area provide sources of water and concentrated foraging.
- One active golden eagle nest and 21 unoccupied nests were recorded within the 16 km (10 mile) buffer surrounding the Project area. No other raptor nests were active within 1.6 km (1 mile) of the Project area.
- No species or habitat protected under the Endangered Species Act (ESA) were present within the Project area at the time of the field investigations. However, in December 2022 the USFWS listed Tiehm's buckwheat as an endangered species and designated critical habitat for the species, which is within the Project area. Areas occupied by Tiehm's buckwheat, and the area proposed for critical habitat designation, are a relatively small portion of the currently delineated area of mineralization.

- Two occurrences of sagebrush cholla, a BLM sensitive species plant, were recorded: 1) in the southern portion of the OPA; and 2) in the access road and infrastructure corridor.
- One noxious weed species was recorded in the access road and infrastructure corridor: Saltcedar.

17.1.5. Archaeological and Paleontological Studies

In 2023, WestLand completed a Class III cultural resources inventory and report (Richey and Felling, 2023) over 5,034 acres within the Project area. Data from field visits conducted by the BLM, Tribes, and Westland in 2024 have been incorporated (Westland 2024b) into the 2023 report. The cultural direct area of potential effect for the Project is defined as a 4,577-acre area on land administered by the BLM. Within the direct area of potential effect, a total of 222 archaeological sites were identified as follows:

- One-hundred and eighty-four sites are recommended as not eligible for listing on the National Register of Historic Places.
- One site is determined as eligible for listing on the NRHP under Criteria A, C, and D.
- Twenty-four sites are determined as eligible for listing on the NRHP under Criterion D.
- Thirteen sites are recommended as unevaluated for listing on the National Register of Historic Places pending subsurface testing.

All cultural resource inventories are submitted directly to BLM and the State Historic Preservation Office in a sealed (confidential) document.

The paleontological resource survey and report (Noble, 2018) includes a study area consisting of a 18-quare-km (7-square-mile) on the west side of Rhyolite Ridge. Also studied was the formerly proposed high voltage power line route extending west from the town of Silver Peak to Cave Spring (largely following the route of Coyote Road); however, a high voltage power line is no longer in the Project scope.

The following summarizes the major findings of the paleontological resource survey (Noble, 2018):

- Six fossiliferous units that had potential paleontological significance were identified within the study area including: Wyman Formation; Campito Formation; Poleta Formation; Harkless Formation; Mule Spring Limestone; and Esmeralda Formation and equivalents, which contains Tertiary Sedimentary (TS) units 3-6.
- One fossil locality of significance was located along what was the Project’s formerly proposed power line route, which occurs in outcrops on the south side of Coyote Road, just outside Silver Peak.
- Several small pieces of petrified wood were observed during the study area transects, but the occurrence is of fairly low density; no large concentrations were observed that may be indicative of a larger log weathering out.
- No vertebrate fragments were found in the Project activities area during the field survey on any of the transects through the surveyed localities.
- Several possible fossil imprints were observed in a pebbly sandstone, but it was not clear if these were the molds of mollusks, or if they were weathered out mud rip-up clasts.
- No beds were observed that were facies equivalent to the coal-bearing lithology found in the Coaldale area, which contain abundant fossil floras.

- No high density fossil localities were encountered in the Project activities area during the various transects through the Esmeralda equivalent units at surveyed localities.

- The Cambrian locality has some beds of limestone with well-preserved marine invertebrates, including archaeocyathids; however, there are better exposures of these same units, just north of the Project area, from which a high density of fossils has been reported.

17.1.6. Geochemistry

A geochemistry study was conducted by HGL in 2020 with results presented in the geochemical characterization report (HGL, 2020b). In completing this study, the acid rock drainage and metals leaching potential was assessed for all major lithologic units within the Project area.

Overburden and ore samples were collected from existing exploration drill core and were geochemically analyzed to characterize the potential of these materials to generate acidic drainage or to leach metals. Geochemical characterization was performed based on regulatory guidance documents published by the Nevada Division of Environmental Protection (NDEP) and the Nevada BLM. Testing included acid-base accounting; net acid generation pH; short-term leach testing by meteoric water mobility procedure; bulk elemental content; X-ray diffraction; optical mineralogy; and humidity cell testing.

The following summarize the findings from the geochemical characterization program (HGL, 2020b):

- Testing was completed for 14 different overburden samples and one ore sample.

- The overburden and ore samples had a range of acid-base accounting and metals leaching characteristics.

- The clay and carbonate marl units generally have significant acid neutralization potential.

- Other units have some acid generating potential, such as the tertiary breccia, while several units have variable acid-base accounting characteristics, such as the gritstones and mixed lacustrine units.

- Materials predicted to be acid generating by static acid-base accounting (ABA) testing developed acidic conditions relatively quickly in the humidity cell testing program.

- Most materials have the potential for leaching elevated total dissolved solids and metals that are mobile at alkaline pH values, particularly arsenic and antimony.

- Process materials tested included samples of spent ore, sulphate salt residues, and neutralization filter cake.

- The spent ore sample contained residual acidity, with associated metal leaching, through the acidity and metal leaching flushed from the sample over the long-term in the humidity cell test (HCT).

- The sulphate salt residue sample was acidic, releasing elevated concentrations of total dissolved solids and metals.

- The neutralization filter cake material sample was classified as non-potentially acid generating and contained some acid neutralization potential, though it also had potential to leach elevated concentrations of total dissolved solids, aluminum, boron, and lithium.

In 2023, Piteau commenced an update of the geochemical characterization, testing overburden samples and ore samples, to address changes to the Phase 1 mine plan in the July 2022 Mine Plan of Operations. This update was completed in 2024. Key aspects of this sampling and analysis plan included the following:

- A sample population was developed to include 125 overburden and 12 ore samples from 21 drillholes. Four process material test work samples were included in the test work program.
- The ore and overburden sample population was developed to represent the spatial distribution of materials present in the approved quarry design, with samples collected from within 500 m (1640 ft) of the quarry perimeter.
- The sample population structure broadly represented the distribution of lithological units contained in overburden.

This supplementary sampling program is summarized as follows:

- An additional 126 ore and waste rock samples were collected from 34 drill holes across the Phase 1 quarry shell. Sampling was skewed towards materials located to the south and east of the existing HGL, Pre-2022 sample population.
- The static test work was completed for all samples and included ABA by the Nevada Modified Sobek Procedure, Net Acid Generation (NAG) testing, bulk elemental content, and carbon speciation.
- Sample selection for short term meteoric water mobilization procedure (MWMP) leach testing and longer term HCT testing was guided by static test work results, with emphasis given to samples with marginal Potential Acid Generation (PAG) characteristics and/or elevated levels of As, Li, Mo, S, and/or Sb.
- Samples selected for leachate testing relate to 23 additional exploration drill holes in previously uncharacterized sectors of the future quarry, with samples representing major lithological units.

The combined geochemical characterization dataset contains 263 samples from 15 units with 55 exploration drillholes sampled. A minimum of seven samples are available for each major lithological unit.

The geochemical characterization dataset was augmented with 126 new supplementary samples representing materials present across the Phase 1 quarry configuration.

Static test work results indicate that the acid base characteristics of bulk quarry materials are broadly consistent with data previously submitted in support of the original permitted quarry design. Across the static test work sample population, 20 percent of samples are classifiable as PAG (NPR of <1.2), and the proportion of PAG materials across all units is broadly consistent with previously reported values. Surrogate ABA calculations have been refined and validated against the expanded test work dataset. Surrogate ABA calculations indicate that approximately 15% of bulk in-quarry materials are PAG. Overburden and quarry walls are expected to remain net neutralizing as per predictions made for the previous quarry characterization by HGL, although the proportion of S3 PAG predicted by surrogate calculations has increased.

The expanded MWMP leachate dataset indicates that leachate chemistry for most units is broadly consistent with previously reported values, although reasonable increases in several Profile I parameters are noted across lithologic units M4, Lsi, and S3, and frequent reductions are noted for B5 and M5. Exceedance frequency analysis indicates that As, Sb, TDS, SO_4, and Mn may exceed Profile I reference values in contact waters. Consistent with previous assessments, contact waters are predicted to be circumneutral to slightly alkaline with elevated levels of several metals and metalloids. During closure, the implementation of OSF and quarry backfill cover systems using Q1 alluvium will minimize infiltration and reduce metal(loid) leaching from overburden and exposed pit wall materials.

17.1.7. Socioeconomic Study

The socioeconomic baseline report (NewFields, 2019b) was prepared by NewFields and evaluated a study area included Esmeralda, Mineral, and Nye counties in Nevada and Inyo County in California. The main objective of this investigation was to describe the socioeconomic characteristics and conditions in the study area. Socioeconomic data from various state and federal agencies (i.e., Nevada Department of Taxation and U.S. Department of Commerce Census Bureau) were reviewed to characterize and describe current social, economic, and environmental justice conditions in the study area.

Social and community impacts associated with development of the Project are being considered and will be evaluated in accordance with the National Environmental Policy Act and other federal laws. Potential impacts are generally restricted to the existing population, including changes in demographics, income, employment, local economy, public finance, housing, community facilities, and community services. Potentially affected Native American tribes and tribal organization are being consulted during the preparation of all plans to advise them of project components that may have an effect on cultural sites, resources, and traditional activities.

A shortage of qualified employees, housing, and infrastructure could negatively affect the Project's development schedule and cost; however, at the time of this report, the QP does not anticipate any known social or community issues or impacts to have a material impact on ioneer's ability to implement the Project. Identified socioeconomic issues (employment, payroll, services and supply purchases, and state and local tax payments) are anticipated to be positive and enhance the lifestyles of the local citizenry. Logistical considerations such as housing and transportation are currently being evaluated and discussed by ioneer in coordination with local community members.

In terms of employment opportunities, ioneer estimates a total of up to 500 persons will be employed either directly through ioneer or through its construction contractors. While the mine is in operation, ioneer estimates an initial staff of approximately 200 workers, in year 1 of operation, increasing to a peak staffing of approximately 290 in year 6 of operation. This will include a mix of skilled workers plus management personnel.

In April 2025 ioneer and Esmeralda County executed a binding Development Agreement related to the Project that addresses the expansion of public services and infrastructure upgrades and establishes a framework for continued collaboration. This plan was developed with input received from community and county management teams and other stakeholders identifying potential pre-emptive development actions that the ioneer will implement to address issues identified due to influx of construction and operations phase employees. Planning components included a focus on alleviating any impacts to schools, traffic management, landfills, emergency response services (e.g., ambulance, fire), roads, law enforcement, and community welfare systems, among other factors important to local communities with respect to project development.

17.1.8. Surface Water Resources

The surface water resources baseline report (NewFields, 2020b) was prepared by NewFields in 2020 encompassing the following study area:

- Land within the Project area and immediately adjacent to and downstream of Project components.
- Land within a 8 km (5 mile) radius of the Project area.

Baseline surface water conditions were also characterized along the access road with results presented in an addendum (NewFields, 2019c).

One of the major data sources used for the surface water resources baseline technical report includes the aquatic resources delineation report. The aquatic resources delineation report was completed by Stantec in 2019 and covered an approximate 8,403-acre area in northeastern Fish Lake Valley. The main objectives of this study were as follows:

- Determining whether drainage features meet the requirements to be considered waters of the United States.

- Determining the ordinary high water mark of drainages within the survey areas.
- Determining wetland occurrence in the survey area.
- Mapping aquatic features to the U.S. Army Corps of Engineers current mapping standard.

The following summarizes the major findings and aspects of the surface water resources baseline report, which includes the findings from the aquatic resources' delineation report, and addendum:

- The wetlands and drainages in the study area are all isolated waters or tributaries to the Fish Lake Valley, which itself is an isolated basin.
- No wetlands and/or drainages identified are anticipated to be jurisdictional by the United States Army Corps of Engineers. and subject to Section 404 Clean Water Act permitting.
- The delineation found no apparent interstate or foreign commerce connection with the aquatic resources and no jurisdictional waters with a significant nexus to a traditional navigable water within the study area.

17.1.9. Groundwater Resources

The groundwater resources baseline report was prepared by Piteau Associates in 2023. The Project is located in the Basin and Range Province in western Nevada. The Walker Lane structural zone is an important control in the area, giving rise to N to S trans-tensional faults that are found in exposed bedrock. The regional geology of the Project area is typical of the Basin and Range Province, with basins composed of younger alluvium, basin fill, playa deposits and mountain ranges composed of uplifted basement rocks. For the purposes of the water resource analysis, the bedrock occupying the mountain range is divided into two general units: carbonate rocks and non-carbonate rocks (granitic and volcanic rocks). The conceptual model domain encompasses the full Fish Lake Hydrographic Basin (Basin 117) to evaluate the effects of resource dewatering, water supply, and the formation of a pit lake following mine closure. The numerical model domain extends into smaller portions of Big Smoky Valley and Clayton Valley and is designed to ensure that potential hydrological changes related to the Project would not impinge on the model domain boundary.

The model scenario for the Project includes the development of the Rhyolite Ridge mine through 2040 as well as an open quarry closure with partial backfilling and the development of a quarry lake. Quarry dewatering will be achieved through the installation of vertical wells, sumps, and horizontal drains. This alternative includes the development of a new wellfield north of Dyer NV designed to produce an additional 4,000 acre-feet per year of groundwater from the Fish Lake Valley groundwater system. The water will be conveyed to the site via a 30 km (19 mile) pipeline. Rhyolite Ridge mine is to be closed as a quarry lake that functions as a groundwater sink. The key findings based on numerical modeling and associated with the development of the Rhyolite Ridge Project include:

- Under Phase 1 of the Project, the Quarry will be excavated to its lowest elevation of 5,490 ft amsl. Dewatering or sump pumping is anticipated to stabilize slopes and manage quarry wall seepage.
- Under Phase 1 of the Project, the North, South, and Quarry backfill OSFs will be established as resource development continues. The southern portion of the Rhyolite Ridge mine will be backfilled with non-potentially acid generating overburden rock.
- Dewatering rates associated with the Project are expected to range from ~227 lpm (~60 gpm) to a maximum annual average of 2,460 lpm (650 gpm) occurring in 2033. The average dewatering flow through the life of the mine is expected to be about 1,041 km (275 gpm).

- At the end of quarry mining (2040), simulated heads show changes in piezometric levels of more than 122 m (400 ft) in the Project area due to quarry dewatering. In addition, there is a limited area of drawdown below the location of the modeled production wells.
- The Project has two water supply wells pumping at 4,000 acre-feet per year in the agricultural area north of Dyer. A small area of drawdown forms below the new wells but is of limited extent. The maximum differential drawdown is less than 6 m (20 ft).
- A quarry lake will form as a terminal sink upon closure of the mine. Lake levels are expected to recover to approximately 1,721 m (5,646 ft) amsl elevation during the first 60 years post closure.

17.2. Requirements and Plans for Waste and Tailings Disposal, Site Monitoring, and Water Management During Operations and After Mine Closure

A design report for the SOSF, South OSF, and associated infrastructure for Phase 1 of the Project was prepared in support of Project development. In addition, the North OSF is part of Phase 1 of the Project development. During operations, run-of-quarry ore will be crushed and vat-leached. As a result, byproducts including spent ore, sulphate salts, and precipitation filter cake will be transported to the SOSF for disposal. Under Phase 2 of the Project the additional overburden will be placed in any of five OSFs.

17.2.1. Effluents

The SOSF and the processing facility are designed to be a zero-discharge facility and will incorporate the necessary drainage and collection systems as part of the containment design. The OSFs are designed with underdrain systems to collect and control any meteoric water seepage. Domestic wastewater will be managed through a septic field system.

17.2.2. Waste Management

Wastes will be generated during operations. ioneer has developed a project waste management plan that will guide how such discarded products will be handled and allow 80% of all waste generated to be recycled. Residual non-hazardous solid waste will be disposed of in a permitted landfill.

Impacted soil (petroleum-contaminated soil) and other unconsolidated earther material will be transported to an appropriately licensed facility or otherwise remediated in an appropriate manner.

17.2.3. Air Quality

The Nevada Bureau of Air Pollution Control requires an Air Quality Permit be granted. Air quality will be maintained using state-approved environmentally compatible methods of dust control and air emissions will be monitored to make certain that they meet air quality guidelines defined in the environmental design criteria. The following air quality control measures will be employed by the Project:

The sulfuric acid plant is designed with double absorption conversion technology, a NOx collection system and a tail gas scrubber to reduce tail gas emissions;

Reagent transfer systems are designed with baghouses on all emissions points;

Product drying and bagging systems are designed with baghouses or wet scrubber to control emissions;

The mining haul fleet and associated mining equipment have all been specified with Tier 4 engines;

The haul fleet will be autonomous, which are expected to result in lower overall fuel consumption/ton and, therefore, emissions;

The use of polymer treatment for haul, plant and service roads is under investigation to reduce dust emissions and quantity of water required for dust suppression.

17.2.4. Stormwater Controls

Stormwater controls were designed to route upgradient runoff (non-contact water) around the proposed SOSF, the OSFs, and processing infrastructure, and to accommodate and contain on-site runoff (contact water) from design storm events. The intent of the stormwater controls is as follows:

- Divert non-contact water (i.e., water that has not come in contact with disturbed ground or composite materials) around the facilities and discharge to downstream water courses.
- Convey sediment-laden runoff, as necessary, to sediment collection basins prior to discharging to downstream water courses. It is anticipated that the flows from the South Diversion Channel of the SOSF could result in minor erosion to the overburden on the native slopes at this outlet. A Sediment Basin has been designed to capture all runoff from the South Diversion Channel and slowly release it to the natural drainage through perforated riser pipe.
- Contain precipitation from a design storm event that has come in contact with composite materials. During operations, runoff from the SOSF will be contained within the lined SOSF area. Flow will be directed to the underdrain system and toward the outlet of the SOSF. Under normal operations, stormwater will be routed to the Underdrain Pond. If a storm produces more runoff than the underdrain collection piping can handle, contact stormwater will overflow the SOSF outlet berm into the lined underdrain collection outlet channel, where it will be directed to the Underdrain Pond.

Hydrologic and hydraulic calculations were performed to establish design peak flows, runoff volumes, channel capacities, minimum channel dimensions, and slopes required to pass the design peak flows from up-gradient watersheds that will be diverted around the SOSF.

Stormwater controls for the South OSF are discussed in Section 13.1.3.

17.2.5. Tailings Management and Monitoring

Surveillance of the SOSF will consist of visual inspections to assess both the conditions and performance of the facility and associated underdrain pond. Routine inspections will be performed by the maintenance technician or environmental specialist on a daily basis and after intense precipitation events. Monthly inspections will be performed by the site services manager. At minimum, the SOSF will be inspected annually by the engineer of record. The inspection will include a review of the construction records and visual inspection of the facility. A log book will be maintained as part of the SOSF and underdrain pond surveillance to document all inspection findings and maintenance work.

In addition to visual monitoring, a network of vibrating-wire piezometers is included with the SOSF design to allow monitoring of phreatic levels within the facility. Piezometers will be installed beneath the primary structural zone as well as the interior of the SOSF. Monitoring wells will be located down gradient of the SOSF to monitor the quality of the groundwater. Surface deformation monuments will be established along slopes and final crests as the facility expands.

17.2.6. Tailings and Process Water Containment, Management, and Treatment

The SOSF will be lined with an 80-milimeter high-density polyethylene double-side textured geomembrane for fluid containment.

