Review of Dust Deposition and Suppression Impacts on Tiehm's Buckwheat from the Rhyolite Ridge Lithium-Boron Project

Technical Memorandum prepared for Center for Biological Diversity

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Background and Executive Summary

The Rhyolite Ridge Lithium-Boron Project ('Project') would involve the construction and operation of an open-pit mine to extract lithium and boron ore in the Rhyolite Ridge area of Esmeralda County, NV. The proposed quarry, overburden storage, haul road, and service road intersects existing critical habitat for Tiehm's Buckwheat *Eriogonum tiehmii* (F.R., 2022). Operation of the quarry, haul road, overburden storage, service roads, and general mine operations will create significant and unavoidable dust impacts. Dust suppression methods include water trucks, in-place watering, and potential chemical dust suppressants (if approved).

This technical memorandum evaluates the Draft Environmental Impact Statement (DEIS) – DOI-BLM-NV-B020-2021-0020-EIS and associated environmental documentation and appendices for dust deposition direct and indirect impacts on the critical habitat areas – specifically focused on domain specific air quality emissions, modeling, and deposition impacts for the 'Proposed Action' and the 'North and South OSF Alternative'.

Executive Summary

Fugitive dust emissions are underestimated. Fugitive dust emissions from quarry blasting, quarry excavation operations, overburden loading/unloading, service roads, watering trucks, and overburden wind erosion are not included in the fugitive dust dispersion modeling impacts on critical habitat.

Model inputs are systematically biased low. Multiple dispersion model or emission inputs systematically bias the results to lower fugitive dust emissions. Silt fraction, meteorology, and water truck emissions activity are inadequate. Minor and major sources of fugitive dust are not included in critical habitat deposition modeling.

Resuspended herbicide and/or chemical suppressants will affect critical habitat. Indirect effects of dust deposition and dust suppression on critical habitat are not considered at all. Resuspension of particles and dust deposition of mine dust with adsorbed/absorbed herbicides or chemical dust suppressants is not considered.

Water truck emissions and water requirements are inadequate. Dust suppression activities from Water Trucks are inadequately modeled for emissions activity and water management.

Model documentation is insufficient. DEIS documents, supplemental reports, appendices, and attachments are insufficient for evaluation of model domain and model results for critical habitat dust deposition. Dispersion modeling was not performed for the North and South OSF alternative.

Detailed Discussion

Documents Reviewed and DEIS Description of Impacts and Mitigation Measures

This technical memorandum evaluates the Draft Environmental Impact Statement (DEIS) – DOI-BLM-NV-B020-2021-0020-EIS and associated environmental documentation and appendices for dust deposition direct and indirect impacts on the critical habitat areas. My comments reflect documents available publicly or through public records requests which are the most recent available. These documents reviewed include:

- Rhyolite Ridge Lithium-Boron Project DEIS – Project DOI-BLM-NV-B020-2021-0020-EIS; (BLM, 2024)
    - Air Quality Including Climate Change Supplemental Environmental Report
    - Transportation and Access Supplemental Environmental Report
    - Vegetation Resources, Including Noxious Weeds, and Special Status Plant Species Supplemental Environmental Report
    - Threatened and Endangered Species Supplemental Environmental Report
- Air Quality Impact Analysis – Trinity Consultants (September 2022, and revised October 2023 v5.6)
- Work Plan for Air Quality Impact Analysis (August 2023)
- Attachment H – Particulate Matter Impact Analysis on Tiehm's Buckwheat – Trinity Consultants June 2023 and September 2023
- Geospatial files on critical habitat, Tiehm's buckwheat populations, haul road location, and quarry/overburden storage locations.

