



Québec, November 23, 2021

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**SUBJECT: James Bay Lithium Mine Project - Third Information Request**

Gail Amyot,

Following a review of the revised Environmental Impact Statement and supporting documentation provided by Galaxy Lithium (Canada) Inc., the Joint Assessment Committee (JAC) formed by the Impact Assessment Agency of Canada and the Cree Nation Government, in collaboration with the experts of the Federal Environmental Assessment Committee, has prepared a third information request. The purpose of this request is to obtain the information and clarifications necessary to continue the analysis of the project's Environmental Impact Statement.

The information request is based on the requirements of the *Guidelines for the Preparation of an Environmental Impact Statement* (February 2018). It takes into account the following documents produced by the proponent:

- WSP (October 2018). *Environmental Impact Statement*. Volumes 1 to 3 and specialized studies.
- WSP (February 2019). *Additional Information on the Environmental Impact Statement*.
- WSP (September 2019). *Answers to Questions and Comments Received from the CEEA as part of the Environmental Impact Study Review*.
- WSP (December 2019). *Answers to Precision Request on Answers to Questions (1st series) Received from the Canadian Environmental Assessment Agency as part of the Environmental Review of the Project*.
- WSP (February 2020). *Answers to the Request for Additional Information Dated January 8, 2020, Received from the Canadian Environmental Assessment Agency as part of the Environmental Assessment of the Project*.


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- WSP (March 2020). *Results of Kinetic Column Tests - Ore and Diabase.*
- WSP (June 2020). *Answers to Second Information Request (1<sup>st</sup> part) Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project.*
- WSP (July 2021). *Environmental Impact Assessment. Version 2 and specialized studies.*
- WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project.*

The Agency will contact you in the next few days to arrange a meeting to discuss this matter and answer your questions. In the meantime, if you wish to obtain more information about this information request, you are invited to contact Guillaume Clément-Mathieu by e-mail at [guillaume.clement-mathieu@iaac-aeic.gc.ca](mailto:guillaume.clement-mathieu@iaac-aeic.gc.ca) or by telephone at 418-573-2306.

Yours sincerely,

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## Information Request No. 3

# Environmental Assessment of the James Bay Lithium Mine Project

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## **Important Considerations for Responding to the Information Request**

### **Rationale for Missing Information**

The Proponent must answer all questions to allow the Joint Assessment Committee (the JAC) to continue its analysis. Referring to the sector studies is not a sufficient response. These studies support the Impact Statement. The Proponent must clearly indicate how it considered these studies in its environmental assessment and decisions.

If the Proponent chooses to provide a single answer for more than one question, the Proponent must clearly identify which questions the answer relates to.

The Proponent must provide a rationale if no information is submitted for any of the items requested in this application.

### **Revision of the Environmental Assessment**

For any questions that require a revision of the project's environmental assessment, the Proponent must also update the following:

- Description of potential environmental effects;
- Mitigation measures;
- Description and assessment of the significance of residual environmental effects;
- Cumulative effects assessment; and
- Monitoring and follow-up program.

### **Mitigation Measures:**

In responding to the questions in this Information Request, the Proponent must describe the practices, policies and commitments that constitute mitigation measures, i.e. technically and economically feasible measures for the elimination, reduction or control of the project's environmental effects. In its analysis of the significance of the effects, the JAC assesses whether the mitigation measures proposed by the Proponent are adequate to mitigate the anticipated effects on the various valued components of the environment. In the absence of adequate mitigation measures proposed by the Proponent, the JAC may conclude that there are significant adverse environmental effects and present its conclusions in the Environmental Assessment Report submitted to the Minister.

## Air Quality and Greenhouse Gases

### CCE3-1 Quantity of explosives used

#### References

Canadian Environmental Assessment Agency (CEAA) [2018]. *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2 (Project Activities).

WSP (October 2018). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Volume 1. Section 4.5.3 (Tables 4-7 and 4-8).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.5.3 (Tables 4-6 and 4-7) and Appendix C (Appendix D, Section 3.1.1, Table D.1).

#### Context

When comparing the original (WSP, October 2018) and revised (WSP, July 2021) Environmental Impact Statements (EIS), the mine life would increase from 16 years to 18.5 years. Despite this change, the explosives consumption table is identical in both versions of the EIS. The same amount of explosives could be used if the total amount of material mined was the same. The consumption of explosives for additional years cannot be estimated, as it is not presented by the Proponent.

#### The JAC requests that the Proponent:

Confirm that the annual explosives use data is as presented in Table D.1 of Appendix D (Appendix C, WSP, July 2021). If applicable, complete Table 4-7 (WSP, July 2021).

### CCE3-2 Modelling of blasting emissions

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (September 2018). *Air Dispersion Modelling Study*. Section 4.2.5.

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix C (Sections 4.1.6 and 6.2), Appendix C (Appendix D, Sections 3.1.1 and 4.2).