Drainage of solution and meteoric water from the composite material will be collected in the drainage system at the base of the SOSF and gravity drain to the underdrain pond. The solution collection systems include a drainage medium consisting of a sand and gravel mixture (referred to as overliner) with a network of piping.

All flows will gravity drain to the outlet of the SOSF. Captured solution will discharge into the underdrain pond.

The underdrain pond has been sized to contain residual draindown flow, direct precipitation runoff from the SOSF, and direct precipitation on the pond from a 100-year 24-hour storm event. The pond will be doublelined with a leak detection system located between the primary and secondary liners. The leak detection system is fitted with a submersible pumping system to evacuate any leakage that may occur through the primary geomembrane. This serves to reduce head on the secondary liner system and therefore any seepage through the secondary liner. Solution collected in the underdrain pond will be recovered by a pumped solution recovery system located on the pond slope and evacuated to a truck loadout area. From the loadout area, solution will be trucked to the processing facilities where it will be consumed through operational uses.

The underdrain pond will be located to the north-northwest of the SOSF.

17.3. Permitting Requirements

ioneer has focused its efforts on obtaining permits for the initial Phase 1 Quarry. The development of the Phase 2 Quarry will require revisions to some of the Project permits and these revised permits will need to be secured prior to Phase 2 Quarry development. Table 17-2 lists the major and ministerial permits that are required for the Project and indicates the status of those permit applications or permit issuance. No permit applications have been developed or submitted for the Phase 2 development of the Project.

Table 17-2 - Rhyolite Ridge Project Phase 1 Permits Register

Permit	Regulatory Agency	Permit Status
Above Ground Storage Tanks Permit	State Fire Marshall	Pending Construction
Air Quality Permit to Construct and Operate	NDEP, Bureau of Air Pollution Control	Issued
Boiler and High-Pressure Vessels Operating Permit	Nevada Department of Business and Industry, Division of Industrial Relations, Mechanical Compliance Section	Pending Construction
Certificate of Public Convenience and Necessity for Power Generation	Public Utilities Commission of Nevada	Issued
Dam Safety Permit	Nevada Division of Water Resources (NDWR)	Issued
Explosives Permit	US Department of Treasury, Bureau of Alcohol, Tobacco, Firearms, and Explosives	Pending Construction
Fire and Life Safety	State Fire Marshall	Pending Construction
Hazardous Materials Permit	State Fire Marshall	Pending Construction
Hazardous Materials Storage Permit	Nevada Department of Public Safety, State Fire Marshall, and State Emergency Response Commission	Pending Construction
Hazardous Waste Identification Number	US Environmental Protection Agency and NDEP, Bureau of Sustainable Materials Management	Issued

Permit	Regulatory Agency	Permit Status
Industrial Artificial Pond Permit	Nevada Department of Wildlife, Habitat Division	Pending Construction
Mine Identification Number Request	Mine Safety and Health Administration	Issued
Notice of Commencement of Mine Operations	Mine Safety and Health Administration	Pending Construction
Notice of Commencement of Mine Operations	Nevada Department of Business Industry, Division of Industrial Relations, Mine Safety and Training Section	Pending Construction
Mine Plan of Operations and Record of Decision, including the NEPA analysis document and the ESA Section 7 consultation with the USFWS	BLM	Issued. Under appeal[2]
Mine Registry	Nevada Division of Minerals	Pending Construction
Notice of Dam Construction	Nevada Division of Water Resources	Issued
Permit to Appropriate Water	Nevada Division of Water Resources	See Note 3
Permit for Package Wastewater Treatment Plant[1]	NDEP, Bureau of Water Pollution Control	Project likely to utilize a Septic System. This permit will be obtained if septic system not possible.
Public Water System Permit	NDEP, Bureau of Safe Drinking Water	Pending Construction
Project Notification	Esmeralda County	Completed
Radio Communication Authorization	Federal Communications Commission	Should be obtained in 2025
Reclamation Permit	NDEP, BMRR	Issued
Road Maintenance Agreement	Esmeralda County Road Department	Completed
Septic System Permit[1]	Nevada Division of Public Health (Fallon)	Pending Construction
Water Pollution Control Permit	NDEP, BMRR	Issued

Note:

1. Permit may not be required depending upon final project design
2. The BLM issued the Record of Decision and approved the Mine Plan of Operations. Subsequent to these actions, the Center for Biological Diversity, the Great Basin Resource Watch and the Western Shoshone Defense Project filed three appeals. The first against the BLM concerning the adequacy of the analysis in the EIS, the second against the BLM regarding the approval of the Mine Plan of Operations, stating that the Project violates the requirements under 43 Code of Federal Regulations (CFR) 3809, and third against the USFWS regarding the adequacy of the Biological Opinion that was used by the USFWS to complete the Section 7 consultation under the ESA.
3. ioneer has acquired all the necessary water rights for the Project through private-party contracts of existing water rights. Changes to the points of diversion and place and manner of use need to be obtained through permit changes from the NDWR. Permits to Appropriate Water State of Nevada Permit No 92731 and Permit No 92732 were granted December 15, 2023, totaling 484 acre-feet per year which is sufficient to support construction activities. Application to Appropriate Water for Dewatering around the Quarry prepared submitted on October 22, 2024. On February 12, 2025, NDWR notified White Mountain Ranch, LLC (WMR; applicant) of protests filed by Esmeralda County, Center

for Biological Diversity, Central Nevada Regional Water Authority, and Dan J. Peterson against the granting of Applications 93949, 93950, and 93951. ioneer responded to protests on behalf of WMR and submitted responses on March 26, 2025. The applications are currently pending a "ready for action" determination from the State Engineers office at which time further information may be requested. The ready for action determination has been delayed and is expected in Q3 2025.

In order to commence the development of Phase 2 of the Project, several of the permits outlined in Table 17-2 will need to be amended. At a minimum, these include, but are not limited to, the Mine Plan of Operations with the BLM, the Nevada Reclamation Permit with the State of Nevada Bureau of Mining Regulation and Reclamation (BMRR), and the Water Pollution Control Permit with the BMRR.

As outlined above and as a result of a need to expand the Project area, certain baseline environmental studies, including geochemistry, groundwater resources, biological resources, and cultural resources, will need to be completed prior to the submittal of these applications. In addition, detailed engineering design work for the storage of spent ore and overburden, as well as for stormwater management, will need to be completed.

Ultimately, the BLM permitting process will require compliance with the National Environmental Policy Act (NEPA) likely through the completion of a Supplemental Environmental Impact Statement (SEIS). The NEPA process will be guided by the 2023 implemented requirements in the NEPA regulations under 40 CFR 1500 and other U.S. Department of Interior guidance, as well as the BLM Battle Mountain District Instruction that streamline the overall environmental review and permitting processes. The BLM will select a third-party SEIS contractor to complete the process with the BLM.

Within the Project area, there is one threatened and endangered species currently listed under the ESA for which the Project would require permitting through Section 7 of the ESA. This species is the Tiehm's buckwheat (*Eriogonum tiehmii*) and is listed as endangered under the ESA with designated critical habitat. Previously under the Phase 1 permitting for the Project, consultation under Section 7 of the ESA between the BLM and the USFWS occurred to analyze the expected effects of the development of the Project on the species and its critical habitat. The USFWS determined that Phase 1 of the Project would not jeopardize the continued existence of the species or result in adverse modification of its critical habitat.

The presence of Tiehm's buckwheat, under Phase 2 of the Project, will again require the BLM to enter into formal consultation with the USFWS under Section 7 of the ESA, based on 50 CFR 402.16. Consequently, the USFWS would analyze the additional impacts of the Phase 2 development of the Project on the species and critical habitat to determine if the Project would jeopardize the continued existence of the species or result in adverse modification of critical habitat. Should the USFWS determine that jeopardy or adverse modification would likely occur, Reasonable and Prudent Measures that meet the purpose and need of the Project would be developed, if practicable, in order for the Project to proceed.

During Section 7 consultation, the BLM and USFWS could coordinate with ioneer to develop additional conservation measures and Project design features to minimize impacts and avoid jeopardy to the species and adverse modification to critical habitat. As such, it is anticipated that adequate conservation measures would be incorporated into the Project such that permitting under the ESA would not preclude development of the Project.

17.3.1. Environmental Protection Measures

The application for the Mine Plan of Operations and Nevada Reclamation Permit for the Phase 1 Project activities included a number of applicant-proposed conservation measures that minimize the environmental effect of the Project. ioneer has committed to the following applicant-committed environmental protection measures for the Project.

17.3.1.1. Tiehm's Buckwheat

ioneer has been engaged with the BLM and the USFWS regarding the protection of Tiehm's buckwheat and the measures to ensure the long-term viability of the species. As a result of these discussions, the Tiehm's Buckwheat Protection Plan was developed. Information regarding the plant and the means ioneer would take to protect the plant include: establishing disturbance buffers around the subpopulations; installing fencing around known populations as soon as a continuous proponent presence is on site; implementing a propagation and transplant program for plants at new locations; and constructing a growth media area on the reclaimed OSF that reflects the geochemical and physical characteristics of the occupied Tiehm's buckwheat designated critical habitat. Specifics of these measures are provided in the Tiehm's Buckwheat Protection Plan, which has been developed by ioneer to conserve and expand the species. The size and shape of the buffer areas were developed based on the specific topographic characteristics at each subpopulation and designed to avoid direct effects to the subpopulations from the Project. It should be noted that these applicant-committed environmental protection measures for Tiehm's buckwheat are designed to only address potential threats to the species from Project-related activities. In addition, all activities, including quarrying, have been designed to avoid any surface disturbance within the buckwheat exclusion area, and thus, the subpopulations. The buckwheat exclusion area would be fenced.

17.3.1.2. Air Quality

Air quality operating permits have been obtained from the NDEP Bureau of Air Pollution Control prior to Project construction. Air quality protection would include stationary source emissions control and fugitive dust control per Bureau of Air Pollution Control regulations. Appropriate emission control equipment would be installed at point (stationary) sources and operated in accordance with the construction and operating air permits. Where required, pollution control devices installed by equipment manufacturers would control combustion emissions. Pollution control equipment would be installed, operated, and maintained in good working order to minimize emissions. Fugitive dust would be controlled on roadways and other areas of disturbance with water or NDEP/BLM- approved dust suppressants, where appropriate. Fugitive emissions at the crusher and material drop points would be minimized through application of water sprays or other dust control measures as per accepted industry practice and permit stipulation. Disturbed areas would be seeded with an interim seed mix developed in conjunction with the BLM to minimize fugitive dust emissions from exposed, unvegetated surfaces. ioneer would use best management practices to operate the ultra-low emission sulfuric acid plant (comprising low emissions for sulfur dioxide [SO_2], nitrogen oxides [NO_x], and sulfuric acid [H_2SO_4]). These measures would include the use of Tier 4 equipment, controlling emissions of hazardous air pollutants, minimizing impacts to ambient air quality, and ensuring compliance with applicable standards.

17.3.1.3. Cultural Resources

A Class III cultural resource survey was performed within and near the Project area. The types and locations of cultural resources within this area have been documented and would be avoided, where possible, during all phases of Project implementation. In the event impacts to potentially eligible or unevaluated cultural resources are unavoidable, ioneer would undertake actions in accordance with the Memorandum of Agreement between the BLM, Nevada State Historic Preservation Office, and the Advisory Council on Historic Preservation signed October 2024. For eligible cultural resources that cannot be avoided by the Project, ioneer in conjunction with the BLM and Nevada State Historic Preservation Office developed a historic properties treatment plan historic properties treatment plan (HPTP) executed in June 2025 for data recovery, archaeological and architectural documentation, and report preparation based on the Secretary of the Interior's Standards and Guidelines *for Archaeology and Historic Preservation* (National Park Service, 1983). If previously unknown cultural resources, or human remains, funerary objects, or items of cultural patrimony, are encountered on BLM-administered land during Project construction or implementation, procedures spelled out in the discovery plan, historic properties treatment plan, and/or memorandum of agreement would be followed. Project activities would not recommence in these areas until a Notice to Proceed is issued by the BLM consistent with these documents. The BLM authorized officer would be notified, in accordance with Section VI.B.1. of the *State Protocol Agreement between the Bureau of Land Management, Nevada and the Nevada State Historic Preservation Officer for Implementing the National Historic Preservation Act* (Revised December 22, 2014) (BLM and Nevada State Historic Preservation Office, 2014). The location of the find would not be publicly disclosed, and the remains would be secured and preserved in place. ioneer or its contractors would also immediately notify the Esmeralda County Sheriff of the discovery. Any discovered Native American human remains, funerary objects, or items of cultural patrimony found on federal land would be handled in accordance with the Native American Graves Protection and Repatriation Act of 1990. Non-Native American human remains would be handled in accordance with Nevada state law. An evaluation of the resource would determine any subsequent actions to be taken. Project activities would not recommence in the isolated area until a Notice to Proceed is issued by the BLM. ioneer would inform all field personnel of their responsibilities to protect cultural resources and report inadvertent discoveries. ioneer would also inform all field personnel of the various regulations and penalties in place to protect these resources, including the Archaeological Resources Protection Act of 1979 and Native American Graves Protection and Repatriation Act (Public Law 101-601). ioneer is also responsible for training employees and contractors to not engage in the illegal collection of historic and prehistoric materials and to follow procedures for off-road travel and cultural resources' buffer zones avoidance.

17.3.1.4. Vibration Monitoring at Cultural Sites

Predicted indirect effects on cultural resources from blasting and equipment use were quantified as part of the Class III cultural resources evaluation to identify any potential resources that may be indirectly affected as a result of vibration caused by Project activities. A HPTPhas been developed for eligible or unevaluated cultural resources deemed adversely impacted by the Project. Should vibration monitoring be deemed necessary by the BLM and Nevada State Historic Preservation Office, ioneer would perform monitoring at the appropriate sites identified in the historic properties treatment plan. If monitoring indicates that adverse impacts not initially anticipated in the plan have occurred at these sites, additional mitigation may be required. Mitigation options may include, but are not limited to, the implementation of a data recovery program that could include detailed site documentation, surface collection, and/or excavation and analysis to gather a representative sample of surface and subsurface cultural deposits capable of addressing identified research questions.

17.3.1.5. Paleontological Resources

ioneer would not knowingly disturb, alter, injure, or destroy any scientifically important paleontological deposits. In the event that previously undiscovered paleontological resources are encountered, work in the area would cease and the area would be left intact and brought to the attention of the BLM. If significant paleontological resources are encountered, avoidance, recordation, and/or data recovery may be required, as determined by the BLM.

17.3.1.6. Erosion and Sediment Control

Erosion and sediment control would be accomplished through the application of best management practices to limit erosion and reduce sediment from precipitation or snowmelt runoff. Surface water would be managed using surface stabilization measures, runoff and run-on control and conveyance systems, and sediment traps and barriers. Following construction, areas such as cut-and-fill embankments and growth media stockpiles would be seeded with an interim seed mix, developed in conjunction with the BLM, to stabilize material, reduce erosion and minimize the establishment of undesirable weeds, while sediment controls would be applied to limit wind and water erosion. Concurrent reclamation would be implemented, to the extent possible, to accelerate stabilization of disturbed areas. All sediment and erosion control measures would be inspected regularly, with any needed repairs performed or additional best management practices implemented.

17.3.1.7. Water Resources

The Project is located in the Fish Lake Valley Hydrographic Basin (10-117) which is considered endorheic and does not contribute to traditionally navigable waters. No perennial streams are present in the Project area. There is an avoidance area around Cave Spring where no surface-disturbing activities would occur under Phase 1 of the Project. Process components would be designed, constructed, and operated in accordance with Nevada Administrative Code 445A. Water would be recycled to the maximum extent practicable to conserve water resources. Stormwater management would ensure that clean water and contact water are not intermingled. Stormwater monitoring would be completed according to the stormwater management plan to ensure that all surface water controls are stable and well maintained.

17.3.1.8. Geology and Minerals

A quarry lake evaluation report, geochemical characterization report, and overburden management plan have been prepared in accordance with BLM and NDEP guidance. The geochemical characterization report describes the potential for acid rock drainage, metals and metalloids leaching, and salinity generation from overburden, ore, and process residual materials as well as the potential for mobilization of deleterious constituents. The quarry lake evaluation report describes the anticipated geochemical and hydrogeological characteristics of a predicted post-closure quarry lake. The overburden management plan includes recommendations, from an environmental geochemistry standpoint, for overburden handling, overburden placement, and OSF design. Objectives of the overburden management plan include: minimizing leaching of metals and metalloids; minimizing sulfide oxidation and developing localized acidic conditions; limiting seepage through overburden materials; and facilitating closure of the OSFs.

17.3.1.9. Materials and Waste Management

The Project may result in the use and generation of hazardous and non-hazardous waste materials. The management of regulated solid and hazardous wastes that are not classified as exempt waste per the Bevill Amendment (e.g., fossil fuel combustion waste; waste from the extraction, beneficiation, and processing of ores and minerals [including phosphate rock and overburden from uranium ore mining]; and cement kiln dust) or associated with process components would be managed according to best management practices and requirements of regulatory permits. Efforts to find markets for other leached materials would continue during operations as a means to reduce waste quantities. Spill contingency and emergency response measures are included in the emergency response and spill contingency plan.

17.3.1.10. Hazardous Materials

Hazardous materials would be transported, stored, and used in accordance with federal, state, and local regulations, including regulations identified in the Standards Applicable to Generators of Hazardous Waste. Management of hazardous materials associated with the Project would comply with all inventory and reporting requirements. If any hazardous waste is generated on site, it would be properly disposed of at a licensed facility. Transportation and handling of hazardous materials would be conducted by licensed carriers and properly trained workers. Employees would be trained in the proper transportation, use, and disposal of hazardous materials. Blasting components, including ammonium nitrate, would be stored away from other Project facilities and a minimum of 213 m (700 ft) from Cave Springs Road in compliance with the Mine Safety and Health Administration, state, and federal requirements. Boosters and detonators would be stored at a separate location nearby. All liquid petroleum products and reagents used in the process would be stored in above-ground tanks within a secondary containment area capable of holding 110 percent of the volume of the largest vessel in a given containment area.

17.3.1.11. Sanitary and Solid Waste Disposal

Employee training plans would address appropriate disposal practices, to include education on which wastes may be placed in a landfill, as well as management of regulated substances. Non-hazardous solid wastes would be disposed of in a licensed off-site facility. Used solvent, liquids drained from aerosol cans, accumulations of mercury fluorescent lights, and used antifreeze may be regulated under the Resource Conservation and Recovery Act and would be managed accordingly. ioneer anticipates that the facility would fall under the "conditionally exempt small quantity generator" category. Domestic wastewater would be routed, treated, and disposed of appropriately.

17.3.1.12. Petroleum-Contaminated Soils

Petroleum-contaminated soils resulting from spills or leaks of hydrocarbons would be addressed immediately by being removed from the spill site and stored in appropriate secondary containment areas in accordance with NDEP guidelines. ioneer would excavate and transport any petroleum-contaminated soil to a licensed off-site disposal facility.