The DEIS acknowledges that project activities will generate dust that can deposit on the critical habitat and adversely impact Tiehm's Buckwheat populations. Adverse impacts are described In Section 4.12.1.3 of the DEIS. The Proposed Action would disturb approximately 354 acres of designated critical habitat. Surface disturbance will reduce the habitat available for pollinator species, will lead to establishment and spread of non-native species (both plant and animal), and increase dust deposition on critical habitat areas. The Proposed Action includes mitigation measures for dust suppression on some portions of the mining operation (watering trucks, chemical dust suppressants), noxious species herbicide application, and a dust monitoring plan. In my review of the DEIS and accompanying documentation, there were multiple critical areas of concern that should be addressed. These areas must meet NEPA requirements that decision-makers and the public are fully informed of the environmental, social, and economic effects of the Proposed Action and the North-South OSF Alternate.

Section 2.1.13.2 describes Applicant-Committed Environmental Protection Measures, including protections for Tiehm's Buckwheat, Air Quality, and Noxious Weeds. Key measures reviewed for this report include the disturbance buffers around subpopulations, a Buckwheat Exclusion Area, fugitive dust controls including in-place water sprays, water trucks or chemical dust suppressants, and physical weeding or herbicide application.

Section 2.2.2 identifies additional plans for Tiehm's Buckwheat in the North and South OSF Alternative Action.

Table 2-6 Compares effects by actions. For Fugitive Particulate Emissions, the Proposed Action and North and South OSF Alternative are 'Similar.' The surface disturbance differential is 35 acres fewer for the alternative action out of 2,306 – or less than 2%. Critical Habit disturbance is 354 acres in the proposed action and 197 acres in the Alternate; 559 acres of critical habitat would be fenced in the Proposed Action and 714 Acres would be fenced in the Alternative. The 'Dust' category asserts that Fugitive Dust would impact the critical habitat in the Proposed Action and is the 'Same as the Proposed Action, but less impacts from less disturbance in designated critical habitat.' It is not at all clear how Fugitive Dust can be **the same** but also less impact, as this claim is based on no dispersion modeling or emissions dust modeling. There is no air quality document that supports this assertion.

The DEIS reports on emissions and dispersion modeling of air quality impacts and dust deposition of the proposed Project Action. Dispersion modeling was not conducted for the North and South OSF Alternative (DEIS, p. 4-2). Total fugitive dust emissions from the Proposed Action are presented as 2,625 tons per year of particulate matter (PM), non-fugitive emissions are 76 tons per year, and mobile emissions are 199 tons per year, for a total of 2,900 tons per year. Fugitive emissions are the bulk of emissions in the DEIS.

The DEIS describes mitigation measures which include implementing a dust deposition monitoring program and verifying the effectiveness of dust suppressant measures on unpaved roads, construction areas, and stockpiles. The adaptive management program sets a limit of 4 g/m^2/day based on a trailing 12-month average. Based on this approach, they claim the 'impacts to Tiehm's buckwheat from fugitive dust would be minor, long-term, and localized.' This assertion is unsupported and relies on multiple untested assumptions and modeling underestimates.

Fugitive dust emissions are underestimated

Critical sources of fugitive dust are identified and documented outside of the DEIS and Supplemental Environmental Reports in the Trinity Consultants Air Quality Impacts Analysis (AQIA 2023, v5.6). There are multiple iterations of these reports, but we believe this is the most recent available. A single modeling simulation was used to assess all facility impacts based on 'mining throughputs, VMT, source locations, and reasonably foreseeable maximum emissions year.'

In Attachment H – Trinity Consultants (September 2023) provided a determination of potential deposition of PM from a haul road proximate to the Tiehm's Buckwheat populations 3 and 6. In it, they explicitly note that they only model haul truck traffic trips. This is not a credible cumulative assessment of fugitive dust deposition as it omits dozens of sources large and small that will contribute to fugitive dust emissions in the project area. As noted in the Air Quality Impacts Analysis based on the broader emissions analysis, total emissions from Haul Trucks are not the only sources of fugitive dust emissions. Other significant sources include the overburden stockpiles in Table 13a which emit 2,906 lbs/day for the North stockpile, 4,690 lbs/day for the West overburden stockpile, and 3650 lbs/day for the Infill stockpile of fugitive dust emissions. Total on-site road emissions are 3,333 lbs/day, with most of that being in Segment 1, 22, or in-pit, so it is unclear how the determination was made to exclude wind erosion from overburden storage from a dust deposition analysis. It is also unclear how the water truck dust emissions were allocated based on Table 16b – since all the emissions were allocated identically to the mine-pit and to Segment 1, with zero dust suppression on road Segments 2-22. Water trucks contribute at least 470 lbs/day of PM and the allocation does not appear to be included in the Attachment H dust deposition modeling.