#### Context

Differences in blasting patterns were noted in the two air dispersion modelling studies. The number of holes per blast would be 308 in the 2018 EIS and 185 per blast in the 2021 EIS. However, the blasting areas would be comparable at 4932 m<sup>2</sup> in the 2018 EIS and 4616 m<sup>2</sup> in the 2021 EIS. In addition, the quantities of explosives per blast would be greater in the 2018 EIS (57 tonnes) than in the 2021 EIS (22.7 tonnes). In fact, the quantities of explosives may vary from 6 to 57 tonnes in the 2018 EIS, depending on the type of explosive and the nature and quantity of materials. The Proponent notes significant differences between the two studies regarding CO, NO and SO<sub>2</sub>. The Proponent explains that these differences are due to the

modelling parameters used in the new study (e.g., blasting release height).

Environment and Climate Change Canada (ECCC) believes that more detail is required, including modelling parameters, to explain the differences in CO, NO and SO<sub>2</sub> emissions between the two versions of the EIS given the comparable blasting surfaces and reduced use of explosives in the 2021 EIS.

### **The JAC requests that the Proponent:**

Provide detailed information regarding the interpretation of the results explaining the lower concentrations of CO, NO and SO<sub>2</sub> obtained in the 2021 EIA.

## **CCE3-3 Documents related to the air dispersion modelling study**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix C (Section 6.2 and Appendix G).

### **Context**

According to the air dispersion modelling study (WSP, July 2021: Appendix C): "Although both assessments used the same emission factors from the Australian NPI (2016), this assessment relied on updated blasting parameters recommended during the Value Engineering Phase (GMS 2020)". According to the references, this document is entitled: "*G Mining Services Inc. (GMS). 2020. Value Engineering Report - James Bay Lithium Mine Project*". Therefore, it would appear that the activities and operating characteristics for the optimized project are based on this document, of which Appendix G is said to be a part. Appendix G, as presented in the study, is difficult to read, and it was not possible to verify its content.

### **The JAC requests that the Proponent:**

- A) Provide a copy of Appendix G in an alternate format for easy reading and review.
- B) Provide the referenced document: *G Mining Services Inc. (GMS). 2020. Value Engineering Report - James Bay Lithium Mine Project*.

## **CCE3-4 Worst-case scenario for air dispersion**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.5.3 (Table 4-6) and Appendix C (Section 4.2).



## Context

According to the air dispersion modelling study (WSP, July 2021: Appendix C), the material movement log allowed the selection of year 14 as the worst-case scenario. Indeed, "The peak operational year was assessed for emission rates and dispersion modelling, based on the maximum rates for mining activities, material movement, and milling. This year corresponds to year 14. The material movement log for the life of the mine is presented in Appendix F\*.

The mining schedule indicates that the quantities of material mined from the pit between years 10 and 14 are approximately the same (11,000 tonnes). However, of these five years, only year 14 was selected as the worst-case scenario for the optimized project. The document requested in Sub-question CEC3-3-B would be useful in assessing the basis for choosing year 14 over any other but was not provided.

Note: Appendix G is sometimes referred to in the text as Appendix F. It would be helpful to correct this error.

## The JAC requests that the Proponent:

- A) Provide the *Material Movement log* document referenced in Appendix C (WSP, July 2021) or provide more detail on the methodology adopted for the selection of the worst-case scenario, year 14.
- B) Provide detailed information on what led to the selection of year 14 as the worst-case scenario.

## CCE3-5 Modelling of material transport from borrow pits

### Reference

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

Impact Assessment Agency of Canada (July 2020). *Second Information Request (Part 2)*. Question CCE-49.

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.4.3 and Appendix C.

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-49.

### Context

As part of the second information request (part 2) [WSP, July 2020: CCE-49], the JAC asked the Proponent to assess the impact of the use of borrow pits PBS-8, 9, 11 and 14 on air quality associated with the increased transport volume and to update the dispersion modelling for air contaminants. The Proponent also considers using the overburden and waste rock for road construction (WSP, July 2021). The waste rock would be mined, crushed and then stored and exposed to the weather for some time before being used. However, the Proponent should consider a scenario in which the waste rock could not be used for road construction if it does not meet the standards of the *Ministère de l'Environnement et de la Lutte contre les changements climatiques* (MELCC). The Proponent must therefore provide for one or more alternative solutions.

With respect to air quality modelling (WSP, July 2021: Appendix C), the Proponent does not appear to have considered emissions from materials used in the construction of mine site structures and their handling and transportation (e.g., transportation of materials from borrow pits). In its additional answers to the second

information request (WSP, October 2021: R-CCE-49), the Proponent specifies the location of the borrow pit and quarry: "Construction material will come from the km 381 borrow pit and the km 394 quarry, both already in operation. [...] In the event that more material is required following construction, it could then come from other borrow pits or previously identified quarries. The necessary permit applications would then be filed at the appropriate time, well before the operation of one of these sites".

### **The JAC requests that the Proponent:**

- A) Provide alternative(s) and model a worst-case scenario in the event that the use of waste rock for road construction is not permitted.
- B) Update the air contaminant dispersion modelling based on the options selected to extract and transport construction materials, if any.

## **CCE3-6 Wind erosion of material piles**

### **Reference**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix C (Section 4.2.8).

### **Context**

According to the air dispersion modelling study (WSP, July 2021: Appendix C), "The surface area of the piles was based on technical drawings provided by Galaxy and it was conservatively assumed that emissions could occur from the full surface. The active waste rock pile (east waste rock for the peak operating year) had a 5,000 m<sup>2</sup> active area during any one time, while the remaining area was considered inactive". The active area of the east waste rock pile was estimated to be 5,000 m<sup>2</sup>, but the explanation provided does not assess how this area was obtained.