17.3.1.13. Growth Media and Soil Salvage

Suitable growth media/cover material would be salvaged and stockpiled during Project development. Growth media stockpiles would be located such that they would not be disturbed by Project development. The surfaces of the stockpiles would be contoured with slopes to reduce erosion. To minimize wind and water erosion, growth media stockpiles would be seeded with an interim seed mix developed in conjunction with the BLM to stabilize material, reduce erosion and minimize the establishment of undesirable weeds. Surface water would be diverted around stockpiles as needed to prevent erosion from stormwater runoff. Best management practices such as silt fences or staked weed-free straw bales would be applied as necessary to limit wind and water erosion.

17.3.1.14. Monitoring Plan and Other Plans

Baseline monitoring and characterization were completed at the onset of this Project. These findings would be utilized as a basis for assessing potential impacts to air, water, and biological resources that may result from the Project. The Monitoring Plan (ioneer 2022) and other commitments (leak detection, fluid management, etc.) to be included in the Water Pollution Control Permit would serve as a basis for monitoring activities. These plans may be updated as the Project progresses to accommodate changes in conditions and ensure ongoing protection of the environmental integrity of resources on site.

ioneer has entered into a Development Agreement with Esmeralda County.

17.3.1.15. Wildlife and Avian Protection

The following applicant-committed environmental protection measures would be implemented by ioneer to reduce or preclude risks to raptors, birds, bats, grazing animals, and other species that may interact with Project activities or facilities:

- The open adit adjacent to the Project haul road may be closed in coordination with the Nevada Department of Wildlife and BLM.
- Operators would be trained to monitor the Project area for the presence of larger wildlife such as deer, antelope, and sheep. Mortality information would be collected and reported, as necessary.
- ioneer would establish wildlife protection policies that prohibit feeding or harassment of wildlife within the Project area boundary.

- Following Project construction, areas of disturbed land no longer required for operations would be reclaimed as required by the BLM to promote the reestablishment of native plant and wildlife habitat.

ioneer has developed a draft bird and bat conservation strategy that includes measures to reduce impacts to birds and bats. The bird and bat conservation strategy includes, but is not limited to, the following:

- Land clearing or other surface disturbance associated with the Project would be conducted outside of the avian breeding season, whenever feasible, to avoid potential destruction of active nests or young birds in the area. When surface disturbance must occur during the avian breeding season (March 1 through July 31), a BLM-qualified biologist would survey the area prior to land clearing activities in accordance with current BLM protocols. Survey results would be submitted to the BLM before surface disturbance occurs.

- Primary pond liners would consist of 80-mm high-density polyethylene single-sided textured geomembrane with the textured side up to facilitate wildlife egress.

- Avian exclusion measures (e.g., bird balls, netting, BirdXPellers) would be used where required. ioneer employees would check the avian exclusion measures and the fencing around all ponds at least once per 12-hour shift or as specified in the permit. Ponds would be monitored and reclaimed at closure.

- The interior side slopes of the processing facility contact water pond are designed at 3H:1V with the exterior cut fill slopes designed at 2H:1V to ensure that there are no shallow ‘mud-flat’ areas that could allow birds to wade, forage, and rest along the shore.

- ioneer would maintain a record of all mortalities (birds and bats) associated with permitted facilities.

- During all phases of the Project, all food, waste, and other trash would be placed in containers with lids or covers that can be closed to discourage scavenging by wildlife.

- Speed limits would be posted at 35 miles per hour (mph) on haul roads, 45 mph on access roads, and 25 mph on all other roads in the Project area.

- Powerlines would be designed to provide sufficient separation between phases and grounds to reduce the risk of electrocution for raptors, birds, and bats.

- The processing facility, mine, explosive storage area, and contact water ponds would be fenced to specifications outlined in the BLM Handbook 1741-1, as applicable. All fences would include double swing gates to allow for human access. ioneer would also coordinate with Nevada Department of Wildlife on fencing specifications. Avian and wildlife protection measures would be in compliance with Industrial Artificial Pond Permit measures.

- Blasting would be performed during daylight hours.

17.3.1.16. Noxious Weeds and Invasive Non-native Species

ioneer has developed a noxious and invasive weed management plan for the Project. Prevention, detection, containment, and removal would be the primary strategies for weed control. Weeds on site would be physically removed or treated with approved herbicides by certified applicators. Weed treatment activities within the Tiehm’s buckwheat avoidance area and the subpopulations would be limited. Monitoring would include creation of an occurrence and treatment database including geographic locations of the sites. The results from annual monitoring and treatment would be reported to the BLM and shall serve as the basis for updating the plan and developing ongoing annual treatment programs.

17.3.1.17. Public Safety and Accessibility

Public safety would be maintained throughout the life of the Project by excluding unauthorized access to sensitive Project facilities through the installation of fencing and security features (including cameras and personnel) as well as the installation of traffic-control measures. The latter would include the establishment of speed limits (to be strictly enforced) for Project-related traffic on public and haul roads, the installation of a rail- road type crossing guard (with stop signs) at the intersection of the haul road and Cave Springs Road near the processing plant, and the installation of stop signs at the intersection of Cave Springs Road and the service road to the explosives storage area from the mine area. These measures would also provide for continued public accessibility to and through the Project area. All equipment and facilities associated with the Project would be maintained in a safe and orderly manner for public safety. All activities would be conducted in conformance with applicable federal and state health and safety requirements; site visitors would be properly instructed in site safety procedures prior to admittance.

17.3.1.18. Transportation and Access

ioneer's transportation and access plan outlines safe procedures and mandatory practices for Project-related personnel travel and material transport to and from the Project site. The plan includes descriptions of how safe public access would continue to be accommodated through the Project area, in coordination with Esmeralda County and other existing road users. In addition, ioneer realizes that certain road engineering upgrades and maintenance activities must be implemented to safely accommodate the increased traffic that would result from Project activities. Accordingly, an access road improvement and maintenance plan has been produced. Together, the transportation and access plan and the access road improvement and maintenance plan outline the various commitments ioneer has made related to road improvement, management, and maintenance.

17.3.1.19. Visual Resources and Night Skies

A visual resources technical report was prepared to characterize the existing conditions associated with visual aspects in and around the Project area. ioneer would seek to minimize the visual impact of activities and structures to viewers along publicly accessible roadways, public use areas, and within the wilderness study area. Dark sky lighting best practices would also minimize the effects of lighting on wildlife that may be present in the area, including bats. Several examples of measures ioneer intends to implement include:

Careful placement and blending of stored materials to minimize contrast;

Selection of building sites and new roads such that they would be hidden from view behind topographical features, where possible; and

Consultation with the BLM on choice of colors of machinery, fencing, and powerlines; lighting design and color; and design, color, and surface texture treatments for the processing plant structures.

To minimize the effects from lighting, ioneer would utilize hooded stationary lights and lighting plants. Lighting would be directed onto the pertinent sites only and away from adjacent areas not in use, with safety and proper lighting of the active work areas being a priority.

17.3.1.20. Fire Protection and Emergency Response

Fire protection equipment would be secured, and a fire protection plan would be established for the Project in accordance with National Fire Codes for Fire Protection and State Fire Marshal. The Project would operate in conformance with all applicable Mine Safety and Health Administration and Occupational Safety and Health Administration safety regulations. Smoking would only be permitted in designated areas that are free of flammable materials and only if allowed by state law or federal regulations. ioneer would immediately contact the appropriate dispatch or coordination center in the event of a fire and report all wildland fires to the BLM and other relevant agencies. Project vehicles would be equipped with radios and/or cellular telephones for fire preparedness and prevention, suppression operations, and emergency response purposes. Crew vehicles and equipment would also be supplied with an emergency communication list that would include emergency contact information for administering agencies.

17.4. Plans, Negotiations, or Agreements with Local Individuals or Groups

Social and community impacts associated with development of the Project are being considered and will be evaluated in accordance with NEPA and other federal laws. Potential impacts are generally restricted to the existing population, including changes in demographics, income, employment, local economy, public finance, housing, community facilities, and community services. Potentially affected Native American tribes and tribal organizations are being consulted during the preparation of all social plans to advise them of project aspects that may have an effect on cultural sites, resources, and traditional activities. Based on the Project design that is being permitted, no known social or community issues or impacts will have a material impact on ioneer's ability to obtain permits to develop the Project.

A development agreement was executed in April 2025 with the Esmeralda County.

17.5. Descriptions of any Commitments to Ensure Local Procurement and Hiring

Labor statistics and data suggest that Nevada may have difficulty acquiring sufficient construction craft workers to sustain the labor needs for the Project as designed. Many trained construction workers left the state to find work elsewhere as a result of the economic downturn in the state during the late 2000s. The ability to staff quality construction workers is a risk to the project, as there are now many employment opportunities in the state.

The recommended labor approach for the construction phase of the Project is to have all subcontracted work to be competitively bid by both union and non-union contracting companies. This allows contractors to pull from all available resources in the area and allows them to use internal resources to staff awarded packages. The preferred contractor type for this Project is a larger, regional contractor that can handle multiple trade types (i.e., civil, structural, mechanical, and piping). In addition, this will limit the number of contractor companies onsite.

Recruitment of permanent employees will take place locally as well as regionally.

17.6. Mine Closure Plans

A closure plan was prepared that includes preliminary details for the final closure of all facilities under the Phase 1 Project operations. Closure plans for Phase 2 of the Project would be developed as Project design details are formalized.

During Phase 1, Project operations, and as closure approaches, spent materials will be evaluated to preclude the potential for pollutants from reclaimed sites to degrade the existing environment. Nevada Administrative Code requires a closure plant to stabilize all process components with an emphasis on stabilizing spent process materials (445A.398b).

Closure activities will be conducted to standards required by the Nevada Administrative Code (445A.433) and Nevada Reclamation Statue (519A). The Project was designed as a facility with zero discharge of process or contact water to waters of the state. All process components were designed to withstand the runoff from a 100-

year, 24-hour storm event and permanent diversion structures were designed to withstand the runoff from a 500-year, 24-hour storm event.

Concurrent reclamation will be completed to the extent practical throughout the life of the Project. A Final Plan for Permanent Closure will be submitted to NDEP-BMRR at least two years before the anticipated date of permanent closure of each process component. The Final Plan for Permanent Closure will incorporate procedures, methods, and schedules for stabilizing the spent process materials based on information and experience gathered throughout the active life of the process components.

The key closure activities of the Rhyolite Ridge Project Phase 1 closure plan are summarized in Table 17-3.

Table 17-3 - Closure Activities by Project Component

Project Facility	Closure Summary
Quarry	A berm to prevent access to the quarry and warning signs will be constructed prior to decommissioning of the quarry fence. An all-terrain vehicle trail from the country road to the quarry will remain accessible for quarry lake monitoring by project personnel. The northwestern portion of the quarry will be buttressed with backfill to ensure long-term slope stability adjacent to the populations of Tiehm's buckwheat. Diversion features will continue to redirect run-on from upgradient of the quarry into natural drainages, to the extent practical.
Processing Plant	The processing plant and all associated infrastructure will be decommissioned and removed from the site. This area will be regraded to ensure appropriate drainage, covered with a growth medium, and revegetated by seeding with native species. The area will be similar to pre-existing conditions.
Spent Ore Storage Facility	The SOSF side slopes will be recontoured to remove the bench configuration. In general, the re-grading efforts will be completed to create a variable slope angle with steeper gradients near the crest and flatter gradients near the toe. Some variability will be incorporated in order to add naturally appearing features, provide drainage courses, and create wildlife habitat areas. The top surface will be sloped to promote runoff and prevent ponding of meteoric water. Surface runoff will be shed to the natural topography. Non-contact run-on surface flow upgradient of the facility will continue to be directed around the perimeter by a diversion channel and will be released to natural drainages. The re-graded surface will be capped with an evapotranspiration cover system, composed of a mixture of onsite alluvium and low-permeability clay materials excavated from the quarry, that will minimize percolation of meteoric water through the cover to negligible levels. The slopes will be vegetated to further reduce the amount of recharge due to meteoric infiltration and to stabilize the cover system. When chemical constituents of the water from the underdrain fall below regulatory limits, the underdrain pond liner system will be demolished; the pond will be backfilled and/or graded to drain; and the underdrain collection system will be capped and covered. Long-term drainage of meteoric water will then report directly to the natural drainage.
Overburden Storage Facilities	They will be reclaimed concurrently with active development. The cover will be vegetated with native plant species to reduce meteoric water infiltration and to

Project Facility	Closure Summary
	stabilize cover material. Diversion channels constructed around the facility will remain in place and continue to be used to convey run-on into the natural drainage course located downslope. Once the reclamation is complete and no additional contact water is produced from the surfaces, the contact water diversion channels will be modified, and the contact water ponds will be reclaimed. The contact water ponds liner system will be removed or perforated, and the pond will be backfilled, graded to drain to the north, and covered with growth media. The underdrain system will be capped and covered.
Ancillary Facilities/Infrastructure	All applicable roads will be reclaimed at closure by ripping the surface to loosen the compacted soil, regraded, then seeded with an approved seed mix. Water supply wells will be plugged and abandoned, and surface infrastructure and pipelines will be dismantled and removed from the site. All wells will be plugged. Tanks used for storage of potable and fire water will be dismantled and removed from the site. Buried water lines will be capped, buried, and left in place. The premanufactured treatment facilities used to treat wastewater will be completely removed from the site at closure. In the case where hazardous substances are identified in soils the contaminated areas will be remediated in accordance with applicable rules. The geomembrane lining will be buried in place with a minimum cover of three feet. Any concrete foundations and/or pedestals will be broken, and the rubble buried with a minimum of three feet of cover. Power lines and associated infrastructure will be removed and recycled as appropriate. Growth media stockpiles will be completely consumed by the reclamation process. The footprint of these areas will be reseeded once they are no longer in place.
Other Closure Considerations	Ensure all chemicals (hazardous, toxic, flammable, etc.) are completely removed from the site and safely disposed. Mineral exploration and development drill holes and wells will be abandoned. Retain access to long-term monitoring stations and project elements that will remain following closure. Assure that accumulations of precipitation received following closure are accommodated in the fluid management system. All erosion protection will remain in place until deemed reclaimed and permanently stable from mine related activities. Regrade and contour all areas no longer needed for long-term monitoring and access. Remove all building materials, fencing, signage, and stormwater features no longer needed.

17.6.1. Closure Costs

Closure and reclamation costs are currently estimated at approximately $61 million, using the Nevada Standardized Reclamation Cost Estimator with 2023 cost data. This cost estimate assumes that concurrent reclamation of the OSFs would occur during site operations and that these costs would occur over a seven-year period after the end of quarry mining. In each of the final three years of quarry mining, ioneer will build a financial reserve equal to 33% of the estimated closure costs to pay the reclamation (closure) costs.

17.6.2. Closure Schedule

Concurrent reclamation will be completed to the extent practical throughout the life of the Project. A Final Plan for Permanent Closure will be submitted to BMRR at least two years before the anticipated date of permanent closure. The Final Plan for Permanent Closure will incorporate procedures, methods, and schedules for stabilizing spent process materials based on information and experience gathered throughout the active life of the facility.

The quarry and OSFs will be first to be closed at the site as final products are removed and resultant overburden stored. Reclamation of the OSFs will be started in year 1 of operations when final buildout is expected to be completed on a portion of the facility. Roads to the quarry and OSFs will be reclaimed wherever they are no longer needed and are not retained for long-term monitoring or maintenance. The haul road will be reclaimed once the route is no longer needed for active ore transport. This route will be returned to a single-lane access road with gravel surface to be used for maintenance and monitoring.

Roads used for monitoring or maintenance will be reclaimed and then used as overland all-terrain vehicle trails as long as they are needed. They will then be fully reclaimed as soon as the roads and/or all-terrain vehicle trails are no longer required for monitoring or maintenance purposes.

The SOSF and process facility components no longer needed for reclamation will be decommissioned once the quarry is no longer active. Key elements of the processing area that will be needed for reclamation and final closure, such as sanitary and administrative support will be retained until no longer needed. The SOSF and associated access route will be reclaimed, then utilized as a limited-access overland all-terrain vehicle trail for maintenance and monitoring purposes only. As soon as monitoring and maintenance is no longer required, the access road will be fully reclaimed.

Permanent closure is considered complete when:

- Appropriate procedures are in place to assure that all areas associated with the Project do not release contaminants that have the potential to degrade the waters of Nevada, and the quarry is left in a manner that minimizes the impoundment of surface drainage (Nevada Revised Statute 445A.429).
- Spent ore effluent has been demonstrated to be non-acid generating and will not result in degradation of waters of the state (Nevada Revised Statute 445A.430)

Although post-closure monitoring is anticipated to last approximately 6 years, the NDEP can extend monitoring for up to 30 years. Final monitoring requirements will be established by the NDEP according to baseline data, process component characterization and the Final Plan for Permitting Closure (Nevada Revised Statute 445A.433).

17.7. QP’s Opinion on the Adequacy of Current Plans to Address Any Issues Related to Environmental Compliance, Permitting, and Local Individuals or Groups

It is the QP’s opinion that ioneer’s current actions and plans are appropriate to address any issues related to environmental compliance, permitting, relationship with local individuals or groups, and tailings management for the Project design that is currently undergoing, or has recently completed, permit acquisition activities.

18. CAPITAL AND OPERATING COSTS

This Section contains forward-looking information related to capital cost, operating cost, and sustaining capital cost estimates for the Project. The material factors that could cause actual results to differ materially from the conclusions, estimates, designs, forecasts, or projections in the forward-looking information include any significant differences from one or more of the material factors or assumptions that were set forth in this Section including prevailing economic conditions such that unit costs are as estimated in constant (or real) dollar terms.

As part of this analysis, the QP has taken into consideration the accuracy of the estimation methods in prior similar environments. The accuracy of capital and operating cost estimates complies with the requirement as set forth in §229.1302 (Item 1302 of Regulation S-K).

18.1. Capital Cost Estimate

18.1.1. Basis of Capital Cost Estimate

The capital cost estimate is based on the feasibility study (FS) basis of estimate (Rev. 10) with a base date of April 2024 (Q1 2024). The estimate is based on engineering design completion of 68.4%. Capital costs for various scopes of work for the Project were independently developed by several consultants, including Golder, AtkinsRéalis and NewFields, before being provided to Fluor for consolidation to the overall capital cost estimate. A summary of the parties responsible for input to the estimate is provided in Table 18-1. The estimate reflects an engineering, procurement and construction management execution strategy, and aligns to the baseline Project schedule of 38 months from final investment decision to first production.

Table 18-1 - Engineering and Estimate Responsibilities Matrix for the Capital Costs Estimate

Area	Engineering Responsibility	Equipment Sizing and Pricing Responsibility	Bulk Material Take-off Responsibility	Estimate Development or Compilation
Mine	Golder	Golder/Fluor Estimating	Golder	Fluor
Spent ore facility	NewFields	NewFields/Fluor Estimating	NewFields	Fluor
Processing facilities	Fluor	Fluor	Fluor	Fluor
Lithium hydroxide facility	AtkinsRéalis	AtkinsRéalis	AtkinsRéalis	AtkinsRéalis
Sulfuric acid plant	AtkinsRéalis	AtkinsRéalis	AtkinsRéalis	Fluor
Power plant	AtkinsRéalis	AtkinsRéalis	AtkinsRéalis	Fluor
Balance of plant/common	Fluor/Golder	Fluor	Fluor/Golder/NewFields	Fluor

The capital cost estimate was based on the following:

- Project scope of facilities;
- Project scope of services;
- Project work breakdown structure;
- Project schedule;
- Project execution plan;
- Schedule risk analysis report;
- Key design documents as of April 2024 including:

  - Design criteria (multiple engineering disciplines);
  - Project block flow diagrams and process flow diagrams;
  - Piping and instrumentation diagrams;
  - 3D model;
  - Overall plot plan for processing facilities and sulfuric acid plant;
  - Mechanical equipment list and general arrangement drawings;
  - Supplemental sketches;
  - Electrical single-line diagrams;
  - Electrical equipment list;
  - Instrumentation and valves tag items list;
  - Detail engineering bulk material take-offs;
  - NewFields surface water management report;
- Supply pricing for equipment and materials based upon best and latest available information (committed purchase order/contracts, firm quotations, budgetary quotations, or historical/reference pricing);
- Engineering and procurement services effort hours and pricing based upon commercial contract(s) for the remaining engineering work from October 2024 onwards;
- Commissioning execution plan.