Additionally, the extra-large water trucks that are CAT 777 are too large to go on service roads and no other water trucks are specified for dust suppression on those roads. Those appear to have not been modeled or to have been omitted from the analysis.

Cumulatively, there are more fugitive dust emissions that have not been modeled for critical habitat dust deposition impacts than have been modeled. Given the variable location of overburden storage across the alternate scenarios – a transparent and reproducible dust deposition modeling simulation with multiple mine layout scenarios needs to be performed to assess maximum dust deposition impacts. The existing work is neither reproducible nor inclusive enough to be credible for estimating maximum dust deposition impacts based on the limited haul road modeling performed.

Lastly, silt content is parameterized at 6.4% for haul road and service road emissions calculations based on Arizona Department of Environmental Quality, State Implementation Plan Revision: Regional Haze Program (2018-2028) – (2022). In that report, it describes its silt content assumptions for achieving 6.4%.

> *Application and maintenance of surface gravel on the unpaved non-haul roads is technically feasible. However, the rubber tire rigs would still degrade the gravel over time at a rate faster than normal vehicle traffic, due to the weight of the rubber tire rigs. This would necessitate periodic replacement of the gravel.*
>
> *Per AP-42 Section 13.2.2 Equation 1(a), surface material silt content (%) is one of the key variables for estimating PM_{10} emission factor. Asarco currently utilizes a silt content of 6.9% in its emission inventories for the unpaved roads. A silt content of 6.4% could be achieved by adding more gravel to the unpaved roads. A decrease in the silt content from 6.9% to 6.4% would reduce the PM_{10} emission by 5.1 tpy. (ADEQ, 2022)*

The description is specifically on how a specific facility can lower its silt content by regularly applying gravel to its non-haul road. First, I note that this is for non-haul roads and is not a reasonable assumption for a haul road which has far heavier vehicles mechanically grinding down material into smaller dust particles. Secondly, it requires period application of a gravel layer which would also create dust through application – this has not been modeled or included in any documentation in the DEIS or appendices. Finally, this silt content value is far lower than observed silt content on site, which ranges from 12% to 32%. Moreover, it is lower than the 13% silt content of the ore stockpile ore in Table 13a of appendix B (AQIA 2023, v5.6). The assumption that the silt content of the mining overburden and ore will be more than twice as high as the road is based entirely on water treatment or chemical dust suppressant applications, despite the usage of a haul road being 200+ ton trucks which will pulverize the haul road into silt at a rapid rate. It is not a conservative or realistic estimate to assume silt content levels less than half of the silt content of the ore and surrounding overburden material.

Model inputs are systematically biased low.

Multiple key dispersion model and emission inputs systematically bias the results to lower fugitive dust emissions. Silt fraction, meteorology, and water truck emissions activity are inadequate.

As discussed in the previous section, silt fraction values for the haul road ranged from 1.7% to 6.4% which is at least a factor of 3 lower than observed silt values within the critical habitat (~12% to ~32%, with an average silt content of 25.7%) (Threatened and Endangered Species SER, 2024 – see Figure 5b below), and a factor of 2 lower than the content of the ore stockpile in Table 13 of Appendix B (AQIA 2023, v5.6). Silt content is a key factor in dust deposition. Moreover, the silt fraction of 6.4% requires routine gravel application which has not been described as part of the DEIS or mitigation measures for dust suppression.