For the other piles that would not be active, the silt content was set at 0.5%. This value does not appear to have been justified, other than that "the active area used a silt content of 2%, while the inactive area used a silt content of 0.5%". The inactive zone would have been covered with larger material, it would also have been exposed for a longer period, and the fine particles would have been washed away, leached and/or crusted due to precipitation. It appears that the value selected (0.5%) is based on judgment and not on actual data. In such a case, ECCC indicates that it would have been more prudent to use more conservative and therefore higher silt values.

### **The JAC requests that the Proponent:**

- A) Explain the method of determining the active area of the east waste rock pile (5000 m<sup>2</sup>).
- B) Explain the method of determining the silt content of the various "covered" and inactive cells and justify the use of a silt content of 0.5%.
- C) Update air contaminant dispersion modelling as appropriate.

## **CCE3-7 Length of transport routes**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 3.1 (Project components) and 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix C (Section 4.1.2 and Appendix A).

### **Context**

The Proponent describes unpaved roads for the transportation of materials during construction. These are three roads, the lengths of which are shown in Table 3 of the modelling report (WSP, July 2021: Appendix C, Section 4.1.2). The parameters of these roads are also shown in Table A.1.3 (WSP, July 2021: Appendix A to Appendix C). It was found that the lengths of the routes are not the same for the two tables. In addition, there appears to be an error in Table 3 for the distance from the centre of the pit to the surface; it is reported to be 11.34 metres.

### **The JAC requests that the Proponent:**

Verify and correct, if necessary, the road lengths shown in Tables 3 (WSP, July 2021: Appendix C) and A.1.3 of the modelling report (WSP, July 2021: Appendix A of Appendix C) and the distance from the center of the pit to the surface. Submit adjusted data, if applicable.

## **CCE3-8 Optimization of the length of transport routes**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix C (Section 4.2.2).

WSP (September 2018). *Air Dispersion Modelling Study*. Section 4.2.2.

### **Context**

According to the Proponent, the site plan was optimized to reduce the length of haul roads and the amount of fuel burned by haul trucks in the optimized project. However, the total length of the various roads presented in the original air quality modelling report (WSP, September 2018: Section 4.2.2) and the revised report (WSP, July 2021: Appendix C, Section 4.2.2) is virtually the same (approximately 16 and 17 kilometres). Based on this information, the length of the roads does not appear to have been optimized.

### **The JAC requests that the Proponent:**

Confirm that the length of the routes has been optimized and provide the actual lengths of the routes, if applicable.

## CCE3-9 Contaminant emissions for concentrate transportation

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (February 2020). *Answers to the Request for Additional Information Dated January 8, 2020, Received from the Canadian Environmental Assessment Agency as part of the Environmental Review of the Project*. Report produced for Galaxy Lithium (Canada) Inc. Appendix R-AD2-60/140-1.

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix H of Appendix C.

### Context

The Proponent states that fuel combustion results in the emission of combustion gases (carbon monoxide, sulphur dioxide and nitrogen oxides), but these are not estimated (WSP, July 2021).

Note: The original impact assessment considered emissions of contaminants from combustion products as well as particulate matter from transportation routes (WSP, February 2020).

### The JAC requests that the Proponent:

Present the emission rates for the combustion gases (carbon monoxide, sulphur dioxide and nitrogen oxides) and their modelled concentrations.

## CCE3-10 Effect of buildings

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix C (section 5.7).

### Context

According to the Proponent, only buildings within the zone of influence from stationary sources were considered in the air quality modelling (WSP, July 2021). However, the information provided does not appear to precisely identify the stationary sources or the buildings involved.

### The JAC requests that the Proponent:

- A) Specify the stationary sources and buildings involved in the air quality modelling.
- B) Provide a diagram showing the layout of the proposed infrastructure, its characteristics, distances and the position of stationary sources.

## **CCE3-11      Deposition of particulate matter**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix C (sections 6.1 and 6.2).

### **Context**

The Proponent presented results for deposition of particulate matter for construction in Tables 18 and 19 (WSP, July 2021: Appendix C, section 6.1) and for operation in Tables 23 and 24 (WSP, July 2021: Appendix C, section 6.2). However, the Proponent does not appear to have presented a specific method for quantitatively assessing the deposition of these substances.

### **The JAC requests that the Proponent:**

- A) Present the method used to estimate the deposition of particulate matter.
- B) Provide monthly particulate matter deposition rates.

## **CCE3-12      Modelling of metal concentrations for the construction phase**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix C (Section 4.1).

### **Context**

According to the Proponent (WSP, July 2021), metals were not considered in the modelling for the construction phase. However, blasting, handling and transportation of materials would occur at the proposed pit location and other locations on the mine site. These materials would contain metals and also silica.

### **The JAC requests that the Proponent:**

- A) Justify the absence of metal and silica emission modelling for the construction phase.
- B) Provide, where applicable, the results of modelled concentrations for metals and silica at the construction phase.

### **CCE3-13 Fugitive emission mitigation rate for unpaved roads**

#### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (October 2018). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc.

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.10.1 and Appendix C (section 4.1.2).