The capital cost estimate covers the period from final investment decision to first production and is reported in Q1 2024 real US dollars without design growth allowances on neat quantities and risk costs. It was assumed that 20% of the workforce will be local and 80% will travel from outside the region and will be eligible for travel subsistence. The contractors selected to execute the Project will adhere to Davis Bacon prevailing wage rates for the State. The labour productivity factor selected for the Project was 1.0 and was applied to all base construction work hours for all Project labour. Contractor quotes for civil works were used to confirm the unit rates and the productivity used in the capital cost estimate. These rates were also benchmarked with historical data from similar projects in the region (reference benchmark report from Fluor). Pre-assembly and modularization strategies, where feasible, have been considered and are reflected in the estimates. A per diem allowance of US$110/day for 80% of the direct labor and 90% of the indirect labor force was included for living-out and travel expenses.

Total equipment pricing, including mine equipment, process/mechanical, electrical and instruments/controls, is based as 63% on firm price, and 36% on budget price from competitive bidders. The balance of equipment pricing, representing 1% of total equipment cost, is based on historical data.

The capital cost estimates present all expected forecast to complete costs for the Project as defined by the scope of work in the basis of estimate, while any spent or sunk costs up to the Report date were excluded. A contingency of 10% was applied to the capital costs estimate using a Monte Carlo simulation to achieve a P65 (i.e., the probability at the 65th percentile) confidence level for the estimate and P50 for schedule according to the model and ranges established by Fluor. The estimate, including contingency, has an expected accuracy range of +15%/-10% as per the basis of estimate.

Capital costs for the mining equipment and the process plant mobile equipment are based on a firm quote and a leasing strategy contract with Caterpillar, and other selected equipment vendors. The costs for a two-year lease plus 20% lease down payment and fees are included in the capital cost estimate. The remaining lease costs are included in the sustaining capital estimates.

Capital costs for the haul roads, overburden storage facilities, spent ore storage facility, the processing plant (which includes processing structures and facilities), maintenance facilities, warehousing, shipping and receiving, fuel island, sulfuric acid plant, steam turbine generator, and administrative buildings were estimated from material take-off quantities developed by various third parties. Each of the above has an engineering design that supports the FS level of design maturity.

18.1.2. Summary of Capital Costs

Total initial capital costs were estimated at US$1,667.9 million. A summary of total capital costs for the Project is provided in Table 18-2, whereas a summary of monthly cash flows is provided in Section 19.

Table 18-2 – Summary of Initial Capital Cost Estimate Updated in 2024

Discipline		Total Cost (US$ Million)
Direct field costs		
00	Earthwork & civil	52.2
10	Concrete	64.9
20	Structural steel	55.7
30	Architectural and buildings	5.2
40	Machinery and equipment	437.3
50	Piping	121.2
60	Electrical	120.0
70	Control systems	38.8
75	Communications and security	4.7
81	Painting and coatings	31.7
82	Insulation & refractory	21.7
83	Modularization	5.2
87	Scaffolding	8.3
Sub-total direct cost		966.9
Sub-total direct distributable		282.2
Sub-total indirect cost		82.1
Other Cost		
9800000	Escalation	65.8
9900000	Contingency (project @ risk)	107.3
9900000	Contingency (schedule risk analysis)	40.2
Sub-total other cost		213.3

Discipline		Total Cost (US$ Million)
Owner's managed cost		
8500000	Owner's project cost	91.5
Sub-total owner's cost		91.5
Indicative total cost		**1,636.0**
Late Additions (order of magnitude)		31.9
Indicative total cost with late additions		**1,667.9**

18.2. Sustaining Capital Cost Estimate

18.2.1. Sustaining Capital Costs and Basis

The capital costs estimate has an expected accuracy range of +15%/-10% as per the basis of estimate. A 10% contingency was considered in the sustaining costs estimates. An annual breakdown of these sustaining capital costs is included in ioneer's financial model (see Section 19). Closure and reclamation costs (estimated at approximately US$61 million as indicated in Section 17.6.1) are incurred after the life of mine plan is completed, and they are not tabulated in the capital cost or sustaining capital cost estimates. The quarry will be mined out in Production Year 82.

The total sustaining capital costs, including capitalized deferred stripping costs during operation, are estimated at approximately US$3,040.2 million as shown in Table 18-3.

Table 18-3 – Summary of Total Sustaining Capital Costs

Category	Total Cost (US$ Millions)
Process mobile equipment replacement cost	168.6
Mining mobile equipment replacement cost	252.2
Ground anchors and mine capital improvements	1,445.9
Spent ore capital improvements / updates	47.8
Machinery & equipment (sulfuric acid plant) capital improvements / updates	67.6
Machinery & equipment (power plant) capital improvements / updates	4.0
Leach optimization expansion	30.0
Lithium hydroxide plant	161.9
Vat leach/DCS replacement	40.0
Ranch Purchase	24.0
Total sustaining capital costs (excluding deferred stripping costs)	**2,241.9**
Deferred stripping costs during operation	798.3
Total sustaining capital costs (including deferred stripping costs)	**3,040.2**

Sustaining capital costs include allocations for expansion of facilities (SOSF and OSF), infrastructure and major equipment maintenance and overhaul activities completed during planned shutdowns (or not) for continual support of the operating mine and plant at life of mine nameplate capacity.

Sustaining capital key cost elements include:

- Stripping costs during operation (stripping costs prior to operation are captured in capital cost estimate);
- Mining mobile equipment replacement cost;
- Ground anchors and quarry capital improvements;
- The steam turbine generator (STG) refurbishment every ten years;
- Processing mobile equipment replacement cost;
- Sulfuric acid plant machinery and equipment capital improvements/updates, which include allowance for sulfuric acid plant total bed catalyst replacement;
- Power plant capital improvements and updates;
- Highwall monitoring system modifications and expansion;
- Provision for the Stage II (Year 3) and Stage III (Year 9) expansion of the SOSF, including capacity increase allowance for subsequent expansions every six years thereafter;
- Dewatering infrastructure expansion as pit becomes deeper;
- The north overburden storage facility foundation and associated stormwater controls will be constructed in Production Year 3;
- Haul roads expansion;
- Leach Optimization Expansion;
- Vat leach Cranes Replacement;
- DCS Replacement;
- LiOH Plant expansion;
- Ranch Purchase.

18.3. Operating Cost Estimate

18.3.1. Basis of Operating Cost Estimate

The operating expenditure estimate was based on ioneer’s basis of operating cost estimates dated March 2024 and their latest operating cost estimate model.

The total operating cost estimates include typical operating costs associated with mine and process plant operations, and are broken down into six main categories:

- Personnel, which includes labour and outsourced services;
- Reagents, such as sulfur, lime, soda ash and gypsum;
- Fuels, which include diesel, gasoline and mine site lube and filters;

- Miscellaneous operating supplies, which include operation supplies, packaging material and shipping;
- Maintenance materials and services;
- Other, which includes, sales taxes, insurance, software, and general administration.

18.3.1.1. General

The operating cost estimates are based on the latest mine plan updated in first half of 2024, with a cost base date of April 2024 and a planned operation start date in year of 2027. The overall operating cost estimates are considered at a feasibility study level with the expected accuracy range of +/-15% and contingency requirement as per S-K 1300. No contingency has been allocated in the operating cost estimate.

The mine was assumed to operate two-shifts-per-day, 365 days per year with no scheduled off days for the first 21 years of production. The mine was then assumed to transition to a one-shift-per-day basis from Year 55 through the remaining mine life of 82 years.

Direct operating costs for the mine operation are estimated based on first principles from the production plan statistics using methodologies consistent with a feasibility study.

Process costs for spent ore removal and spent ore storage facilities, processing facilities including sulfuric acid plant, and other indirect operating costs were estimated by Ioneer from first principles using the production schedule from the production plan. Process costs were estimated using mythologies consistent with a feasibility study and included quoted firm pricing from major reagent suppliers, quoted freight costs from the transport firms, and workforce costs based on industry norms for salary and wage data within the region consistent with the mine workforce costs. Reasonable scenarios for other requirements such as outsourced services with quoted rates or estimates were also included.

18.3.1.2. Personnel Cost Estimate Basis

Workforce numbers were derived based on typical organization charts of similar mining and process facility operations, with additional inputs as follows:

- Management and corporate staff - inputs by ioneer;
- Mine operations - inputs by ioneer, Caterpillar, Empire Southwest, and IMC;
- Processing facilities – inputs by ioneer, Fluor, and specifically for sulfuric acid plant by Elessent and AtkinsRéalis;
- Logistics and support operations – inputs by ioneer and respective contractors/suppliers;
- Sales and marketing – inputs by ioneer and consultants.

The workface costs include base rate, incentives, bonus, allowances, benefits, initial housing allowance, and employment taxes for each position within the organization.

18.3.1.3. Reagents

Reagent consumption was estimated for the LOM based on the mine plan, overall plant availability and heat and material balance.

Major reagents will include sulfur, hydrated lime, soda ash and gypsum. Unit prices were based on competitive quotations from industry suppliers and included taxes and surcharges based on the delivery location.

Minor quantities of miscellaneous reagents were required for the Project operation and have been considered, including water treatment chemicals, laboratory chemical and cleaning chemicals that were covered in the contract services based on competitive quotation.

18.3.1.4. Fuel and Lubes

Mobile equipment and mine equipment fuel consumption costs were based on manufacturer standards and the estimated hours of operation from mine and processing facilities.

For the process facilities, major fuel consumption was related to the operation of the auxiliary boiler at the minimum flow based on the operating philosophy. An allowance was made for grease and lubrication costs for process equipment. No fuel consumption allowance was made for emergency backup generators or auxiliary boiler fuel consumption above minimum flow.

Fuel pricing was based on fuel PADD 5 and index for Reno, Nevada for Q1 2024. The cost for lubrication and oils was based on budgetary pricing from Shell.

18.3.1.5. Miscellaneous Operating Supplies and Product Transport

The miscellaneous operating costs are primarily due to costs associated with packaging and product transport. The costs were estimated based on quotations and budgetary estimates.

Finished products, including boric acid and lithium carbonate, will be packaged onsite using one metric tonne FIBC (for lithium carbonate and boric acid) or 25 kg bags (for boric acid).

A composite transport cost was estimated based on the volume weighted average cost of transporting finished product from Rhyolite Ridge site to the customer. For boric acid, the volumes and customer locations were based on sales and marketing plan; while for lithium carbonates, these were based on offtake agreements.

For ocean bound shipment, no allowance for demurrage was included. It was also assumed that there would be no delays for truck dropping off empty containers or picking up loaded containers, and thus no allowance for truck detention was included.

18.3.1.6. Maintenance Materials and Services

Mine mobile equipment will be monitored and maintained through Master Service Agreement with the Empire Southwest Caterpillar dealership. The contract includes cost of service, management, supplies, and parts management. Operation costs and component sustainable capital costs were based on a firm bid.

Mobile equipment specific to the process facilities were covered under the mine mobile equipment costs. Process spares were based on the cost of two-year spares, factored for equipment utilization, with pricing information based on bids from equipment suppliers.

18.3.1.7. Other Costs

Costs associated with sale taxes, insurance, software, general administration for office equipment, medical supplies, and general administration allowances were also included in the operating cost estimate. The general administration allowance was not broken down in detail but included allocations for miscellaneous costs such as office supplies, furniture, miscellaneous software licenses, dues and subscriptions, public relations, advertisements, sports and recreation, special assignment, regulatory permits, donations, and community affairs.

18.3.2. Summary of Operating Costs

The total operating cost was estimated at approximately US$15,708.8 million in total excluding taxes, or an average of approximately US$60.3/Mt of run-of-mine ore feed, over the proposed 82-year mine life. Total operating costs for the processing plant and mine are summarized in Table 18-4, whereas total operating costs by expense categories are summarized in Table 18-5.

Table 18-4 - Summary of Total Operating Costs – Mine vs Process Plant

Description	Total Cost (US$ Million)	Average Cost per Tonne RoM [1] (US$/MT RoM)	Percentage (%)
Mine (excluding deferred stripping [2])	1,830.0	7.0	11.3
Process plant (excluding sales tax)	13,878.8	54.9	88.7
Total operating costs excluding sales tax	15,708.8	60.3	**100.0**

Notes:

1. RoM = run-of-mine
2. Deferred stripping costs during operation are included in the sustaining capital costs as indicated in Table 18-3.

Table 18-5 - Summary of Operating Costs over Life-of-Mine by Categories

Description	Total Cost (US$ Million)	Average Cost per Tonne RoM [1] (US$/MT RoM)	Percentage (%)
Personnel	2,210.6	8.5	14.1
Reagents (with freight)	8,404.7	32.3	53.5
Fuels	1,870.2	7.2	11.9
Misc operating supplies	1,132.8	4.4	7.2
Maintenance materials and services	2,189.4	8.4	13.9
Other costs	1,114.2	4.3	7.1
Deferred stripping costs[2]	(798.3)	(3.1)	(5.1)
Total operating costs including sales tax	16,123.5	61.9	
Sales tax	(414.7)	(1.6)	(2.6)
Total operating costs excluding sales tax	15,708.8	60.3	100.0

Notes:

1. RoM = run-of-mine
2. Deferred stripping costs during operation are included in the sustaining capital costs as indicated in Table 18-3.

19. ECONOMIC ANALYSIS

This Section contains information related to the economic analysis for the Project. The material factors that could cause actual results to differ materially from the conclusions, estimates, designs, forecasts or projections include any significant differences from one or more of the material factors or assumptions that were set forth in this sub-section including estimated capital and operating costs, Project schedule and approvals timing, availability of funding, projected commodities markets and prices.

19.1. Demonstration of Economic Viability

The production schedule and associated capital and operating costs estimates, described in Section 18.0, were analyzed using an economic model developed by ioneer. In the QP's opinion, the outcomes from this economic analysis demonstrates that the Project is economically viable. ioneer's economic analysis has formed the basis of the mineral reserve estimates.

Inputs into the economic analysis include the capital and operating costs, saleable lithium carbonate and boric acid production, commodity price and revenue forecasts, and transportation and management costs previously described in Sections 16 and 18. The financial model uses post-tax nominal cashflows in real terms. An 8% discount rate was applied to estimate the Project net present value.

The economics of the Rhyolite Ridge Project were evaluated using a real (non-escalated), after-tax discounted cash flow model on a 100% project equity basis (unlevered). Capital costs, revenues, operating costs, and taxes are included in the financial model.

This financial analysis covers the period from FS completion to end of mine life and reclamation. Capital and operating expenses are calculated based on Q1 2024 estimates and revenues are based on Q1 2025 forecast pricing. Cash flows are reported in Q1 2025 real U.S. dollars without allowance for escalation or currency fluctuation.

19.2. Principal Assumptions

Key financial modeling assumptions are noted in Table 19-1.

Table 19-1 - Key Financial Modeling Assumptions

Item	Unit	Parameter	
General			
		Metric Tons (t)	Short Tons (st)
Ore mining rate	Million tons, average annual	3.2	3.5
Lithium carbonate equivalent (LCE) production rate	tons, average annual	19,276	21,248
Lithium carbonate production rate (Years 1-2)	tons, average annual	19,185	21,147
Lithium hydroxide production rate (Years 3+)	tons, average annual	21,897	24,137
Boric acid production rate	tons, average annual	68,031	74,992
Lithium reference price (carbonate and hydroxide)	US$ per tons, average annual	23,012	20,876
Boric acid reference price	US$ per tons, average annual	1,368	1,241
Life of mine	Years	82	
Construction period	Months	38	
Working Capital Assumptions			
Accounts receivable lithium carbonate	Days	50	
Accounts receivable boric acid	Days	77	
Accounts payable	Days	60	
Tax Rates Assumed			
Federal corporate tax	%	21.00	
Inflation reduction act 45(x) production tax credit	%	10.00	
Nevada minerals tax	%	5.00	
Depletion allowance	%	22.00	
Nevada commerce tax	%	0.05	
Nevada property tax rate	%	3.02	
Assessed book value for property tax	%	35.00	
Nevada modified business tax	%	2.00	
Nevada sales tax	%	6.85	
Other			
Inflation rate	%	None	
Discount rate	%	8.0	
Currency	US$	U.S. dollars	

19.3. Cashflow Forecast

The financial analysis, carried out for the feasibility study and updated for this Report, was conducted using a discounted cash flow. This method calculates annual cash flows (based on a calendar year) using various sources of inputs, including operating expenses, capital expenses (both initial and sustaining), pricing forecasts, run-of-mine ore production, processing rates, etc. The annual cash flows are based on revenue in a specific period (calendar year) minus the projected expenses or taxes associated with life-of-mine operations. The result is then discounted using the discount rate that adjusts the cash flows for the time value of money. This method produces the present value of the expected future cash flows, also known as net present value (NPV).

The economic analysis and sensitivities were completed using ±15% variation in one variable at a time. There was no sensitivity analysis performed for two variables or multi-variable. Note that the equation to determine revenue is based on a linear relationship between prices of the metal (either lithium or boric acid) and the corresponding recovery rate. This linear relationship forces the sensitivities to be equal.

19.3.1. Results of Economic Analysis

The Project's total cash flow is detailed in Table 19-2, resulting in post-tax cash flow of US$23.8 billion total for the 82-year life-of-mine and, over the Project's life, average annual pre-tax cash flow of US$258.6 million.

The Project's overall revenue is shown below first, minus operating costs, taxes (production taxes and federal income tax), and miscellaneous costs following.

Table 19-2 - Total Project Cash Flow – Details

	Unit (US$)	Total – Life of Quarry
Revenue		
Lithium carbonate (ex-plant)	$000s	670,829
Lithium hydroxide	$000s	38,909,886
Boric acid (ex-plant)	$000s	7,598,497
Total revenue	**$000s**	**47,179,212**
Operating Costs		
Mine [1]	$000s	1,829,976
Plant [1]	$000s	13,878,833
Total operating cost	**$000s**	**15,708,809**
Non-Operating Costs		
Initial capital	$000s	1,667,860
Sustaining capital	$000s	2,241,965
Working capital	$000s	-
Closure costs	$000s	61,087
Capitalized deferred stripping	$000s	798,290
Total non-operating cost	**$000s**	**4,769,202**
Pre-tax cash flow	**$000s**	**26,701,201**
State and Federal Taxes		
Nevada minerals tax	$000s	1,340,181
Nevada sales tax	$000s	438,587
Nevada modified business tax	$000s	39,652
Nevada commerce tax	$000s	21,410
Nevada property tax	$000s	411,822
Total Nevada state tax	**$000s**	**2,251,651**
Federal income tax	$000s	844,388
Federal 45 (x) production tax credit	$000s	(167,503)
Total tax cost	**$000s**	**2,928,536**
Post-tax cash flow	**$000s**	**23,772,665**

Notes:

1. General and administrative costs are included within "Mine" and "Plant" cost items.

The net present value, internal rate of return and payback period are summarized along with other pertinent Project economic metrics in Table 19-3.