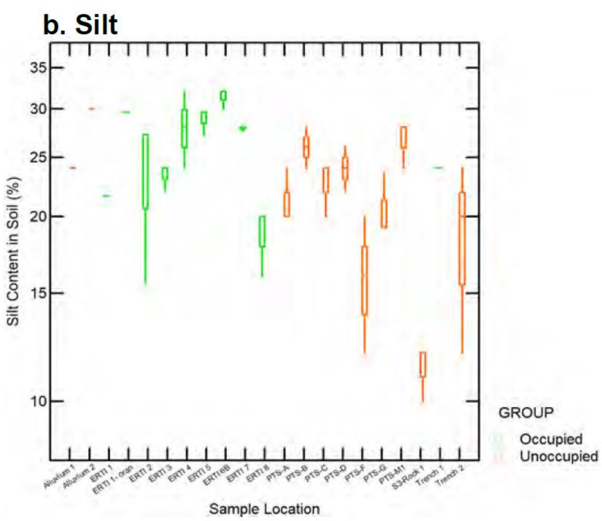

Figure 5b - Threatened and Endangered Species SER (2024) Silt Content in Critical Habitat Occupied and Unoccupied areas.

Meteorological observations used by the Project Applicant from the Tonopah Airport site are unlikely to be representative of the topographically complex Rhyolite Ridge project area. While the Tonopah Airport site is the closest ASOS site with processed AERMET data, it is more than 40 miles to the northeast of the project site in a flat basin; multiple mountain peaks are barriers to air movement between the project site and the Tonopah Airport. Additionally, the project site area is topographically complex due to the surrounding mountains within the Rhyolite Ridge project area.

The Tonopah Airport Wind Rose is shown in **Figure 1.** Winds are predominantly on a north-south axis, originating from the north most of the time. Winds from the northwest are slightly higher wind speeds. This wind rose is extremely unlikely to represent the winds at Rhyolite Ridge along the haul road, which is in a canyon at approximately with ridges rising well over 1,000 feet above the canyon floor to the north and south of Cave Springs Rd.