#### **Context**

For particulate matter, modelled concentrations and dust deposition were obtained using a 75% attenuation factor in the 2018 EIS (WSP, October 2018) and 80% and 95% in the 2021 EIS (WSP, July 2021). Furthermore, the 2021 EIS (WSP, July 2021: Section 4.10.1) states that a "dust reduction factor of 75%" was considered in the design of the spray system and in the criteria and assumptions for completing the dust management plan. However, the modelling was done with mitigation rates greater than 75%.

In addition, the 85% and 95% fugitive emission mitigation rates for unpaved roads were obtained from a single study conducted by Golder Associates (WSP, July 2021: Appendix C) at two other mine sites in Northern Canada. However, these two site-specific rates cannot be transposed to other projects, as the characteristics of the materials used to construct unpaved roads may differ from one site to another. In addition, the results are dependent on local weather and mine operations, such as traffic on the road. According to ECCC, these rates are overestimated and, in practice, could not be maintained at all times. Thus, the modelled concentrations of particulate matter, including silica, and their off-site deposition at sensitive receptors could be underestimated and possibly result in more frequent or greater exceedances of existing standards.

According to ECCC, it would be more realistic to present results with no mitigation measure (0%) and other results with the mitigation measure considered (regular watering of roads). More conservative mitigation rates could also be used (around 50% or 75%). This approach would assess the magnitude of the mitigation measures to be implemented to achieve concentrations below the applicable standards.

#### **The JAC requests that the Proponent:**

Revise the modelling by considering a 75% or less attenuation rate for fugitive emissions from unpaved roads to be consistent with the assumptions of the planned dust management plan. Provide justification if not.

### **CCE3-14 Greenhouse gas emissions associated with site clearing and stripping (construction phase)**

#### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (October 2018). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Volume 3. Appendix E.

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix D of Appendix C (Section 3.1).

## Context

According to the greenhouse gas (GHG) study (WSP, October 2018), only clearing of the construction area was excluded from the emission sources due to the fires the site has experienced since 2005. However, according to the 2021 EIS (WSP, July 2021), the Proponent does not account for land clearing, stating that "as land clearing is expected to occur prior to the peak construction year, its emissions were not included."

The 2018 EIS (WSP, October 2018) did not consider deforestation but did consider stripping. In the 2021 EIS (WSP, July 2021), the Proponent does not appear to have indicated why deforestation was not considered or whether site stripping was considered in the GHG assessment.

## The JAC requests that the Proponent:

- A) Indicate which activities were considered in the GHG estimate during site preparation (clearing and stripping).
- B) Include missing activities (e.g., stripping) in the estimate if they were not accounted for.

## CCE3-15 Transportation of concentrate from Matagami to the Trois-Rivières port

## References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (September 2019). *Answers to Questions and Comments Received from the CEAA as part of the Environmental Impact Study Review*. Report produced for Galaxy Lithium (Canada) Inc. Answer A-67.

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix D of Appendix C.

## Context

In the 2018 EIA, GHG emissions for transporting the concentrate from Matagami to a final destination location (from which the product could be shipped by vessels) had been accounted for (WSP, September 2019). The calculation was also done considering an additional scenario of transporting the concentrate from Matagami to the Trois-Rivières port by a 550-kilometre rail line.

In contrast, in the 2021 EIA (WSP, July 2021), only the transportation of concentrate between the mine site and Matagami was considered in estimating GHGs. The Proponent does not appear to have indicated that transportation beyond Matagami would not be included in the GHG calculation.

## The JAC requests that the Proponent:

- A) Please clarify why emissions from the transportation of the concentrate from Matagami to a final destination were not included in the GHG estimate.
- B) Include missing GHG emissions, if any, and revise Appendix D (*Greenhouse Gas Assessment*) of Appendix C (WSP, July 2021).

## **CCE3-16 Greenhouse gas emissions and duration of the construction phase**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.1 (Changes to atmospheric, sound and light environments).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix D of Appendix C (Section 4.1).

### **Context**

In the GHG estimation report (WSP, July 2021), the text indicates that the construction phase would be 18 months and would emit 27.9 kilotonnes of CO<sub>2</sub>. However, in Tables D.9, D.10 and D.13 (WSP, July 2021: Appendix D of Appendix C), only one year of construction is considered and leads to emissions of 18.6 kilotonnes of CO<sub>2</sub>.

It is possible that construction could continue at the same time as production for the first year of operation, but this is not clearly stated in the report. ECCC believes that more information is needed to clarify the duration of the construction phase and to justify the use of 12 months in the GHG calculation.

### **The JAC requests that the Proponent:**

- A) Clarify the duration of the construction phase.
- B) Explain why 12 months were considered for the GHG calculation.
- C) Make corrections to the GHG estimate, if necessary.

## **CCE3-17 Road watering intensity**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.1 (Project components).

WSP (June 2020). *Answer to Second Information Request (1<sup>st</sup> part) Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Appendix R-CCE-16 (Section 4).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix E of Appendix C (Section 4).

### **Context**

According to the Proponent (WSP, July 2021), the daily water requirements have been increased (from 300 to 500 m<sup>3</sup>) to "achieve 80% efficiency" in mitigating dust dispersion. Previously, the maximum watering intensity required was 0.24 litres per square metre-hour with a 75% efficiency (WSP, June 2020). In the 2021 EIS, the watering intensity would be reduced to 0.13 litre per square metre-hour with an efficiency rate of over 75% (80%) [WSP, July 2021].