Table 19-3 - Project Economic Summary [1,2]

Item	Unit	Description
Revenue	US$ million	47,179
Pre-tax cash flow	US$ million	26,701
Post-tax cash flow	US$ million	23,773
Unlevered post-tax net present value	US$ million	1,888
Unlevered post-tax internal rate of return	%	16.8
Payback period	Years	10
Mine life	Years	82

Notes:

7. The Rhyolite Ridge Project has closed a loan with the U.S. Department of Energy Loan Programs Office for US$996 million. The conditions for the first draw have not yet been met. If the conditions are met, the levered post-tax internal rate of return of the Project would be 20.9%.
4. As further described in Section 19.3.3, production tax credit and net operating loss carry forwards are used to offset federal income tax to compute post-tax economic metrics.

Overall, the Rhyolite Ridge Project has demonstrated strong project economics, made feasible by having significant lithium and boron revenue streams. Details of annual economic analysis results are presented in Table 19-4. Annual production of boric acid and lithium carbonates is presented in Figure 19-1. Graphical presentation of annual and cumulative cash flows is provided in Figure 19-2.

Table 19-4 - Economic Analysis Results – Annual

Description	Units	LoM Total	-3	-2	-1	1	2	3	4	5	6	7
Lithium Carbonate Production [1]	['000 Mt]	38	-	-	-	16	22	-	-	-	-	-
	['000 St]	42	-	-	-	18	25	-	-	-	-	-
Lithium Hydroxide Production [1]	['000 Mt]	1,752	-	-	-	-	-	28	29	29	27	25
	['000 St]	1,931	-	-	-	-	-	31	32	32	30	28
Boric Acid Production [1]	['000 Mt]	5,579	-	-	-	41	56	48	95	114	167	175
	['000 St]	6,149	-	-	-	45	62	53	104	125	184	193
Total Revenue [2]	**[US$ 000s]**	**47,179,212**	**-**	**-**	**-**	**301,720**	**461,919**	**635,418**	**694,856**	**715,065**	**775,279**	**760,858**
Operating Costs - Mine	[US$ 000s]	1,829,976	-	-	-	26,606	27,104	73,949	62,928	36,937	67,752	54,465
Operating Costs - Plant	[US$ 000s]	13,878,833	-	-	-	134,434	162,741	179,418	189,648	191,298	193,081	194,869
Total Operating Costs	**[US$ 000s]**	**15,708,809**	**-**	**-**	**-**	**161,039**	**189,845**	**253,368**	**252,576**	**228,235**	**260,833**	**249,333**
Operating Cash Flow	**[US$ 000s]**	**31,470,403**	**-**	**-**	**-**	**140,681**	**272,074**	**382,051**	**442,280**	**486,830**	**514,446**	**511,524**
Initial Capital Expense	[US$ 000s]	1,667,860	36,177	332,135	658,096	641,452	-	-	-	-	-	-
Sustaining Capital Expense	[US$ 000s]	2,241,965	-	-	-	82,556	131,926	102,249	35,640	18,650	55,007	59,144
Working Capital	[US$ 000s]	(0)	-	-	-	8,715	(6,747)	40,128	13,097	299	12,963	848
Capitalized Deferred Stripping	[US$ 000s]	798,290	-	-	-	42,588	54,475	11,978	22,751	36,421	-	6,806
Reclamation Expenditure	[US$ 000s]	61,087	-	-	-	-	-	-	-	-	-	-
Total Non-Operating Costs	**[US$ 000s]**	**4,769,202**	**36,177**	**332,135**	**658,096**	**775,312**	**179,654**	**154,354**	**71,488**	**55,369**	**67,971**	**66,798**
Pre-Tax Cash Flow [3]	**[US$ 000s]**	**26,701,201**	**(36,177)**	**(332,135)**	**(658,096)**	**(634,631)**	**92,421**	**227,696**	**370,792**	**431,461**	**446,475**	**444,726**
Nevada State Tax [4]	[US$ 000s]	2,251,651	-	-	2,695	22,739	34,111	41,086	41,563	41,732	45,186	44,232
Federal Income Tax [5]	[US$ 000s]	676,885	-	-	-	-	(24,295)	(32,339)	(33,237)	(33,373)	(30,468)	18,127
Total Unlevered Cash Flow	**[US$ 000s]**	**23,772,665**	**(36,177)**	**(332,135)**	**(660,791)**	**(657,370)**	**82,605**	**218,949**	**362,466**	**423,102**	**431,758**	**382,367**

Description	Units	LoM Total	8	9	10	11	12	13	14	15	16	17
Lithium Carbonate Production [1]	['000 Mt]	38	-	-	-	-	-	-	-	-	-	-
	['000 St]	42	-	-	-	-	-	-	-	-	-	-
Lithium Hydroxide Production [1]	['000 Mt]	1,752	25	27	27	24	25	28	26	27	27	26
	['000 St]	1,931	27	30	30	26	28	31	29	30	29	28
Boric Acid Production [1]	['000 Mt]	5,579	55	52	117	38	77	168	183	183	183	183
	['000 St]	6,149	60	57	129	42	85	185	202	202	202	202
Total Revenue [2]	**[US$ 000s]**	**47,179,212**	**606,032**	**676,346**	**758,255**	**587,736**	**665,818**	**857,830**	**846,178**	**868,207**	**848,009**	**830,478**
Operating Costs - Mine	[US$ 000s]	1,829,976	42,508	47,816	32,810	16,931	43,340	44,748	52,598	51,666	61,706	37,579
Operating Costs - Plant	[US$ 000s]	13,878,833	173,280	177,485	187,756	166,133	172,910	196,227	194,223	198,486	196,126	196,414
Total Operating Costs	**[US$ 000s]**	**15,708,809**	**215,788**	**225,301**	**220,567**	**183,064**	**216,249**	**240,975**	**246,821**	**250,152**	**257,832**	**233,993**
Operating Cash Flow	**[US$ 000s]**	**31,470,403**	**390,244**	**451,045**	**537,688**	**404,672**	**449,569**	**616,855**	**599,357**	**618,055**	**590,177**	**596,485**
Initial Capital Expense	[US$ 000s]	1,667,860	-	-	-	-	-	-	-	-	-	-
Sustaining Capital Expense	[US$ 000s]	2,241,965	56,261	18,063	41,523	67,036	83,917	100,684	31,720	14,913	6,797	5,468
Working Capital	[US$ 000s]	(0)	(25,916)	8,231	15,731	(25,940)	11,616	29,434	187	3,512	(1,954)	(2,063)
Capitalized Deferred Stripping	[US$ 000s]	798,290	15,732	12,147	25,077	41,897	21,796	20,427	16,268	10,040	-	24,127
Reclamation Expenditure	[US$ 000s]	61,087	-	-	-	-	-	-	-	-	-	-
Total Non-Operating Costs	**[US$ 000s]**	**4,769,202**	**46,077**	**38,442**	**82,331**	**82,992**	**117,330**	**150,545**	**48,176**	**28,465**	**4,842**	**27,532**
Pre-Tax Cash Flow [3]	**[US$ 000s]**	**26,701,201**	**344,167**	**412,603**	**455,357**	**321,680**	**332,239**	**466,310**	**551,181**	**589,590**	**585,335**	**568,953**
Nevada State Tax [4]	[US$ 000s]	2,251,651	36,514	37,840	41,401	33,235	36,510	45,583	42,064	41,777	39,291	37,050
Federal Income Tax [5]	[US$ 000s]	676,885	(0)	0	7,439	3,547	2,812	24,071	26,647	26,364	25,667	24,508
Total Unlevered Cash Flow	**[US$ 000s]**	**23,772,665**	**307,653**	**374,764**	**406,517**	**284,898**	**292,917**	**396,656**	**482,470**	**521,449**	**520,376**	**507,396**

Description	Units	LoM Total	18	19	20	21	22	23	24	25	26	27
Lithium Carbonate Production [1]	['000 Mt]	38	-	-	-	-	-	-	-	-	-	-
	['000 St]	42	-	-	-	-	-	-	-	-	-	-
Lithium Hydroxide Production [1]	['000 Mt]	1,752	26	26	21	19	24	24	25	25	23	26
	['000 St]	1,931	28	29	23	21	26	27	27	28	26	29
Boric Acid Production [1]	['000 Mt]	5,579	183	183	107	101	155	104	139	158	140	129
	['000 St]	6,149	202	202	118	111	171	115	154	175	154	142
Total Revenue [2]	**[US$ 000s]**	**47,179,212**	**826,123**	**837,202**	**623,116**	**564,829**	**750,208**	**685,209**	**746,779**	**784,747**	**712,502**	**757,868**
Operating Costs - Mine	[US$ 000s]	1,829,976	23,144	44,382	54,894	47,856	28,221	35,848	22,036	38,924	(20,785)	32,028
Operating Costs - Plant	[US$ 000s]	13,878,833	197,365	201,879	178,352	172,364	189,753	182,706	188,081	192,593	186,303	187,419
Total Operating Costs	**[US$ 000s]**	**15,708,809**	**220,509**	**246,260**	**233,246**	**220,219**	**217,974**	**218,554**	**210,117**	**231,517**	**165,518**	**219,447**
Operating Cash Flow	**[US$ 000s]**	**31,470,403**	**605,614**	**590,941**	**389,870**	**344,610**	**532,234**	**466,655**	**536,662**	**553,231**	**546,984**	**538,421**
Initial Capital Expense	[US$ 000s]	1,667,860	-	-	-	-	-	-	-	-	-	-
Sustaining Capital Expense	[US$ 000s]	2,241,965	6,144	16,388	15,847	9,204	53,501	21,833	18,778	32,528	29,943	41,866
Working Capital	[US$ 000s]	(0)	(590)	648	(30,461)	(4,892)	24,544	(10,858)	8,810	6,538	(9,600)	3,587
Capitalized Deferred Stripping	[US$ 000s]	798,290	39,145	19,235	7,816	118	26,607	11,767	35,656	14,616	72,039	25,088
Reclamation Expenditure	[US$ 000s]	61,087	-	-	-	-	-	-	-	-	-	-
Total Non-Operating Costs	**[US$ 000s]**	**4,769,202**	**44,699**	**36,271**	**(6,798)**	**4,431**	**104,653**	**22,741**	**63,244**	**53,681**	**92,382**	**70,541**
Pre-Tax Cash Flow [3]	**[US$ 000s]**	**26,701,201**	**560,915**	**554,670**	**396,668**	**340,179**	**427,581**	**443,913**	**473,418**	**499,549**	**454,602**	**467,880**
Nevada State Tax [4]	[US$ 000s]	2,251,651	35,506	34,919	23,441	21,821	33,389	30,159	32,506	34,850	31,423	33,795
Federal Income Tax [5]	[US$ 000s]	676,885	24,072	24,005	2,978	0	2,029	16,747	22,031	29,836	22,031	22,326
Total Unlevered Cash Flow	**[US$ 000s]**	**23,772,665**	**501,338**	**495,746**	**370,248**	**318,358**	**392,163**	**397,008**	**418,881**	**434,864**	**401,149**	**411,760**

Description	Units	LoM Total	28	29	30	31	32	33	34	35	36	37
Lithium Carbonate Production [1]	['000 Mt]	38	-	-	-	-	-	-	-	-	-	-
	['000 St]	42	-	-	-	-	-	-	-	-	-	-
Lithium Hydroxide Production [1]	['000 Mt]	1,752	26	23	22	21	20	22	22	21	20	23
	['000 St]	1,931	29	25	24	23	22	24	25	23	22	25
Boric Acid Production [1]	['000 Mt]	5,579	102	44	64	56	38	45	80	60	27	96
	['000 St]	6,149	113	49	70	61	41	50	88	66	30	105
Total Revenue [2]	**[US$ 000s]**	**47,179,212**	**720,808**	**565,698**	**583,562**	**546,795**	**495,410**	**556,100**	**612,155**	**554,421**	**485,868**	**638,039**
Operating Costs - Mine	[US$ 000s]	1,829,976	29,200	22,096	20,260	18,887	20,061	20,146	22,911	22,360	17,425	26,598
Operating Costs - Plant	[US$ 000s]	13,878,833	186,420	173,006	174,171	170,806	165,827	170,842	173,047	169,212	159,230	176,630
Total Operating Costs	**[US$ 000s]**	**15,708,809**	**215,620**	**195,101**	**194,432**	**189,693**	**185,888**	**190,988**	**195,958**	**191,572**	**176,655**	**203,228**
Operating Cash Flow	**[US$ 000s]**	**31,470,403**	**505,187**	**370,597**	**389,130**	**357,102**	**309,523**	**365,112**	**416,197**	**362,849**	**309,213**	**434,811**
Initial Capital Expense	[US$ 000s]	1,667,860	-	-	-	-	-	-	-	-	-	-
Sustaining Capital Expense	[US$ 000s]	2,241,965	47,011	36,171	10,925	6,259	3,702	5,556	7,419	8,954	8,994	59,748
Working Capital	[US$ 000s]	(0)	(6,322)	(21,773)	4,437	(4,618)	(7,945)	7,301	10,541	(6,701)	(10,428)	23,396
Capitalized Deferred Stripping	[US$ 000s]	798,290	22,350	20,655	20,189	19,996	21,881	24,299	18,514	6,151	12,216	-
Reclamation Expenditure	[US$ 000s]	61,087	-	-	-	-	-	-	-	-	-	-
Total Non-Operating Costs	**[US$ 000s]**	**4,769,202**	**63,040**	**35,053**	**35,552**	**21,637**	**17,638**	**37,156**	**36,474**	**8,404**	**10,782**	**83,144**
Pre-Tax Cash Flow [3]	**[US$ 000s]**	**26,701,201**	**442,148**	**335,544**	**353,579**	**335,465**	**291,884**	**327,955**	**379,723**	**354,445**	**298,431**	**351,667**
Nevada State Tax [4]	[US$ 000s]	2,251,651	32,632	25,327	25,420	23,412	20,615	23,488	26,391	24,412	21,119	30,004
Federal Income Tax [5]	[US$ 000s]	676,885	20,194	3,801	2,057	2,115	0	(0)	10,161	9,021	1,877	17,065
Total Unlevered Cash Flow	**[US$ 000s]**	**23,772,665**	**389,321**	**306,416**	**326,102**	**309,938**	**271,269**	**304,468**	**343,170**	**321,011**	**275,436**	**304,598**

Description	Units	LoM Total	38	39	40	41	42	43	44	45	46	47
Lithium Carbonate Production [1]	['000 Mt]	38	-	-	-	-	-	-	-	-	-	-
	['000 St]	42	-	-	-	-	-	-	-	-	-	-
Lithium Hydroxide Production [1]	['000 Mt]	1,752	20	23	19	19	19	19	19	21	21	21
	['000 St]	1,931	22	25	20	20	20	20	20	23	23	23
Boric Acid Production [1]	['000 Mt]	5,579	62	86	41	41	41	41	41	73	73	73
	['000 St]	6,149	69	94	45	45	45	45	45	80	80	80
Total Revenue [2]	**[US$ 000s]**	**47,179,212**	**527,303**	**624,624**	**472,040**	**472,040**	**472,040**	**472,020**	**472,020**	**572,802**	**572,802**	**572,802**
Operating Costs - Mine	[US$ 000s]	1,829,976	25,217	23,298	18,168	19,437	18,588	18,588	18,271	18,462	18,103	17,385
Operating Costs - Plant	[US$ 000s]	13,878,833	164,566	176,617	156,650	156,117	155,977	156,152	154,997	171,111	170,076	170,422
Total Operating Costs	**[US$ 000s]**	**15,708,809**	**189,783**	**199,915**	**174,818**	**175,554**	**174,565**	**174,739**	**173,267**	**189,572**	**188,179**	**187,807**
Operating Cash Flow	**[US$ 000s]**	**31,470,403**	**337,520**	**424,710**	**297,222**	**296,486**	**297,475**	**297,280**	**298,752**	**383,230**	**384,623**	**384,995**
Initial Capital Expense	[US$ 000s]	1,667,860	-	-	-	-	-	-	-	-	-	-
Sustaining Capital Expense	[US$ 000s]	2,241,965	89,590	43,771	70,813	59,075	60,265	65,660	63,862	20,351	20,667	21,609
Working Capital	[US$ 000s]	(0)	(15,358)	13,173	(20,428)	(125)	142	(96)	206	14,026	242	74
Capitalized Deferred Stripping	[US$ 000s]	798,290	-	-	3,475	3,640	3,450	3,450	3,408	-	-	-
Reclamation Expenditure	[US$ 000s]	61,087	-	-	-	-	-	-	-	-	-	-
Total Non-Operating Costs	**[US$ 000s]**	**4,769,202**	**74,232**	**56,944**	**53,859**	**62,589**	**63,857**	**69,013**	**67,476**	**34,377**	**20,909**	**21,683**
Pre-Tax Cash Flow [3]	**[US$ 000s]**	**26,701,201**	**263,287**	**367,766**	**243,363**	**233,896**	**233,618**	**228,267**	**231,277**	**348,854**	**363,714**	**363,312**
Nevada State Tax [4]	[US$ 000s]	2,251,651	26,041	29,744	23,407	23,273	23,580	23,976	24,229	27,930	27,841	27,760
Federal Income Tax [5]	[US$ 000s]	676,885	12,735	18,017	8,963	3,861	6,689	6,643	6,539	15,901	19,418	18,501
Total Unlevered Cash Flow	**[US$ 000s]**	**23,772,665**	**224,512**	**320,005**	**210,993**	**206,763**	**203,349**	**197,648**	**200,508**	**305,023**	**316,455**	**317,050**