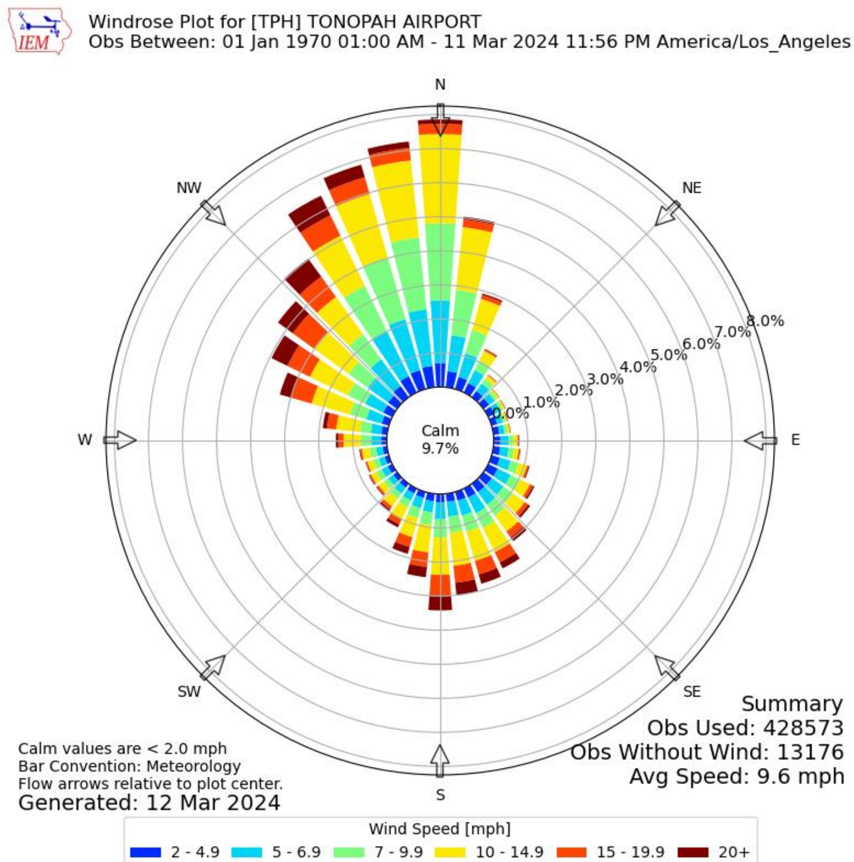

Figure 1. Tonopah Airport Wind Rose from Iowa Environmental Mesonet ASOS network[1] – based on hourly wind observations from 1970 through 2024.

In an area with multiple high ridges, it is likely that the topography channels the wind along Cave Springs Rd on a path of least resistance through the mountainous terrain. Therefore, it is unlikely that the Tonopah airport meteorology will be the same directionally (due to mountainous terrain to the north of the project area).

In addition, areas with high ridges can experience upslope and downslope flow. Upslope flow is orographic lifting and is often associated with precipitation although that is unlikely in this area due to the rain shadow from the Sierras to the west of the project. Downslope flow is associated with strong warm winds. While the ridges may not be tall enough to generate strong topographical flows, it is important for deposition measurements to have accurate meteorological measurements as inputs. Higher wind speeds will cause greater turbulence, greater wind erosion, and additional dust deposition on disturbed silty habitat. Ioneer or BLM should collect onsite meteorology for at least three months to validate if the Tonopah airport meteorology is representative and a portable wind sensor can be acquired for these measurements for minimal funds.

Lastly, the model emissions calculations for dust critically depend on the number of days with greater than 0.1 inches of precipitation for wind erosion and haul road dust deposition estimates. AQIA used a value of 60 in their calculations, based on the isopleths of rainfall days with greater than 0.1 inches of

[1] https://mesonet.agron.iastate.edu/sites/windrose.phtml?station=TPH&network=NV_ASOS

precipitation in AP-42 Section 13.2.2, Figure 13.2.2-1 (US EPA, 2006). This is inadequate for three reasons.

First, the number of days with greater than 0.1 inches of precipitation is not 60 as inferred from Figure 13.2.2-1 isopleths. Tonopah airport precipitation statistics for the last decade are shown in **Table 1**. There are typically 34 days with greater than 0.1 inches of precipitation, as expected for an area with 4.95 inches of average rainfall and a distribution of rain event magnitudes. A more accurate estimate of precipitation events is 34 days, rather than the 60 days used in dust emissions calculations calculating haul road emissions in Appendix B and Attachment H for haul road emissions, wind erosion emissions, and water truck requirements.

Table 1 - Tonopah ASOS Airport Precipitation statistics from 2012-2023[2]

Year	Days with >=0.1 inches of precipitation	Valid days	Percentage of days >=0.1 inches of precipitation
2012	36	347	10.4
2013	32	363	8.8
2014	30	362	8.3
2015	36	346	10.4
2016	41	366	11.2
2017	38	364	10.4
2018	39	365	10.7
2019	45	336	13.4
2020	24	363	6.6
2021	24	357	6.7
2022	27	350	7.7
2023	31	323	9.6
Median	**34**	**360**	**10.0**
Mean	**33.6**	**354**	**9.5**

Secondly, the value of 0.1 inches of precipitation is not a good rule of thumb for this dust suppression application where evaporation rates are extremely high due to the elevation and low humidity. Watering requirements for 90% control efficiency require 0.8 L/m^2 to be applied every 70 minutes on an annual basis in year 11 based on Attachment H. Each application is 800 cm^3/10,000 cm^2 = 0.08 cm application of water. Cumulatively, that results in 1.65 cm of water applied over the 20.6 daily water truck applications for the haul road. There are 2.54 cm in an inch – so that 1.65 cm is 0.65 inches of water applied daily to the haul road and minepit. In fact, even the 75% control efficiency application is 0.66 cm daily – or 0.26 inches. A 0.1 inch precipitation event is only sufficient to suppress dust on the haul roads for the equivalent of 3.175 applications of water truck activity – less than four hours at 90% control efficiency and about 2 hours at 95% control efficiency.