### **The JAC requests that the Proponent:**

Specify the amount of water needed considering the increase in water requirements and the decrease in watering intensity.

## **CCE3-18 Modulation of the air quality monitoring program**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 8.1 (Follow-up program).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix E to Appendix C (Section 5.2).

### **Context**

According to the Proponent (WSP, July 2021), the proposed air quality monitoring program would be modulated according to the results collected. The Proponent does not provide explanations or details regarding the modulation of this program based on results.

### **The JAC requests that the Proponent:**

Describe the approach that would be taken to conduct the "as-built" air quality monitoring program.

## **CCE3-19 Cree health effects assessment**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.3.4 (Indigenous peoples).

WSP (June 2020). *Answer to Second Information Request (1<sup>st</sup> part) Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Appendix R-CCE-16 (Section 4).

Health Canada (January 2020). *Letter to the Impact Assessment Agency of Canada re: Health Canada's Questions and Comments on the Environmental Impact Statement for the James Bay Lithium Mine Project 1 - 2nd Information Request*.

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 7.2.5 and Appendix C.

### **Context**

The Proponent has made some changes to Section 7.2.5 of the 2021 EIS (WSP, July 2021), including the number of standards exceedances calculated in the modelling study. However, this section primarily addresses the project's impacts on air quality. It does not address the project's effects on human health (associated with air quality change). The assessment of health effects is unsatisfactory for the following reasons:

- The conclusion regarding the "low" level of impact of the project on air quality is debatable. The level of health risk associated with air contaminants (e.g., fine particulate matter (PM<sub>2.5</sub>), NO<sub>2</sub>, arsenic and crystalline silica) is based solely on compliance with standards and does not take into account:
  - a. the fact that even in the absence of standards exceedances, air quality degradation may have health consequences. This should be discussed at various stages of the project;
  - b. the principles of keeping clean areas clean and continuously improving air quality based on the Canadian Ambient Air Quality Standards (CAAQS).
- The operation phase of the project would last at least 16 years and the duration of the project's impact on air quality is considered "medium". From a human toxicology perspective, 16 years is a long time. This should be taken into consideration when assessing the significance of the health effect.

### **The JAC requests that the Proponent:**

Highlight potential human health effects associated with changes to air quality in the EIS (WSP, July 2021), taking into account the comments provided above.

Health Canada (HC) recommends that the EIS include discussing the potential effects of exceedances on human health when anticipated contaminant concentrations approach or exceed air quality guidelines and standards. For example, anticipated NO concentrations at the km 381 truck stop exceed the NAAQS 1-hour values for 2025 (WSP, July 2021: Appendix C, Tables 17 and 21), and exceedances of the annual criterion for silica have been modelled. The Proponent must therefore discuss the health risk represented by these exceedances.

In addition, the transportation-related impact is present in the list of impact sources on p. 7-46. Otherwise, it appears to be absent from the discussion in section 7.2.5 (WSP, July 2021). The Proponent should address this issue in this section.

## **Comments and advice for the Proponent**

### **Commentaire 1 Mitigation measures and non-threshold substances**

#### **References**

- CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 6.3.4 (Indigenous peoples) and 6.4 (Mitigation measures).
- Cheminfo Services Inc. (2005). *Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities*. Report produced for ECCC.
- WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix E of Appendix C.

#### **Context**

Mitigation measure "AIR 03" consists of "Limiting vehicle speeds at the various work sites as well as for mine operations" (WSP, July 2021). The dust management plan calls for a speed limit of 40 km/hr (WSP, July 2021: Appendix E of Appendix C). However, best practices are more ambitious, including speed limits ranging from 16 to 24 km/h and adequate signage (Cheminfo Services Inc., 2005). In addition, other mining

projects in Quebec are moving towards using electric vehicles when available (Rose Lithium-Tantale mining project).

### **Comments and advice**

Since PM<sub>2.5</sub> and NO<sub>2</sub> are non-threshold substances, it is recommended that the Proponent implement all technically and economically feasible mitigation measures to reduce emissions of these two pollutants to a minimum, rather than just aiming to meet the standards.

# Sound Environment

## CCE3-20 Noise - Representativeness of reference sound levels

### References

Health Canada (2017). *Guidance for Evaluating Human Health Impacts in Environmental Assessments: Noise*.

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.3.4 (Indigenous peoples).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 6.2.11 and Appendix H.

### Context

According to HC, some uncertainties may impact the accuracy of the baseline sound levels as well as the calculations of the percentage of people significantly affected (%HA) before operations (i.e., baseline) and during the project phases.