Description	Units	LoM Total	48	49	50	51	52	53	54	55	56	57
Lithium Carbonate Production [1]	['000 Mt]	38	-	-	-	-	-	-	-	-	-	-
	['000 St]	42	-	-	-	-	-	-	-	-	-	-
Lithium Hydroxide Production [1]	['000 Mt]	1,752	21	21	21	21	21	21	21	20	20	20
	['000 St]	1,931	23	23	24	24	24	24	24	22	22	22
Boric Acid Production [1]	['000 Mt]	5,579	73	73	78	78	78	78	78	28	28	28
	['000 St]	6,149	80	80	86	86	86	86	86	31	31	31
Total Revenue [2]	**[US$ 000s]**	**47,179,212**	**572,803**	**572,803**	**585,462**	**585,462**	**585,462**	**585,461**	**585,461**	**488,739**	**488,739**	**488,739**
Operating Costs - Mine	[US$ 000s]	1,829,976	17,189	17,541	16,219	16,219	16,581	16,581	16,207	10,575	8,199	7,838
Operating Costs - Plant	[US$ 000s]	13,878,833	170,645	171,965	176,105	175,551	174,958	174,746	173,822	160,810	160,281	160,780
Total Operating Costs	**[US$ 000s]**	**15,708,809**	**187,834**	**189,506**	**192,324**	**191,771**	**191,539**	**191,326**	**190,029**	**171,385**	**168,480**	**168,618**
Operating Cash Flow	**[US$ 000s]**	**31,470,403**	**384,969**	**383,297**	**393,137**	**393,691**	**393,923**	**394,135**	**395,432**	**317,354**	**320,259**	**320,121**
Initial Capital Expense	[US$ 000s]	1,667,860	-	-	-	-	-	-	-	-	-	-
Sustaining Capital Expense	[US$ 000s]	2,241,965	20,370	23,585	39,937	31,665	31,172	33,480	34,706	5,115	2,708	8,018
Working Capital	[US$ 000s]	(0)	20	(260)	1,541	135	56	41	214	(13,955)	526	5
Capitalized Deferred Stripping	[US$ 000s]	798,290	-	-	-	-	-	-	-	-	-	-
Reclamation Expenditure	[US$ 000s]	61,087	-	-	-	-	-	-	-	-	-	-
Total Non-Operating Costs	**[US$ 000s]**	**4,769,202**	**20,391**	**23,325**	**41,478**	**31,800**	**31,228**	**33,522**	**34,920**	**(8,840)**	**3,234**	**8,023**
Pre-Tax Cash Flow [3]	**[US$ 000s]**	**26,701,201**	**364,578**	**359,971**	**351,659**	**361,891**	**362,695**	**360,613**	**360,512**	**326,194**	**317,026**	**312,097**
Nevada State Tax [4]	[US$ 000s]	2,251,651	27,609	27,531	28,654	28,382	28,268	28,227	28,214	22,768	22,447	22,277
Federal Income Tax [5]	[US$ 000s]	676,885	18,978	18,977	20,012	20,589	20,752	21,059	21,186	12,900	10,703	12,789
Total Unlevered Cash Flow	**[US$ 000s]**	**23,772,665**	**317,991**	**313,463**	**302,994**	**312,920**	**313,675**	**311,328**	**311,112**	**290,527**	**283,876**	**277,032**

Description	Units	LoM Total	58	59	60	61	62	63	64	65	66	67
Lithium Carbonate Production [1]	['000 Mt]	38	-	-	-	-	-	-	-	-	-	-
	['000 St]	42	-	-	-	-	-	-	-	-	-	-
Lithium Hydroxide Production [1]	['000 Mt]	1,752	20	20	17	17	17	17	17	18	18	18
	['000 St]	1,931	22	22	19	19	19	19	19	20	20	20
Boric Acid Production [1]	['000 Mt]	5,579	28	28	24	24	24	24	24	10	10	10
	['000 St]	6,149	31	31	26	26	26	26	26	11	11	11
Total Revenue [2]	**[US$ 000s]**	**47,179,212**	**488,567**	**488,567**	**413,227**	**413,227**	**413,227**	**413,224**	**413,224**	**414,404**	**414,404**	**414,404**
Operating Costs - Mine	[US$ 000s]	1,829,976	7,838	7,838	7,637	7,637	7,637	7,637	7,637	7,512	7,330	6,970
Operating Costs - Plant	[US$ 000s]	13,878,833	160,281	161,929	154,752	154,072	153,528	153,770	152,112	147,931	147,486	147,636
Total Operating Costs	**[US$ 000s]**	**15,708,809**	**168,118**	**169,767**	**162,389**	**161,709**	**161,165**	**161,407**	**159,749**	**155,444**	**154,816**	**154,606**
Operating Cash Flow	**[US$ 000s]**	**31,470,403**	**320,448**	**318,799**	**250,838**	**251,518**	**252,062**	**251,817**	**253,475**	**258,960**	**259,588**	**259,798**
Initial Capital Expense	[US$ 000s]	1,667,860	-	-	-	-	-	-	-	-	-	-
Sustaining Capital Expense	[US$ 000s]	2,241,965	1,164	4,922	8,009	47,123	678	3,591	8,669	1,628	3,895	2,746
Working Capital	[US$ 000s]	(0)	122	(246)	(8,819)	(85)	287	(34)	235	(447)	101	53
Capitalized Deferred Stripping	[US$ 000s]	798,290	-	-	-	-	-	-	-	-	-	-
Reclamation Expenditure	[US$ 000s]	61,087	-	-	-	-	-	-	-	-	-	-
Total Non-Operating Costs	**[US$ 000s]**	**4,769,202**	**1,286**	**4,676**	**(810)**	**47,038**	**965**	**3,557**	**8,904**	**1,181**	**3,996**	**2,799**
Pre-Tax Cash Flow [3]	**[US$ 000s]**	**26,701,201**	**319,162**	**314,123**	**251,648**	**204,479**	**251,096**	**248,260**	**244,571**	**257,779**	**255,592**	**256,999**
Nevada State Tax [4]	[US$ 000s]	2,251,651	21,885	21,744	17,912	19,113	17,897	17,863	18,080	18,040	18,049	17,935
Federal Income Tax [5]	[US$ 000s]	676,885	13,310	13,293	6,108	3,329	3,675	3,881	4,980	6,581	7,786	8,722
Total Unlevered Cash Flow	**[US$ 000s]**	**23,772,665**	**283,967**	**279,087**	**227,627**	**182,037**	**229,524**	**226,515**	**221,511**	**233,158**	**229,757**	**230,343**

Description	Units	LoM Total	68	69	70	71	72	73	74	75	76	77
Lithium Carbonate Production [1]	['000 Mt]	38	-	-	-	-	-	-	-	-	-	-
	['000 St]	42	-	-	-	-	-	-	-	-	-	-
Lithium Hydroxide Production [1]	['000 Mt]	1,752	18	18	20	20	20	20	20	19	19	19
	['000 St]	1,931	20	20	22	22	22	22	22	21	21	21
Boric Acid Production [1]	['000 Mt]	5,579	10	10	31	31	31	31	31	7	7	7
	['000 St]	6,149	11	11	34	34	34	34	34	8	8	8
Total Revenue [2]	**[US$ 000s]**	**47,179,212**	**414,388**	**414,388**	**481,765**	**481,762**	**481,762**	**481,589**	**481,589**	**441,444**	**441,444**	**441,444**
Operating Costs - Mine	[US$ 000s]	1,829,976	6,970	6,970	7,267	7,267	7,267	7,267	7,267	7,267	7,242	7,140
Operating Costs - Plant	[US$ 000s]	13,878,833	147,684	149,215	156,582	156,249	156,006	155,618	154,520	148,667	147,757	148,082
Total Operating Costs	**[US$ 000s]**	**15,708,809**	**154,654**	**156,185**	**163,849**	**163,516**	**163,273**	**162,885**	**161,787**	**155,934**	**154,999**	**155,222**
Operating Cash Flow	**[US$ 000s]**	**31,470,403**	**259,734**	**258,203**	**317,916**	**318,246**	**318,489**	**318,704**	**319,803**	**285,510**	**286,445**	**286,222**
Initial Capital Expense	[US$ 000s]	1,667,860	-	-	-	-	-	-	-	-	-	-
Sustaining Capital Expense	[US$ 000s]	2,241,965	1,419	5,310	6,576	9,063	2,258	1,699	4,981	2,522	2,686	2,716
Working Capital	[US$ 000s]	(0)	12	(243)	9,391	43	69	203	151	(6,469)	145	(33)
Capitalized Deferred Stripping	[US$ 000s]	798,290	-	-	-	-	-	-	-	-	-	-
Reclamation Expenditure	[US$ 000s]	61,087	-	-	-	-	-	-	-	-	-	-
Total Non-Operating Costs	**[US$ 000s]**	**4,769,202**	**1,431**	**5,068**	**15,966**	**9,106**	**2,327**	**1,902**	**5,133**	**(3,947)**	**2,832**	**2,684**
Pre-Tax Cash Flow [3]	**[US$ 000s]**	**26,701,201**	**258,303**	**253,136**	**301,949**	**309,140**	**316,162**	**316,802**	**314,670**	**289,458**	**283,614**	**283,539**
Nevada State Tax [4]	[US$ 000s]	2,251,651	17,798	17,755	21,018	21,084	20,903	20,633	20,804	18,861	18,904	18,882
Federal Income Tax [5]	[US$ 000s]	676,885	9,291	9,725	16,527	18,632	18,015	-	-	-	-	-
Total Unlevered Cash Flow	**[US$ 000s]**	**23,772,665**	**231,214**	**225,656**	**264,404**	**269,424**	**277,244**	**296,169**	**293,866**	**270,596**	**264,709**	**264,657**

Description	Units	LoM Total	78	79	80	81	82	83	84	85	86	87	88	89
Lithium Carbonate Production [1]	['000 Mt]	38	-	-	-	-	-	-	-	-	-	-	-	-
	['000 St]	42	-	-	-	-	-	-	-	-	-	-	-	-
Lithium Hydroxide Production [1]	['000 Mt]	1,752	19	19	25	25	25	-	-	-	-	-	-	-
	['000 St]	1,931	21	21	28	28	28	-	-	-	-	-	-	-
Boric Acid Production [1]	['000 Mt]	5,579	7	7	10	10	10	-	-	-	-	-	-	-
	['000 St]	6,149	8	8	11	11	11	-	-	-	-	-	-	-
Total Revenue [2]	**[US$ 000s]**	**47,179,212**	**441,419**	**441,419**	**580,534**	**580,362**	**580,362**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Operating Costs - Mine	[US$ 000s]	1,829,976	7,140	7,140	7,166	7,166	7,166	-	-	-	-	-	-	-
Operating Costs - Plant	[US$ 000s]	13,878,833	147,932	149,252	165,560	164,774	164,560	-	-	-	-	-	-	-
Total Operating Costs	**[US$ 000s]**	**15,708,809**	**155,072**	**156,392**	**172,726**	**171,941**	**171,727**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Operating Cash Flow	**[US$ 000s]**	**31,470,403**	**286,347**	**285,027**	**407,808**	**408,421**	**408,635**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Initial Capital Expense	[US$ 000s]	1,667,860	-	-	-	-	-	-	-	-	-	-	-	-
Sustaining Capital Expense	[US$ 000s]	2,241,965	6,760	6,120	7,384	1,142	154	-	-	-	-	-	-	-
Working Capital	[US$ 000s]	(0)	(1)	(207)	15,434	123	29	(47,747)	-	-	-	-	-	-
Capitalized Deferred Stripping	[US$ 000s]	798,290	-	-	-	-	-	-	-	-	-	-	-	-
Reclamation Expenditure	[US$ 000s]	61,087	-	-	-	-	-	12,217	12,217	12,217	6,109	6,109	6,109	6,109
Total Non-Operating Costs	**[US$ 000s]**	**4,769,202**	**6,759**	**5,913**	**22,817**	**1,265**	**183**	**(35,530)**	**12,217**	**12,217**	**6,109**	**6,109**	**6,109**	**6,109**
Pre-Tax Cash Flow [3]	**[US$ 000s]**	**26,701,201**	**279,587**	**279,113**	**384,991**	**407,156**	**408,452**	**35,530**	**(12,217)**	**(12,217)**	**(6,109)**	**(6,109)**	**(6,109)**	**(6,109)**
Nevada State Tax [4]	[US$ 000s]	2,251,651	19,014	18,962	25,771	25,657	25,693	-	-	-	-	-	-	-
Federal Income Tax [5]	[US$ 000s]	676,885	-	-	-	-	-	-	-	-	-	-	-	-
Total Unlevered Cash Flow	**[US$ 000s]**	**23,772,665**	**260,573**	**260,151**	**359,219**	**381,499**	**382,759**	**35,530**	**(12,217)**	**(12,217)**	**(6,109)**	**(6,109)**	**(6,109)**	**(6,109)**

Notes:

1. Annual ROM ore and waste quantities are provided in Table 13-1 (variations due to rounding).
2. Annual price assumptions are detailed in Section 16.
3. Project cash flow includes Reclamation Expenditure after Production Year 82.
4. State taxes include Nevada minerals tax, Nevada modified business tax, Nevada sales tax, Nevada commerce tax, and Nevada property tax.
5. Includes federal income tax and Inflation Reduction Act (45x) production tax credit. Over the life-of-mine, the expected total production tax credit to be approximately US$1,676 million.

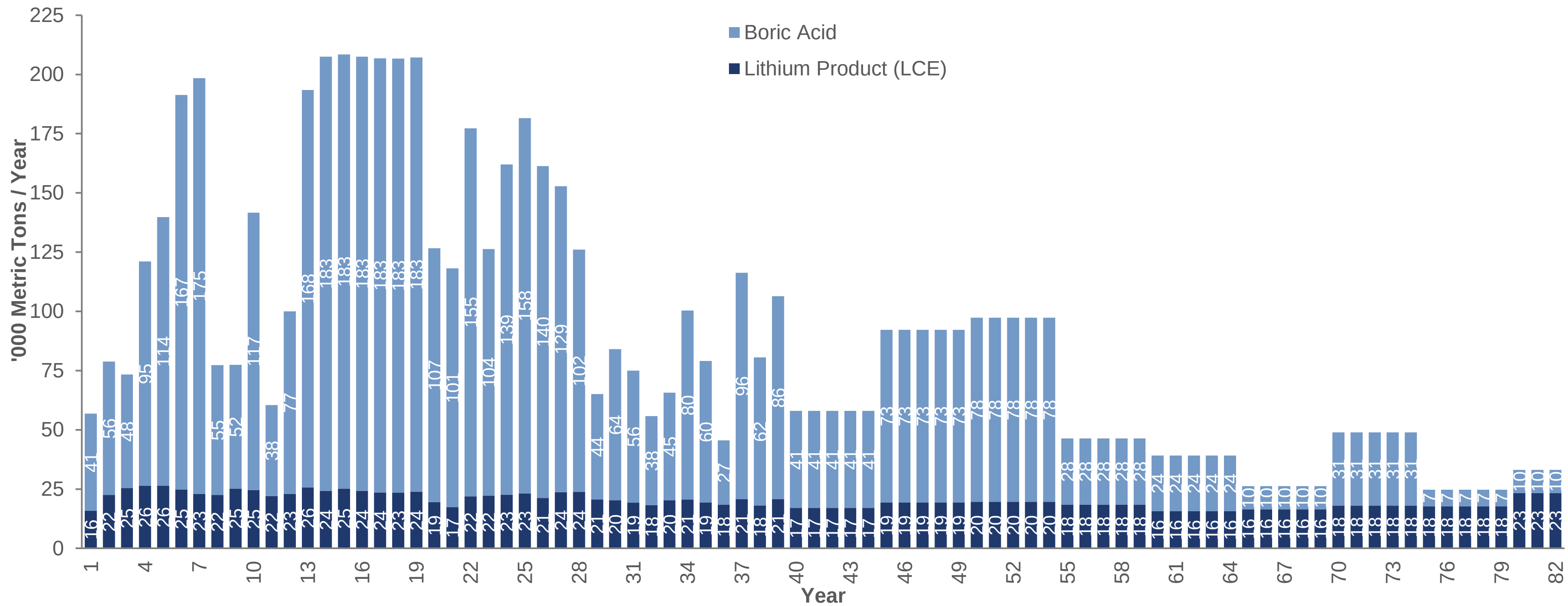


Figure 19-1 – Annual Boric Acid and Lithium Carbonate Production Over Life of Mine

Source: ioneer, 2025

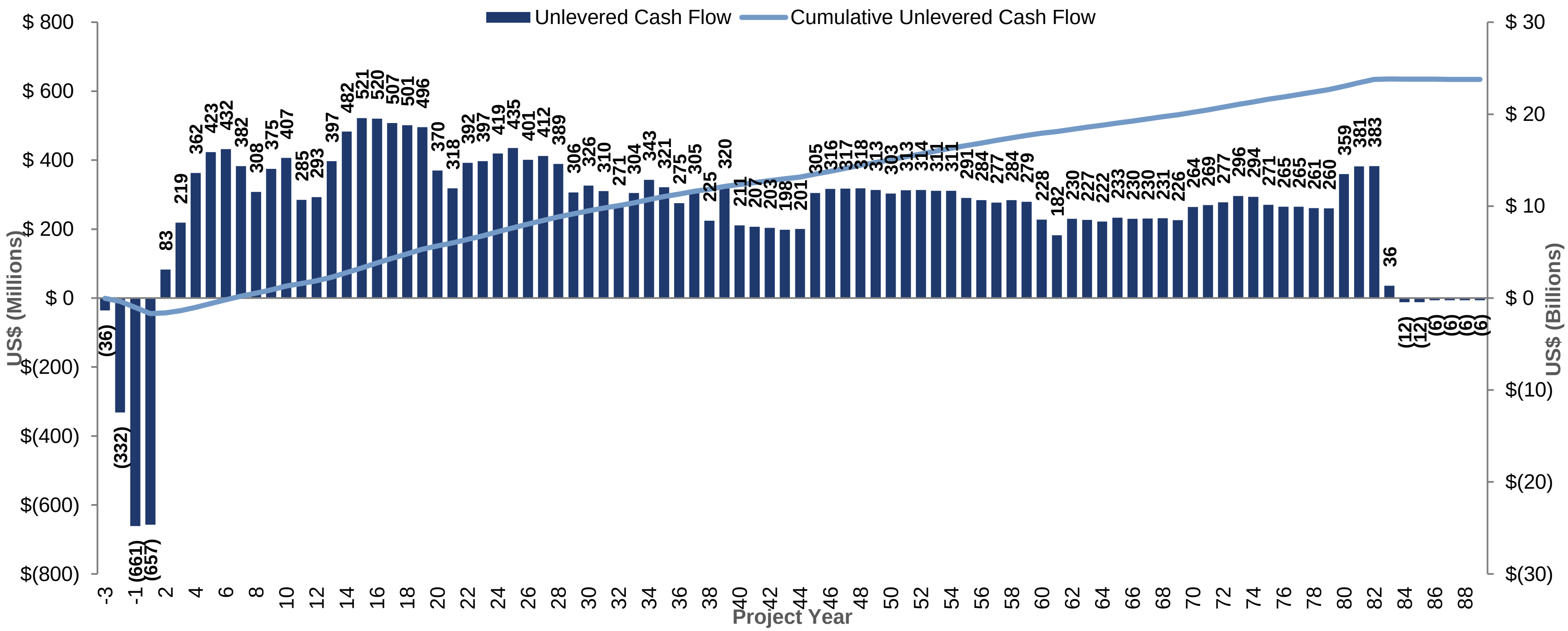


Figure 19-2 – Unlevered Post-tax Annual Cash Flow and Cumulative Cash Flow

Source: ioneer, 2025

19.3.2. Taxes, Royalties, Other Government Levies, or Interests

Tax estimates are based on guidance given by KPMG International Limited tax consultants in a memorandum issued May 17, 2024. The components of total taxes include the following:

- Nevada property and local tax: Real and personal properties are taxed at 35% of actual value to arrive at the assessed value. For the purposes of the financial model, the property tax rate was reported by KPMG as 3.02%. The Nevada property tax is calculated by applying the tax rate to 35% of the book value, given as the non-depreciated portion of the capital and sustaining capital costs are estimated using straight-line depreciation methods;
- Nevada minerals tax: Nevada charges an annual minerals tax on net proceeds from minerals mined or produced in Nevada when they are sold or removed from the state. The tax is based on the actual production of minerals from all operating mines. It is a graduated tax with a top rate of 5%. The estimates of the Nevada minerals tax start with gross proceeds from the sale of the minerals and then certain deductions are taken from the gross proceeds to arrive at net proceeds. These allowable deductions are listed under Nevada Revised Statutes Chapter 362.120 and include certain costs of production, processing, transportation, marketing, royalties, and depreciation;
- Nevada sales tax: Sales tax considerations were included in the current model as applicable. Machinery, equipment, commodities, materials, and supplies purchased for the Project are tangible personal property that are subject to sales and use taxes, unless an exemption applies. The sales tax rate is applicable to the rate at the point of delivery in the state of Nevada, in this case Esmeralda County. The current rate in Esmeralda County is 6.85% (August 2025);
- Nevada taxes the sale, purchase, or lease of tangible personal property. Ordinarily, services provided in Nevada are generally not subject to sales and use taxes. Items such as chemicals and catalysts used for processing the materials are taxable to the processor;
- Nevada modified business tax: The Nevada modified business tax is applied at the rate of 2% on taxable wages;
- Commerce tax: The commerce tax is payable on annual gross revenue in excess of US$4 million. The commerce tax rate is based on ioneer's North American Industry Classification System category of mining code, which is 0.051%. The commerce tax is an entity-level tax based on gross receipts;
- Federal corporate tax: The calculation of U.S. federal corporate tax begins with gross revenues. Cash cost of operations are deducted from the revenues, as are allowances for depreciation (Modified Accelerated Cost Recovery System), depletion, and amortization to calculate taxable income before net operating loss consideration;
- Production tax credit (45x): U.S. tax code includes a 10% tax credit for production of refined lithium, applied to the operating costs of production. The duration of the credit has changed with different federal administrations and within the current financial model the credit is assumed to exist over the mine life.