[2] Data acquired from https://mesonet.agron.iastate.edu/request/download.phtml?network=NV_ASOS May 15, 2024

Thirdly, the dust deposition model excludes all service road dust deposition, quarry activities (blasting, excavating, loading, unloading) and process plant activities. A proper accounting of the cumulative impacts is required informed decision-making. To evaluate dust deposition, a cumulative dust dispersion modeling of **all significant** proposed action PM emissions is necessary, with local meteorology input variables.

Resuspended herbicide and/or chemical suppressants will affect critical habitat

Resuspension of particles and dust deposition of haul road, overburden storage, service road, and quarry dust with adsorbed/absorbed herbicides or chemical dust suppressants was not identified as a potential issue. In both the herbicide application and chemical suppressant cases, it is critically important to model the expected maximum loading of the herbicide and/or dust suppressant and then model the transport of these contaminants onto the critical habitat via multiple cycles of resuspended road dust activity over the course of the active lifetime of the chemical, rather than simply assume they will not migrate onto the critical habitat via fugitive dust resuspension.

Herbicide particulate drift

Herbicide drift could kill or damage Tiehm's Buckwheat (Threatened and Endangered Species SER, 2024). The three main forms of herbicide drift are droplet drift, vapor drift, and particulate drift (Bish et al., 2021). Droplet drift is straight dispersion from the application source with larger droplets falling closer and smaller droplets having a wider area of impact. Vapor drift occurs when herbicide evaporates upon spraying – it can widely disperse until forced back to the ground via precipitation or dry deposition through dust particles. Last, particle drift can occur when droplets or vapors adsorb onto particle surfaces – particles can be resuspended especially in high silt conditions with frequent mechanical disturbance.

APCM-7 in Appendix B of the Threatened and Endangered Species SER (2024) describes the Control of Nonnative, Invasive, and Noxious Species. Herbicide treatments will be applied in May and June using DuPont Telar XP herbicide or an equivalent substitute using Methylate Seed Oil (MSO) as a surfactant. The active ingredient in Telar XP is Chlorsulfuron, which has a DT_{50} of weeks to months in alkaline soils (Sarmah et al., 1999) and is essentially stable at pH 9. Measures will be taken to avoid droplet drift and vapor drift including low wind speed application, spray nozzles with low pressure, and wicking techniques, but no measures will be taken to avoid particle drift or resuspension beyond being 50 feet from critical habitat. Given the sticky and waxy nature of MSO and the stability of Telar, it is highly likely that mechanical disturbance of any herbicide treated areas will resuspend the herbicide via particle drift. It is unclear from this plan whether there will be any intention to apply herbicide to active disturbance areas – haul roads, surface roads, quarry, or overburden storage areas. If there is, and there is active disturbance, it is foreseeable that herbicide drift will occur.

Chemical dust suppressants

Similarly, chemical dust suppressants are briefly discussed in various sections of the DEIS as a means of controlling dust deposition. Potential dust suppression chemical would need to be approved by Nevada Department of Transportation (NDOT) and Bureau of Land Management (BLM) prior to use. Page 4-2 of the DEIS states that polymer, and/or dust suppression reagents could be used to control dust. Page 4-22 states that '…chemical binding agents for dust suppression may impact Tiehm's buckwheat and designated critical habitat…' Without explicitly stating which salts, the DEIS identifies as potentially harmful to critical habitat. The two most common salts used for dust suppression are calcium chloride and magnesium chloride, both of which function as hygroscopic materials to retain moisture for dust suppression.