- Measurements to establish baseline sound levels were taken in October over different periods (only one hour at some locations). Temperatures ranged from 5.3 to 20.8°C (WSP, July 2021: Appendix H, Section 3.4, Table 4), which is not representative of a cold season. However, in the 2021 EIS (WSP, July 2021: Section 6.2.11), the Proponent acknowledges that "if we take a day during the cold season with no wind, when there are no birds or insects, the geographic range will be much greater than on a windy day or when birds or insects are making noise". HC does not consider these measurements adequate to calculate a reliable annual baseline day and night sound level (Ldn).
- A complete characterization of the sounds (e.g., wind, nature sounds, and road traffic) at the time of the measurements and at each location is not provided. However, the Proponent stated that it had considered all ambient sounds (e.g., road and air traffic and area user activities) (WSP, July 2021: Section 3.5). HC recommends that sounds not generated by human activity should be excluded from the baseline (HC, 2017: section 6.2.1). It is not clear whether these have been removed.
- In the 2021 EIS (WSP, July 2021; Appendix H, Table 5), the measurement time for 10/10/11 is 7-9 AM, while HC expects 7 AM-7 PM instead.

### The JAC requests that the Proponent:

In order to ensure that the values of the sound measurements made in the field are appropriate and sufficient to represent current conditions:

- A) Demonstrate that sound measurements made over very short periods in October are adequate to calculate a reliable annual baseline day and night sound level (dnSL). Indicate if any adjustments were made (e.g., quiet rural area).
- B) Confirm or refute the exclusion of non-human generated sound from the baseline. Revise calculations of the percentage of persons significantly affected (%HA) for the reference condition, if applicable.
- C) In the 2021 EIS (WSP, July 2021; Appendix H, Table 5), confirm the measurement time at P7 on

10/10/11. Is this 7-9 AM? If so, provide a revised table.

### **CCE3-21 Noise - Adjustments in the calculation of the percent highly annoyed (%HA)**

#### **References**

Health Canada (2017). *Guidance for Evaluating Human Health Impacts in Environmental Assessments: Noise*.

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.3.4 (Indigenous peoples).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix H.

#### **Context**

The Proponent did not provide examples of calculations of %HA or measures of change in %HA in its assessment of noise effects (WSP, July 2021). Health Canada cannot verify that appropriate adjustments were used in the calculations. These adjustments have an impact on the results and possibly on the conclusions. It is recommended that any adjustments and the rationale for inclusion/exclusion be described in the noise assessment.

#### **The JAC requests that the Proponent:**

Indicate whether the +10 dB adjustment for increased noise sensitivity at night was used as well as the quiet rural adjustment. Provide a rationale if not or revise the calculations for the construction and operation phases and for road noise.

### **CCE3-22 Noise - Complaint intake and management system**

#### **References**

Health Canada (2017). *Guidance for Human Health Impact Assessment in Environmental Assessments: Noise*.

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.3.4 (Indigenous peoples).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Sections 6.4.2 (Map 6-22), 7.4.1.1, 7.4.3 and Appendix H.

#### **Context**

HC recommends assessing noise effects during periods of occupancy for seasonal residences (including hunting and fishing camps and seasonal Indigenous campsites) and passive recreational areas (outdoor lands used for hunting, fishing and teaching), among others, including sites where Indigenous people engage in hunting, fishing or gathering of traditional foods (HC, 2017: Appendix G)

The Proponent states that "the camps located along watercourses CE5 and CE3 (purple stars on maps 3 to 6) were not considered because they do not represent living quarters or because they are irregularly occupied (i.e. temporary) or mobile " (WSP, July 2021: Appendix H). According to HC, irregular or mobile occupation of a territory is not sufficient to justify the exclusion of the human receptors potentially closest to the mine.

It should be recalled that, without specifying the exact locations, the 2021 EIS indicates that some users could spend up to four months on the territory and that the mine would be located on or near two fishing, hunting and trapping areas and gathering areas (WSP, July 2021: Section 6.4.2, Map 6-22). A traditional activities exclusion zone is provided on Map 6-22, but it is not overlaid on isophonic maps 3 through 6 (WSP, July 2021: Appendix H). It is also possible that land users may need to relocate traditional activities based on wildlife movements (WSP, July 2021: Section 7.4.1.1).

That being said, the Proponent plans a system for receiving and processing complaints before construction until the end of the closure period. This program could compensate for the uncertainty described above regarding land use. This is especially true since, as with air quality, Cree land users believe that the radius used to measure the project's effects on the noise climate is too small and feel that noise will be perceived within a wider area (WSP, July 2021: section 7.4.3). This concern cannot be addressed by measuring decibels alone.

A complaint resolution process can complement the monitoring of noise levels to verify if guidelines are exceeded. This process can resolve noise issues that may arise despite the Proponent's demonstration of compliance with the guidelines. The Proponent should also limit noise sources to reduce the number of complaints and not to emit more noise than predicted by the modelling.

### **The JAC requests that the Proponent:**

Since there is uncertainty surrounding land use (and therefore noise exposure) in the fishing, hunting and trapping areas near the mine, HC recommends that the system for receiving and managing complaints be described in greater detail to validate whether it is adequate to address the uncertainty. More specifically, it is recommended to:

- A) Describe the mechanism for reporting and handling complaints and the timeframe for processing. Like all other elements of the system, the timeframe for handling complaints is best discussed with potentially affected parties during community consultations.
- B) Confirm whether a community consultation would take place on the complaint intake and management system.
- C) Describe how the decision to implement additional mitigation would be made and who would decide. It is suggested that compliance with provincial noise guidelines not be the sole basis for upholding (or not) a complaint and/or implementing (or not) additional mitigation measures.