Depletion is a deduction allowed as a mineral is extracted and sold. It is either based on the cost of acquisition or a percentage of income. If it is calculated as a percentage of gross income from the property, it is not to exceed 50% of taxable income before the depletion deduction. The percentage depletion rate applied is 22%, which is the top rate and generally applies to sulfur, uranium, asbestos, lead, zinc, nickel, and mica production.

At the time of this report, the only amortization deduction results from capitalized deferred stripping costs. The U.S. Internal Revenue Service contemplates deferred stripping during the production phase if stripping more than one year of overburden takes place (as is the case for the Rhyolite Ridge Project). This is considered a development cost, which only occurs once access to the deposit is established and commercial operations have commenced. As such, development stripping costs could then be capitalized with a 5-year amortization period.

If the taxable income before net operating loss consideration is positive for the given year, a federal tax rate of 21% is applied to calculate federal tax obligations. If the value is negative, the year has a net operating loss, which is carried forward and applied as a deduction to future year's cash flows. An opening balance of US$280 million in loss carry-forward is applied at the beginning of the life of mine. Note that the net operating loss deduction is limited to 80% of the yearly taxable income before net operating loss consideration. In addition, production tax credits are used to offset federal tax obligations.

19.4. Sensitivity Analysis

ioneer performed sensitivity analyses on labor costs, operating costs, capital costs, lithium carbonate price and grade, boric acid price and grade, lithium recovery, and boron recovery in the financial model. Based on ± 15% changes in factors, the Project post-tax NPV in real dollars was calculated at an applied 8% discount rate. The outcomes of these analyses are summarized in Figure 19-3 in order of highest to lowest net present value sensitivity.

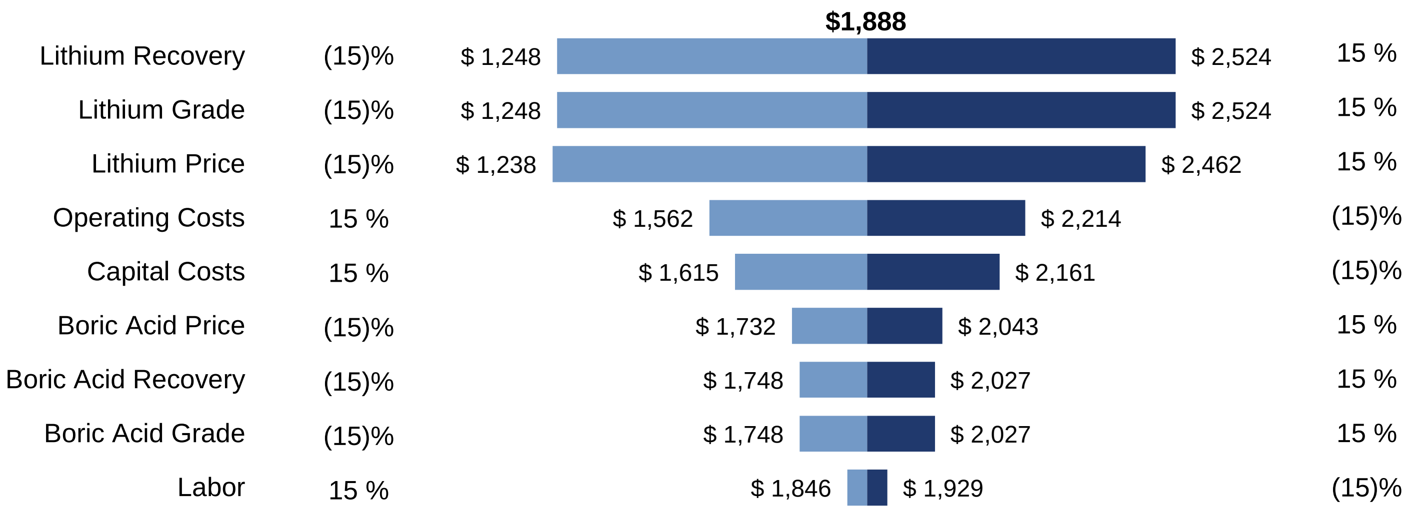


Figure 19-3 - Project Post-tax NPV Sensitivity to Various Factors (millions of US$)

Source: ioneer, 2025

The Project post-tax NPV sensitivity to incremental discount rate ranging from 6% to 12% (Figure 19-4) was also performed by ioneer.

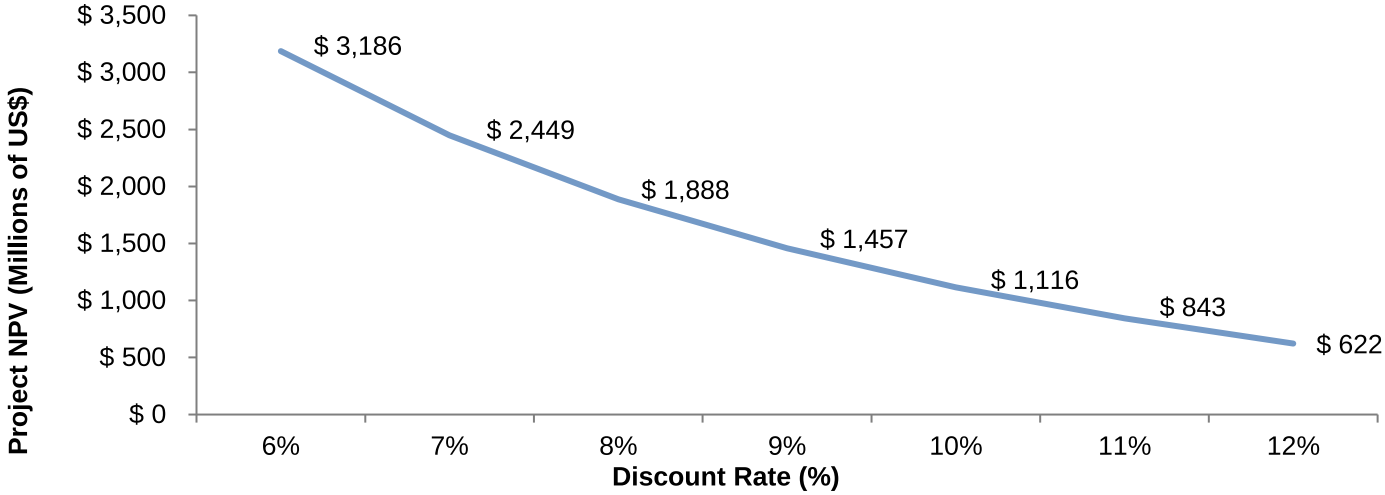


Figure 19-4 - Project Post-tax NPV Sensitivity to Discount Rate

Source: ioneer, 2025

Based on the sensitivity factors summarized in Figure 19-3 and Figure 19-4, the Project is particularly sensitive to changes in lithium grade, recovery rates, prices, and the discount rate. A 15% change in operating expense impacts the post-tax NPV by approximately $325 million while a 15% change capital expense impacts the post-tax NPV by approximately US$275 million. The model is less sensitive to other changes such as labor cost.

20. ADJACENT PROPERTIES

There are no material or relevant properties adjacent to the Project site and as such no data or information have been considered and used from adjacent properties.

21. OTHER RELEVANT DATA AND INFORMATION

This chapter is not relevant to the Report.

22. INTERPRETATION AND CONCLUSIONS

The QPs note the following interpretations and conclusions in their respective areas of expertise, based on the review of data available for this Report.

22.1. Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

The mineral tenement and land tenure for the Project comprises a total of 418 unpatented lode mining claims, of which all are listed as “active”. Based on the documents provided by ioneer, it is the QPs understanding that the claims are held in good standing with the Bureau of Land Management and Esmeralda County and, as such, there are no identified concerns regarding the security of tenure nor are there any known impediments to obtaining a license to operate within the limits of the Project.

The Project, including the access roads, are located on public lands controlled by the Bureau of Land Management and therefore no private surface rights are required.

Groundwater surface rights will be transferred to ioneer. Currently ioneer has sufficient lease options in place to cover all construction and operational water needs.

There are no royalty payments due for the Rhyolite Ridge Project. The QPs are not aware of any agreements or material issues with third parties such as partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings relating to the 418 lode mining claims that comprise the Project.

To the extent known to the QPs, there are no significant factors or risks that may affect access, title, or the right or ability to perform work on the Project other than those discussed in this Report.

22.2. Geology and Mineralization

Rhyolite Ridge is a geologically unique sediment-hosted lithium-boron deposit.

The two main types of mineralization encountered in the deposit are high-grade boron and lithium (HiB-Li) mineralization and low-grade boron and lithium (LoB-Li) mineralization.

Differential mineralogical and permeability characteristics of the 11 sedimentary units within the deposit resulted in the preferential emplacement of HiB-Li bearing minerals in the M5, B5, and L6 units. LoB-Li mineralization occurs primarily in the B5, S5, and L6 units and LoB-Li high clay mineralization in the M5 geologic unit.

The geological understanding of the settings, lithologies, and structural and alteration controls on mineralization is sufficient to support estimation of mineral resources.

22.3. Exploration, Drilling and Sampling

22.3.1. Exploration and Geological Drilling

The quantity and quality of the survey data collected in the conducted exploration and geological drilling programs are sufficient to support mineral resource and mineral reserve estimation.

The QP did not use geological or grade data from the 2010 trench program in the preparation of the geological model or resultant mineral resource estimates due to concerns with correlation and reliability of the results.

All 166 holes from 2022-2024 drilling programs were included in the database. Of the 166 validated holes, all were included in the geological model, with one RC hole excluded as a twin hole and three shallow exploration well holes. All samples were geologically and geotechnically logged to support mineral resource estimates, with acceptable core recovery rates varying by geological unit.

For the 2010 to 2012, 2016, 2018 to 2019, and 2022 to 2024 core drilling programs, the QP considers the core recovery to be acceptable based on statistical analysis, which identified no grade bias between sample intervals with high- versus low-core recoveries. On this basis, the QP has made the reasonable assumption that the sample results are reliable for use in estimating mineral resources. The QP also considers the drill hole spacing sufficient to establish geological and grade continuity appropriate for mineral resource estimation.

The QP is not aware of any drilling, sampling, or recovery factors that could materially affect the accuracy and reliability of the results of the historical or recent exploration drilling. The data are well documented via original digital and hard copy records and were collected using industry standard practices in place at the time.

Although not directly involved during the exploration drilling programs, the QP evaluated the identified mineralized intervals against the analytical results and agreed with the methodology used by ioneer to determine material mineralization. The QP also reviewed the core and sampling techniques and deemed the techniques appropriate for collecting data for the purpose of preparing geological models and mineral resource estimates.

It is the QP’s opinion that the sample preparation, security, and analytical procedures applied by ioneer and its predecessor, American Lithium Mineral Inc. (ALM), were appropriate and fit for the purpose of establishing an analytical database for use in grade modeling and preparation of mineral resource estimates, as summarized in this Report.

22.3.2. Hydrogeological Drilling

The QP is not aware of any factors that could materially affect the accuracy and reliability of the results of the hydrogeological analyses. Laboratory and field techniques used in data collection and evaluation are appropriate for the purposes used in the Report. The data are well documented via original digital and hard copy records and were collected using industry standard practices. All data were organized into a current and secure spatial relational database.

22.3.3. Geotechnical Drilling

The QP is not aware of any drilling, sampling, or recovery factors that could materially affect the accuracy and reliability of the results of the geotechnical drilling data used to support the South Overburden Storage Facility, Spent Ore Facility Storage and process plant facility foundations. Laboratory and field techniques used in data collection and evaluation are appropriate for the purposes used in the Report.

The data are well documented via original digital and hard copy records and were collected using industry standard practices at the time of collection. All data were organized into a current and secure spatial relational database.

It is the QP’s opinion that the geotechnical data regarding the characterization and material properties of the spent ore and associated waste materials to be stored in the SOSF are not adequately characterized, and additional investigation will be necessary to better understand long-term performance of these materials.

22.4. Data Verification

The QP validated the data disclosed, including collar survey, down hole geological data and observations, sampling, analytical, and other test data underlying the information or opinions contained in the written disclosure presented in the Report. It is the QP's opinion that the review of the data and assaying checks validates the data available for use in estimating the mineral resource.

The QP, by way of the data verification process described in Section 9, has used only those data that were deemed to have been generated with proper industry standard procedures, were accurately transcribed from the original source, and were suitable to be used for the purpose of preparing geological models and mineral resource estimates. Data that could not be verified to this standard were not used in the development of the geological models or mineral resource estimates presented in this Report.

22.5. Metallurgical Testwork

The metallurgical testwork conducted and the analytical procedures used follow conventional industrial practice and are considered adequate for the purposes of this Report.

Testwork and process development during the previous 2020 feasibility study focused predominantly on processing the B5 HiB-Li (stream 1) mineralization. This testwork was further improved upon with the additional testwork completed up to the Q2 2025 to further refine and reduce risk of specific areas in the stream 1 process flowsheet.

It is the QP's opinion that the initial challenges associated with achieving the target concentrate grade of boric acid have been addressed by incorporating circuit improvements and lowering the target concentrate grade resulting in flotation being an appropriate processing method to improve overall boric acid recovery. However, additional testing will be beneficial to fully optimize the circuit and realize its maximum potential.

In parallel, metallurgical test programs and investigations specific to the LoB-Li (stream 2) mineralization were performed. The engineering basis for the stream 1 processing facility did not consider stream 2 mineralization types, but testwork showed that stream 2 ore could be subjected to the same recovery processes as stream 1, with comparable lithium recovery and additional implications such as lower boron extractions. Overall boron recovery was observed to be lower, as typically observed with decreased head grade. Blending testwork demonstrated that LoB-Li Clay (stream 3) could be included in the stream 1 development in limited quantities (up to 10%) to minimize deleterious impacts.

The results of the metallurgical testing of the low boron content, M5, S5, and L6 units, indicates a reasonable prospect of recovering lithium and boron from these units. If all appropriate limitations required for blending are implemented, the mineral resource and mineral reserve estimates could include the HiB-Li (stream 1), LoB-Li (stream 2), and LoB-Li Clay (stream 3) mineralization types. It is noted that blending of low boron stream 2 with stream 1 mineralization types can significantly lower boric acid production. Operation should verify and ensure proper blending to optimize evaporation and crystallization process parameters.

Based on testwork results reported for stream 2, it is beneficial to perform a variability testing program, including permeability testing for the mineralized zones in stream 2.

22.6. Mineral Resources

The mineral resource estimate for the Project is reported in accordance with definitions set out in S-K 1300.

The geological model was developed as a stratigraphically constrained grade block model using IMC modeling proprietary software which encompasses computer-assisted geological grade modeling and estimation software applications. The geological model was updated to incorporate additional ioneer geological mapping, geophysical data and new drill hole information, along the eastern side of the basin. This update provided additional geological constraint on the basin stratigraphy's geometry east of the limits of drill hole data in support of geotechnical modeling and analysis in progress on the Project. In addition, this update expands the definition of mineralization in the southeast area of the basin.

It is the QP's opinion that the classification criteria applied to the mineral resource estimate are appropriate for the reliability and spatial distribution of the base data and reflect the confidence of continuity of the modeled geology and grade parameters.

Material factors that could cause actual results to differ significantly from the conclusions, estimates, designs, forecasts, or projections include any substantial deviations in one or more of the key factors or assumptions, such as geological analysis and grade continuity assumptions.

In the QP's opinion, the factors most likely to impact the economic viability of extraction are primarily related to permitting, mining, processing, and market economic considerations, as well as the underlying parameters and assumptions. These elements were used to support the reasonable prospects for the eventual economic extraction of the mineral resources.

The QP is not aware of environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the mineral resource estimates.

Based on the results presented in this Report, the following additional geological work would provide additional benefits to improve confidence and decrease Project risks:

- Continue to further the evaluation of faulting identified in drill holes and on surface mapping and update the geological model, as necessary;
- Evaluate findings of seismic study and continued incorporation into structural and stratigraphic interpretation of seismic profiles into the geological model, as necessary;
- Based on the results of the fault evaluation and seismic study, evaluate the need for targeted infill drilling to better define the geometry and displacement of any faults deemed to be poorly defined in the current data and modeling;
- Evaluate potential additional exploration planning in the southeastern portions of the South Basin, additional core drilling with the aim of identifying additional tons at higher Lithium-Boron grades based on observed grade trends in the current model and limits of the basin;
- Any additional exploration or infill drilling performed on the Project should assure the implementation of the revised QA/QC protocol presented in this Report.

22.7. Mineral Reserves

The mineral reserve estimate for the Project is reported using the definitions in S-K 1300.

The mineral reserve was developed from the 9.14 m (30 ft) mine planning block model and is the total of all proven and probable category ore that is planned for processing. The QP believes that the 9.14 m (30 ft) block model is appropriate to use for defining the mineral reserve and for mine planning.

Based on the outcomes of the August 2025 feasibility study presented in this Report and the consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social, and governmental modifying factors, it is the QP's opinion that the extraction of the stated mineral reserves could be reasonably justified at the time of reporting.

The QP is not aware of environmental, permitting decisions, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the mineral reserve estimate that are not discussed in this Report.

Based on the information presented in this Report and the accompanying FS, the following items are suggested:

- Perform additional drilling outside of the final LOM quarry extents to increase mine reserve to the northeast, better define dip and orientation of the sedimentary layers and understanding of faulting structure;
- Perform updated geotechnical assessment using revised geologic model with hydrogeological data incorporated;
- Continued updating of marketing intelligence and sales plans to mitigate risks.

22.8. Mining Methods

The mine production plan has incorporated design and sequencing considerations to address both metal production and geotechnical constraints. In particular, the construction of the ground anchor support system required to protect the Tiehm's buckwheat populations has been incorporated within the mine phase designs and mine plan.