AP-42 Section 13.2.2 describes the impact of chemical dust suppression on unpaved haul roads. (US EPA, 2006)

> *As opposed to watering, chemical dust suppressants have much less frequent reapplication requirements. These materials suppress emissions by changing the physical characteristics of the existing road surface material. Many chemical unpaved road dust suppressants form a hardened surface that binds particles together. After several applications, a treated road often resembles a paved road except that the surface is not uniformly flat. Because the improved surface results in* ***more grinding*** *of small particles, the* ***silt content*** *of loose material on a highly controlled surface may be substantially higher than when the surface was uncontrolled.* (AP-42 13.2.2-11)

Chemical dust suppressants used in operational areas will be resuspended as fugitive dust – some of which will be deposited into critical habitat areas. It is critical to model these impacts if chemical dust suppressants are likely to be used on haul roads, service roads, or other uncontrolled mine surfaces for dust suppression. While this may be acceptable at significant distances of kilometers from critical habitat, it is much more likely to be detrimental critical habitat and vegetation if used within a few km of critical habitat areas, given the possibility for multiple resuspension events and transport via the high winds in the area.

Water truck requirements are inaccurately modeled.

Dust suppression activities from Water Trucks are inadequately modeled for emissions activity and water management.

Haul road and operational mine areas will require multiple water trucks under high control efficiency scenarios when the mine is fully operational, but the emissions modeling assumes only one truck will be required to operate 16 hours a day (e.g., Table 16b and Table 18a of Appendix B of AQIA 2023 v5.6).

Under the 95% control efficiency scenario, haul roads will need to be watered every 35 minutes, 24 hours a day, 330 days a year, which is ~41 applications per day, over an inch of water daily, and about 473 inches per year. It will require ~2.5 trips for a 77,000 L (20,000 gallon) water truck to apply 0.8 L/m^2 to the ~238,000 m^2 area of haul road (4.7 km long, 51 m wide based on Attachment H). That will require 50,000 gallons of water per hour for dust suppression for the haul road. It is not clear how quickly water trucks can refill a 20,000 gallon tank – although a 1,000 gallon per minute pump would take 20 minutes. While being refilled, the water truck is not watering, and so additional water trucks will be needed. Moreover, this includes no watering requirements for service roads or mine pit – which are multiple miles long and cannot accommodate the 100+ ton weight of the CAT 777 watering trucks. **Table 2** provides a table of estimated watering rates and requirements for the dust control efficiencies described in Attachment H.

Table 2. Water truck haul road dust suppression control efficiency calculations for (1) volume of water required daily and annually and (2) water depth applied to dust suppression surfaces daily and annually.

Control Efficiency (%)	Minutes between application (annual)	Applications per day	Depth of water per application (cm)	Water depth per day (cm)	Water depth per year - 330 days (inches)	Haul road Water volume per day (L)	Haul road water volume per day (gallons)
75	175	8.2	0.08	0.66	86	1,566,832	413,913
80	140	10.3	0.08	0.82	107	1,958,540	517,391
85	105	13.7	0.08	1.10	143	2,611,387	689,855
90	70	20.6	0.08	1.65	214	3,917,080	1,034,783
95	35	41.1	0.08	3.29	428	7,834,160	2,069,566

- Applications will be 0.8 L/m^2 based on Attachment H Table 1 Application intensity.
- Water depth assumes 330 days of watering per year based on 35 precipitation days with >= 0.1 inches of precipitation
- Haul road area of 238,000 m^2 based on 4.696 km length and 51 m width (46 m + 5 m shoulder) based on Attachment H. Haul road area in geospatial shape files was 225,000 m^2, about a 6% difference.

Given the enormous volumes of water required for haul road dust suppression, the water tank and water truck filling pumps will also need to be quite large to efficiently transfer the 20,000 gallons per tank to keep the water trucks on the haul road watering.