## **CCE3-23 Noise - Road Transport**

### **References**

- CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.3.4 (Indigenous peoples).
- WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 5.3.

## Context

The 2021 EIS (WSP, July 2021: Section 5.3) discusses roadway noise and outlines the methodology used. Traffic flow was determined to be 1% per year over a 10-year horizon (data source not shown). However, other authorized industrial projects in the area could use the Billy-Diamond Road.

## The JAC requests that the Proponent:

Confirm whether the projected 10-year traffic data includes other authorized or foreseeable industrial projects in the area that would use the Billy-Diamond Highway. If not, justify this estimate.

## Comments and advice for the Proponent

### Commentaire 2 Noise - Sounds of Nature

## References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.3.4 (Indigenous peoples).

American National Standards Institute (ANSI) [2005]. *Quantities and Procedures for Description and Measurement of Environmental Sound Part 4: Noise Assessment and Prediction of Long-Term Community Response (ANSI S12.9-2005/Part 4)*. Standards Secretariat Acoustical Society of America.

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 6.2.11.

## Context

According to the Proponent, "the second variable is the intensity of existing ambient noise other than noise from the road. The higher this is, the lower the geographic range due to the masking effect of other noise sources (e.g. birds singing, leaves rustling with wind, etc.). In summary, if we take a day during the cold season with no wind, when there are no birds or insects, the geographic range will be much greater than during a windy day or when birds or insects are making noise" (WSP, July 2021: Section 6.2.11).

## Comments and advice

HC considers the statement about nature sounds masking project-related noise to be inappropriate. Human response to noise, reduced quiet periods and different spectral content are variables that can lead to increased annoyance and/or sleep disturbance, even with no change in average sound pressure levels. Masking implies that sounds emitted from the project would not be differentiated from nature sounds emitted in the vicinity of human receptors. Given the variations in sounds (spectra) and times of day, it is unlikely that nature sounds would "mask" project-related noise. This type of formulation is not recommended. See ANSI (2005) for more information.

## Hydrogeology

### CCE3-24 Boundary conditions for hydrogeological modelling

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.1.5 (Ground water and surface water).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 6.2.6 and Appendix J (section 4.2).

#### Context

As expressed by the Proponent (WSP, July 2021: Appendix J), "the choice of boundary conditions is a crucial step in the modelling since they significantly influence the flow patterns of the system". For external boundary conditions, "FEFLOW defaults to zero flow for any cell at the domain boundaries. Thus, no modification to the model is required to define the other external boundaries of the model". However, maps 8 and 9 show load-constant boundary conditions on the perimeter of the modelled area, particularly on the eastern side. As the Proponent acknowledges, "this can lead to water entering the model when neighbouring nodes have a lower potential, or leaving the model when there is a gradient from neighbouring nodes to the boundary condition". In fact, load-constant boundary conditions can act as an unlimited water source to the model and should be used with caution. Natural Resources Canada (NRCan) therefore wishes to verify the Proponent's assertion that "by modelling a larger area (than the study area), it is possible to ensure that the boundary conditions applied to the model will not influence the flow in the area of interest. (*Text in quotation marks is an unofficial translation.*)

#### The JAC requests that the Proponent:

- A) Provide a rationale for using load-constant boundary conditions on the outer perimeter of the groundwater flow model.
- B) For both the calibrated and the predictive model water balance, provide the flux corresponding to the load-constant type nodes on the outer walls of the modelled area.

### CCE3-25 Boundary conditions of watercourses

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.1.5 (Ground water and surface water).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 6.2.6 and Appendix J (sections 4.2 and 6.4).



## Context

For the internal boundary conditions (WSP, July 2021: Appendix J, Section 4.2, Map 8), the Proponent chose to represent the main rivers (CE2, CE3, CE4, CE5) by load-constant boundary conditions. However, as the Proponent acknowledges, "this can lead to water entering the model when neighbouring nodes have a lower potential, or leaving the model when there is a gradient from neighbouring nodes to the boundary condition" (*unofficial translation*). Thus, a stream that represents a resurgent zone for groundwater in the natural receiving environment may become an unrestricted source of water to the aquifer during operation. NRCan believes that it is probably reasonable to represent CE2 and CE5 as load-constant nodes, but for CE3 and CE4 this is less certain. NRCan notes that CE3 at the outlet of Lake Asini Kasachipet, CE4 upstream of the Billy-Diamond Road and Kapisikama Lake were represented by constant load boundary conditions (WSP, July 2021: Appendix J, Section 4.2, Map 8). However, on map 7, these streams are shown as having "diffuse or intermittent flow" which would seem to better justify drain-type boundary conditions. Since Kapisikama Lake is scheduled to be drained (WSP, July 2021: Appendix J, Section 6.4), it is surprising to see it represented by load-constant nodes.

### The JAC requests that the Proponent:

Provide a detailed rationale for the selection of boundary conditions representing major and minor streams and peatlands.

## CCE3-26 Base flows of rivers

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.1.5 (Ground water and surface water).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 6.2.6 and Appendix J (sections 4.2.2 and 5.3).

### Context

According to the Proponent (WSP, July 2021: Section 5.3.2), for the calibrated model, "base flows are obtained by selecting all of the drain-type nodes constituting the stream or ditch and summing the outflows at each of the nodes of the drainage element. However, it is also stated (WSP, July 2021: Section 4.2.2, Map 8) that CE2, CE3, CE4, and CE5 are represented by load-constant boundary conditions and not by drain-type boundary conditions.