The ore production rate is limited by the processing plant's acid consumption, which is roughly 3,131 tonnes per day (1.14 million tonnes per year) for the leaching process. This equates to about 3.1 million tonnes of ore per year, with the life-of-mine plan projecting an estimated mine life of around 82 years. The mine plan follows a phased approach to quarry design, where lower-grade (less economically viable) ore blocks are assumed to be stockpiled near the processing facility. On average, the total ore mined per year is approximately 3.1 million tonnes, with varying overburden removal requirements depending on the quarry's orientation and available loading equipment.

The block size in the (9.14 m) 30 ft mine planning block model aligns with the selected loading equipment. Consequently, the model already accounts for an appropriate mining dilution allowance in its estimates, so no additional dilution has been applied. Mining dilution, loss, and recovery factors were determined based on the assumption of a reasonably accurate geologic model, precise GPS operations, and the use of a fleet management system (FMS). It is also assumed that GPS-guided systems will be installed on support equipment to aid in ore cleaning and grade control.

Overburden storage facilities were designed to contain 735.6 million tonnes of overburden and non-ore grade material removed from the quarry. Four of these facilities are located outside the quarry, while the fifth will be within the quarry itself, using backfill in portions of the mined-out areas. Any remaining overburden will be stored as backfill as space becomes available within the production schedule.

An autonomous haulage system and conventional support equipment were considered for estimating quarry equipment needs, labor requirements, capital expenditures, and operating costs. ioneer chose to implement autonomous haulage to reduce labor costs. Although the use of autonomous haulage in mining and quarry operations is relatively new, it has proven to be reliable, safe, and cost-effective over time. The information, estimates, and comparisons provided here are considered reasonably representative of autonomous haulage requirements, based on the Qualified Person's (QP) experience with similar studies.

22.9. Recovery Methods

The objective of the processing facility is to produce technical grades of boric acid and lithium carbonate.

The processing facilities have been designed to process high boron ore. The ore will be processed by vat acid leaching, impurity removal, evaporation, and crystallization, using known and commercially proven equipment and technology. The flowsheet development has been supported by extensive test work and pilot plant programs.

The Rhyolite Ridge ores differ from conventional brines and spodumene ores in terms of their mineralogy and chemistry. The processing methods proposed also differ from traditional installations, therefore, at the time of this Report, there are no existing commercialized reference operations. While the application and sequencing are unique to the Project, the unit operations and equipment types are not novel, and many unit operations are adopted from existing boric acid, potash, nitrate, and lithium production facilities.

A pilot plant was constructed to complete the metallurgical test work for the Rhyolite Ridge operations, including vat leaching, boric acid circuit, impurity removal, evaporation and crystallization, and lithium carbonate circuit. Following bench and pilot-scale testwork, flowsheet modifications were implemented to address any process issues identified. The test work produced a clear understanding of the processing chemistry, sequences, and understanding of the set points for optimal operation. This work was used as the basis to develop the plant design, cost estimates, and production forecasts in the feasibility study.

Additional metallurgical testwork conducted between Q4 2024 and Q2 2025 confirmed that processing and recovery methods developed for stream 1 are applicable to stream 2 & 3, provided appropriate blending ratio is ensured in earlier stages of development compared to stream 1. Blending stream 3 material with stream 1 & 2 material is limited to 10%.

A 3,500 metric tonnes of sulfuric acid plant is a key component of the Rhyolite Ridge operation. The sulfuric acid plant will produce commercial-grade (98.5%) sulfuric acid, for vat leaching of ore, steam, to drive the evaporation and crystallization steps, and electricity, to drive the entire process. The associated power plant will generate sufficient electricity to run the entire facility independently from the Nevada state power grid.

22.10. Infrastructure

22.10.1. General Infrastructure

The Rhyolite Ridge Project is a greenfield project remote from existing infrastructure.

The Rhyolite Ridge Project is designed to operate independent from the Nevada power grid. Electrical power necessary to operate the process plant will be supplied by the onsite steam turbine generator power plant, which has a design capacity of 42 MW. Actual power output will vary depending on the operation conditions. In addition, two 3 MW diesel generator capacity and a high-pressure auxiliary boiler are included to facilitate the black start of the onsite sulfuric acid plant, as well as to support emergency and critical power requirements when the steam turbine generator is offline. The power plant will be designed to receive high pressure steam from the waste heat boiler of the sulfuric acid plant during normal operation, or from the auxiliary boiler during black start operation.

The Project's primary source of water supply will be ground water from wells located in the Fish Lake Valley agricultural area which will be piped and pumped to the processing plant. Secondary sources of water supply will be from contact water from captured storm water that has been diverted to contact water ponds as well as water from dewatering the mine.

22.10.2. Spent Ore Storage Facility

The spent ore storage facility is designed to be a zero-discharge facility and incorporates the necessary drainage and collection systems for a safe design. The spent ore storage facility has been designed to store leached ore from the vats in addition to sulfate salts generated in the evaporation and crystallization circuits. This material is suitable for dry stacking, meaning there is no need for a conventional tailings dam. The facility has sufficient storage capacity to support the Project.

The spent ore storage facility will be located 1.6 km (1 mile) south of the processing facilities; the material will be trucked from the processing plant and mechanically placed and compacted within the structural zone of the facility to maintain global stability.

22.11. Market Studies

The Benchmark revised Q1 2025 forecast anticipates a surplus of 60,000 metric tons in 2026, followed by balanced market conditions in 2027–2028, and the deficit is expected to develop in 2029–2030. The market will require ioneer's first 20 years' average production of approximately 23,071 short tons by 2028, and demand is expected to absorb its capacity.

For boric acid, the global demand and supply were close to equilibrium before the COVID-19 pandemic, at an 82% utilization rate. However, supply shortages occurred during the pandemic due to logistical disruptions, and it took until the first half of 2022 for supply to recover. The industrial sector in Asia slowed down in 2023 and continues to do so; the market is currently in slight oversupply with a utilization rate of 77%. This is due to Eti Maden's debottlenecking and increasing its nameplate capacity by 40,000 metric tons, from 400,000 metric tons to 440,000 metric tons, in 2024. The utilization rate is expected to increase through 2032 and enter a deficit in 2035, based on an 85% utilization rate cap.

For the financial model of the Project, Benchmark Minerals price forecasts were used rather than current or historic prices to better account for future market conditions and potential price trends. The price forecast of delivered technical-grade lithium carbonate and battery-grade lithium hydroxide in real terms ranges from US$16,591/t (US$15,051/st) to US$22,317/t (US$20,246/st) between 2028 and 2050, with an average price of US$21,594/t (US$19,589/st). The price forecast for boric acid ranges from US$830/t (US$753/st) to US$1,400/t (US$1,270/st) between 2025 and 2040, with an average price of US$1,136/t (US$1,031/st).

ioneer has signed offtake agreements for lithium carbonate with Ford Motor Company, Prime Planet Energy & Solutions, Inc., EcoPro Innovation Co. Ltd. and Dragonfly Energy Corporation and for boric acid with Dalian Jinma Boron Technology Group Co. Ltd, Iwatani Corporation, Kintamani Resources Pte Ltd and Boron Bazar Ltd. ioneer plans to secure additional boric acid distributor sales agreements in North America and Taiwan following the financial investment decision to increase sales.

22.12. Environmental, Permitting and Social Considerations

Phase 1 of the Project will be an operation with zero-carbon emission power production, low-water usage, low emissions, and a modest surface footprint with no tailings dam. Baseline and supporting studies were completed in support of current mine designs, operations, and permitting.

At the time of this report, the QP does not anticipate any known social or community issues or impacts to have a material impact on ioneer's ability to implement Phase 1 of the Project; however, a shortage of qualified employees, housing, and infrastructure in the state of Nevada could negatively affect the Project's development schedule and cost.

ioneer is in the process of securing the other necessary permits to advance Phase 1 of the Project:

- Above Ground Storage Tanks Permit;
- Boiler and High-Pressure Vessels Operating Permit;
- Explosives Permit;
- Fire and Life Safety;
- Hazardous Materials Permit;
- Hazardous Materials Storage Permit;
- Industrial Artificial Pond Permit;

- Notice of Commencement of Mine Operations;
- Notice of Commencement of Mine Operations.

The application for the Mine Plan of Operations and Nevada Reclamation Permit includes a number of applicant-proposed conservation measures that minimize the environmental effect of the Project including, most notably, the protection of Tiehm's buckwheat, a BLM sensitive species listed as a United States Fish and Wildlife Service endangered species that exists within the Rhyolite Ridge Project site. A total of eight populations of this buckwheat species are scattered throughout the Project area boundary. Following discussion with the BLM and USFWS, ioneer has developed the Tiehm's Buckwheat Protection Plan, which contains specifics on the measures ioneer will take to conserve, protect, and expand the plant. These environmental protection measures are designed to address potential threats to the species from Project-related activities.

A closure plan was prepared that includes preliminary details for the final closure of all facilities. Closure and reclamation costs are currently estimated at US$61 million.

It is the QP's opinion that ioneer's current actions and plans for Phase 1 of the Project are appropriate to address any issues related to environmental compliance, permitting, relationship with local individuals or groups, and tailings management for the Phase 1 Project design.

22.13. Capital Cost Estimates

Initial capital costs are estimated at approximately US$1,667.9 million. The sustaining capital costs are estimated at approximately US$2,241.9 million with additional deferred stripping cost estimated at US$798.3 million. Closure costs are estimated at an additional US$61 million. The capital cost estimate covers the period from final investment decision to first production and is reported in Q1 2024 real US dollars with design growth allowances factored within contingency.

A contingency of 10% was applied to the capital costs estimate using a Monte Carlo simulation to achieve a P65 confidence level for the estimate and P50 for schedule according to the model and ranges established by Fluor. The estimate, including contingency, has an expected accuracy range of +15%/-10% as per the basis of estimate.

22.14. Operating Cost Estimates

The operating cost for the Rhyolite Ridge Project is estimated at approximately US$15,708.8 million over the 82-year life of mine. The estimates for the Project are at a feasibility level of confidence, having an accuracy level of -15%/+15%. No contingency has been allocated for operating cost estimates.

22.15. Economic Analysis

Based on estimation of US$1,667.9 million of initial capital costs, sustaining capital costs of US$2,241.9 million, deferred stripping costs of US$798.3 million, closure costs of US$61 million and US$15,708.8 million in life of mine operating costs, financial results show an internal return rate (unlevered post-tax) of 16.8% and a net present value (unlevered post-tax) of US$1,888 million at an 8% discount rate and a 10-year payback period.

ioneer's economic analysis has formed the basis of the mineral reserve estimates. In the QP's opinion, the outcome from this economic analysis demonstrates that the Project is economically viable. The Rhyolite Ridge Project has demonstrated strong project economics, made feasible by having significant lithium and boron revenue streams.

Based on the sensitivity factors, the Project is particularly sensitive to changes in lithium grade, recovery rates, prices and the discount rate. The model is less sensitive to other changes such as labor cost.

22.16. Risks and Opportunities

22.16.1. Risks

22.16.1.1. Metallurgy and Processing

The risks associated with blending low boron mineralization (stream 2 & 3 material) with high boron ores (stream 1 material) are as follows:

- Blending with LoB-Li high clay mineralization (M5 unit) should be limited to 10% to avoid adverse permeability issues in the vats caused by its high clay content. The large volume of M5 unit ore will result in the great portion of this ore type being unsuited for vat leaching through prior blending with low clay ores.
- Blending with other LoB-Li low clay mineralization types in stream 2 (L6 & S5 units) will result in lower boric acid production.

The sulfuric acid plant is expected to have 98% availability, accounting for two weeks of planned shutdown every two years, which is typical for such plants. This high availability is achievable, considering the design includes sufficient spare parts for major equipment. However, risks to this availability may arise from unexpected events, such as unplanned shutdowns caused by scaling of processing equipment exposed to temperature and pH changes.

22.16.1.2. Mineral Resource Estimates

The mineral resource estimates could be materially affected by any significant changes in the assumptions regarding forecast product prices, mining and process recoveries, or production costs. If the price assumptions are decreased or the assumed production costs increased significantly, then the cut-off grade must be increased and, if so, the potential impacts on the mineral resource estimates would likely be material and need to be re-evaluated.

The QP has identified the following additional risk factors relating to geology and mineral resource estimation including:

- Geological uncertainty relating to local structural control relating to geometry, location, and displacement of faults;
- Geological uncertainty and opportunity regarding the continuity and geometry of stratigraphy and mineralization in the eastern and northern extents of the basin, outside of the current Mineral Resource footprint;
- Potential impacts to the mineral resource footprint related to potential changes in the Project footprint relating to avoidance and mitigation measures relating to the Tiehm's buckwheat and designated critical habitat areas;
- The use of assigned density with no density samples, as is the case with one waste unit (the Q1 alluvium unit), is a factor that represents a low risk to the mineral resource estimate confidence.

These additional risk factors are considered as potential impacts on local geology and estimates rather than global (deposit wide) geology and estimates. As such, the QP does not consider these factors as posing a risk to the prospect of economic extraction for the mineral resource as currently stated.

The QP has identified some opportunities related to geology and the mineral resource estimation as follows:

- An evaluation of the unsampled drill core which could lead to an update to the assay database and eventual update to the mineral resource estimate;
- Evaluate the inclusion of additional lithium and boron bearing seams such as S3 and M4 into the mineral resource;
- Continue to expand process test work and expand data set, which may lead to further reduction in Acid consumption or increased recovery variables.

22.16.1.3. Mineral Reserve Estimates and Mine Plan

The mineral reserve estimates may be affected positively or negatively by additional exploration that alters the geological database and models of lithium-boron mineralization on the Project. The mineral reserve estimates could also be materially affected by any significant changes in the assumptions regarding the quarry slope stability analysis (e.g., hydrogeologic data and/or geologic structure remodeling with new drilling), forecast product prices, mining and process recoveries, or production costs. If the price assumptions are decreased or the assumed production costs increased significantly, then the cut-off grade must be increased and, if so, the potential impacts on the mineral reserve estimates would likely be material and need to be re-evaluated.

The mineral reserve estimate is also based on assumptions that a mining project may be developed, permitted, constructed, and operated. Any material changes in these assumptions would materially and adversely affect the mineral reserve estimates for the Project; potentially reducing to zero. Examples of such material changes include extraordinary time required to complete or perform any required activities, or unexpected and excessive taxation, or regulation of mining activities that become applicable to a proposed mining project on the Project. The QP does not know of environmental, permitting decisions, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the mineral reserve estimate that are not discussed in this Report.

22.16.1.4. Markets and Contracts

The marketing risk review identified the following key commercial risks as listed below:

- Losing existing offtake agreements due to significant commissioning delays;
- US-China tariff conflict escalation, resulting in lower boric acid prices and volume;
- Customers do not honor contracts and memoranda of understanding, resulting in lower sales levels;
- Prices are less than expected due to oversupply or lower demand; and
- The market has not grown as predicted, and sales volume is less than expected.

Each of these risks can be mitigated to some degree; however, in some cases, the residual risk is still significant.

22.16.1.5. Environmental, Permitting, and Social Considerations

Several baseline studies were conducted within portions of the Project area to characterize existing environmental and social resources to support mine permitting and development. ioneer has secured the critical permits for Phase 1 of the Project and is in the process of securing other necessary permits to advance Phase 1 of the Project. Based on the Phase 1 Project design, no known social or community issues or impacts will have a material impact on ioneer’s ability to obtain the remaining necessary permits to develop Phase 1 of the Project.

22.16.1.6. Cost Estimation

The Rhyolite Ridge Project estimate analysis represent forward-looking information that is subject to a number of known and unknown risks and uncertainties, such as:

- Skilled labor availability in the region;
- Accommodation availability due to unexpected competing projects;
- Volatile raw material and transportation costs;
- Late changes.

The above-listed risks should be further evaluated during the next phase of the Project.

22.16.2. Opportunities

Opportunities include:

- Potential opportunity to convert additional LoB-Li high clay mineralization in M5 unit from current classification of mineral resources to mineral reserves following appropriate supporting studies and tests.

23. RECOMMENDATIONS

It is recommended by the hydrogeological resource QP to allow additional cost for additional hydrogeological data collection and modelling likely required for NEPA analysis required for project expansion. This recommendation was estimated to have a cost of approximately US$2-3 million.

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25. RELIANCE ON INFORMATION PROVIDED BY THE REGISTRANT

25.1. Introduction

The QPs have fully relied upon third party information provided by Ioneer regarding macroeconomic trend, markets, legal matters, environmental matters, stakeholder accommodation, and governmental factors for the Project.

The QPs have reviewed the information provided by the registrant and have determined, in their professional judgement, the information to be suitable for use in this Report. The QPs consider it reasonable to rely on the provided information due to the following reasons:

- The registrant has employed or retained industry professionals with expertise in the areas listed in the following sub-sections;

- The registrant has the oversight and governance over these activities, including direct involvement, peer review and approval;

- The registrant has experience and, in some cases, knows the history of these areas.

25.2. Macroeconomic Trend

Information relating to inflation, interest rates, discount rates, foreign exchange rates and taxes.

This information is used in the economic analysis in Chapter 19. It supports the mineral resource estimate in Chapter 11 and the mineral reserve estimate in Chapter 12.

25.3. Markets

Information relating to market studies for product, market entry strategies, marketing and sales contracts, product valuation, product specifications, refining and treatment charges, transportation costs, agency relationships, material contracts, and contract status.

This information is used when discussing the market, commodity price and contract information in Chapter 16, and in the economic analysis in Chapter 19. It supports the mineral resource estimate in Chapter 11, and the mineral reserve estimate in Chapter 12.

25.4. Legal Matters

Information relating to the corporate ownership interest, the mineral tenure (concessions, payments to retain, obligation to meet expenditure/reporting of work conducted), surface rights, water rights, royalties, encumbrances, easements and rights-of-way, violations and fines, permitting requirements, ability to maintain and renew permits, monitoring requirements and monitoring frequency, and bonding requirements.

This information is used in support of the property ownership information in Chapter 3, the permitting and closure discussions in Chapter 17, and the economic analysis in Chapter 19. It supports the mineral resource estimate in Chapter 11, and the mineral reserve estimate in Chapter 12.

25.5. Environmental Matters

Information relating to baseline and supporting studies for environmental permitting, environmental permitting and monitoring requirements, ability to maintain and renew permits, emissions controls, closure planning, closure and reclamation bonding and bonding requirements, sustainability accommodations, and monitoring for and compliance with requirements relating to protected areas and protected species.

This information is used when discussing property ownership information in Chapter 3, the permitting and closure discussions in Chapter 17, and the economic analysis in Chapter 19. It supports the mineral resource estimate in Chapter 11, and the mineral reserve estimate in Chapter 12.

25.6. Stakeholder Accommodation

Information relating to social and stakeholder baseline and supporting studies, hiring and training policies for workforce, partnerships with stakeholders (including national, regional, and state mining associations; trade organizations; state and local chambers of commerce; economic development organizations; non-government organizations; and state and federal governments), and the community relations plan.

This information is used in the social and community discussions in Chapter 17, and the economic analysis in Chapter 19. It supports the mineral resource estimate in Chapter 11, and the mineral reserve estimate in Chapter 12.

25.7. Governmental Factors

Information relating to taxation and government royalty considerations at the Project level.

This information is used in the economic analysis in Chapter 19. It supports the mineral resource estimate in Chapter 11, and the mineral reserve estimate in Chapter 12.