Additionally, there is no discussion of the structural impacts to the haul road of constant watering (in and out of the mine-pit), the noxious weeds impacts from having a tropical rain forest level of watering, and pollinator impacts of watering the haul road 86 to 400+inches of water per year. It is also unclear if the mine operations have sufficient water for dust suppression under high control efficiency scenarios since the watering requirements indicate between 17,000 and 86,000 gallons per hour estimates is solely for the haul road. I have not included the watering and misting required for the quarry excavation, overburden storage, ore crushing, or service roads. Given a water budget of ~2,500 gallons per minute (150,000 gallons per hour) – it is not clear if the dust suppression plan is practical or implementable.

It is foreseeable that the water management for dust suppression will be a critical part of the Project environmental impacts and it does not appear to have been considered holistically in the DEIS and supplemental environmental reports. Moreover, it is likely that critical habitat area adjacent to haul roads will be impacted by haul road mud, haul road water evaporation and deposition via dust, and indirectly impacted by the persistent misting of the sprayed water on adjacent haul roads and operational quarry surfaces and overburden storage areas. A full accounting of water management is necessary to characterize the dust suppression plan in detail.

Model documentation is insufficient.

DEIS documents, supplemental reports, appendices, and attachments are insufficient for evaluation of model domain and model results for critical habitat dust deposition.

Air Quality modeling is described in the DEIS and AQIA 2023 v5.6. The Modeled Receptor Grid is displayed in Figure 3-1 as reproduced below. All receptors are outside of the boundaries of the operational project area. This modeling does not address the internal dust deposition in the critical habitat area.

Figure 3-1 reproduced from the DEIS showing the model receptor grid used for Air Quality modeling – offsite only.

As seen in the figure, there is no internal receptor modeling of critical habitat. Critical habitat modeling was done separately and only included emissions from the haul trucks on the haul roads. Receptor grids for the critical habitat were not provided for evaluation, and no spatial information was provided on the maximum impacted receptor. It is not clear to what extent the critical habitat was modeled, nor is it possible to evaluate why only two haul trucks were expected to pass by Buckwheat population 3 in year 3 of the mine operations, given that the DEIS definitively states that 'Approximately 2.8 Mt per year of ore is anticipated to be processed…' on p2-3. If ore processing is occurring at capacity in year 3, that is 7,000+ tons of ore a day, or 51 haul truck trips each way past population 3. Even still, there would still be much more extensive haul truck activity within the mine pit quarry and overburden storage that would create fugitive dust emissions to the south of population 6 in removal and moving of overburden – on the order of 7 times as much haul truck activity as required for ore hauling. That is 350 haul truck trips that were not modeled in Attachment H, for unknown reasons. Water truck emissions were not modeled, and neither were quarry activities or overburden storage wind erosion emissions.

Model documentation is insufficient to evaluate the true impacts of the mine activities on critical habitat areas. It is highly likely that this is due to the insufficiency of the analysis in evaluating the cumulative impacts of mine operations on dust deposition due to arbitrary exclusion of emissions sources and insufficiently spatial characterization of mine impacts on the critical habitat areas.

Conclusions

The Draft Environmental Impact Statement is required to include sufficient information for decision-makers and the public to evaluate the environmental impacts of a proposed action and its alternatives. The Rhyolite Ridge Lithium-Boron Project DEIS fails to adequately consider and address the environmental impacts of its project's dust deposition impacts on the critical habitat of Tiehm's Buckwheat within the Project operating area. The impacts of the dust deposition can cause damage directly or indirectly; the DEIS only evaluates the direct impacts of dust deposition and it does that only for one of the Project's emissions sources; this is piecemealing and the entirety of the Project impacts need to be considered. Moreover, the suppression of the dust impacts and the planned noxious weed management will also have environmental impacts and need to also be evaluated for their impacts when they are resuspended into dust by routine project operations. Finally, dust suppression will require extreme quantities of water that will alter the local ecosystem and require adequate water management evaluation and ecosystem impact evaluation.

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