### The JAC requests that the Proponent:

Clarify how base flows for major rivers are calculated. Correct information where necessary.

## CCE3-27 Water balance of the calibrated model

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.1.5 (Ground

water and surface water).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 6.2.6 and Appendix J (sections 3.2.1 and 5.3.3).

## Context

The calibrated model water balance (WSP, 2021: Appendix J, Section 5.3.3, Table 14) only provides very general information (constant load, recharge, storage) on inflows and outflows. To assess the impacts of pit dewatering on surface water, a more detailed water balance is required. NRCan noted that the outflow from drains should also be included in the balance.

### The JAC requests that the Proponent:

Provide a calibrated model water balance with a complete breakdown detailing inflow or outflow for each of the streams in Table 1, i.e., CE2, CE3, CE4, and CE5 (constant load); each of the modelled lakes in Table 2 (constant load); the model sidewalls (constant load); drains; recharge; and storage.

## CCE3-28 Water balance at the end of the operation phase

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 6.1.5 (Ground water and surface water) and 7 (Summary of environmental effects assessment).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 7.2.2 and Appendix J (sections 3.2.1 and 6.4).

## Context

The Proponent presents the impacts of pit dewatering on surface water at the end of the operation phase in terms of change in base flow for major streams (WSP, 2021: Appendix J, Section 6.4, Table 21). According to NRCan, a more detailed presentation is required to assess the impacts of dewatering and compare with the calibrated model results.

### The JAC requests that the Proponent:

Provide a water balance for the end of the operation phase (year 20), including inflows or outflows for each of the streams in Table 1, i.e., CE2, CE3, CE4, and CE5 (constant load); each of the lakes in Table 2 (constant load); the model sidewalls (constant load); peatlands (drains); pit dewatering (drain); recharge; and storage.

## CCE3-29 Transport of contaminants from mine waste

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.1.5 (Ground

water and surface water).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. sections 4.13, 7.2.2 and Appendix J (section 7).

## Context

For the modelling of contaminant transport from mine waste, the source of contaminants (As, Cu) was represented as follows (WSP, July 2021: Appendix J, Section 7.2.1, Table 24): "Concentrations were imposed based on the deposition times of waste rock and tailings on the various stockpiles. Chemical analyses showed that leaching occurred for 16 weeks, so the imposed loads were left on the stockpiles for an additional year to remain conservative. Table 24 shows the years for which a concentration was imposed on the co-disposal piles" (*unofficial translation*). According to NRCan, this extrapolation of laboratory leachate kinetic test results to the scale of the stockpiles lacks justification and is not conservative. The Proponent acknowledges this uncertainty (WSP, July 2021: Section 4.13.4): "Note that water quality monitoring will be conducted during the operation phase and will determine if the actual leaching reactions last longer than the laboratory simulations [...] If they do, then the restoration plan will be modified accordingly during operation. Water quality monitoring will also be maintained during the restoration phase to validate the assumption that the tailings will not leach once new material is no longer deposited". According to NRCan, when modelling the transport of contaminants from mine discharges, it is usual to assume a source with a constant concentration indefinitely.

## The JAC requests that the Proponent:

Provide contaminant transport modelling results from mine releases for the scenario where source concentrations are constant over time after deposition of the releases. Provide a rationale for the method used in the opposite case.

## CCE3-30 Contact water in the post-restoration phase

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 6.1.5 (Ground water and surface water) and 7 (Summary of environmental effects assessment).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 7.2.2 and Appendix J (section 7.3).

### Context

According to the Proponent (WSP, July 2021: Appendix J, Section 7.3.1, "map 17 shows a plan view of simulated arsenic concentrations in surface deposits. The results show that at the surface, arsenic concentrations are captured by the ditches for all co-disposal piles. Even after 200 years, arsenic concentrations from the infrastructure remain within the footprint of the co-disposal piles" (*unofficial translation*). The EIS does not specify the long-term fate of the contact water captured by the ditches surrounding the stockpiles and where this water will be directed.

### **The JAC requests that the Proponent:**

Provide a complete description of the fate of contact water collected by the ditches surrounding the pads during the post-restoration phase, after the closure of the processing plant.

## **CCE3-31 Contamination plume during the post-restoration phase**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.1.5 (Ground water and surface water).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 7.2.2 and Appendix J (section 7.3).

### **Context**

According to the Proponent (WSP, July 2021: Appendix J, Section 7.3.1, Map 16), "map 18 presents a plan view of arsenic concentrations in surficial rock. For all years shown, arsenic concentrations are below natural background. Concentrations from the northeast stockpile can be seen migrating northward. In the east stockpile, one plume forms towards the northwest and a second smaller plume forms towards the east. The concentrations of these plumes are below natural background arsenic levels and, no change is observed between year 100 and year 200. Furthermore, these arsenic concentrations do not resurface" (*unofficial translation*). NRCan notes that maps 15 and 16 show no plume migration to the pit despite the strong converging hydraulic gradient at the end of operations shown on figures 2 and 3 and map 13. This gradient is expected to persist as the pit is filled in contact water from the adjacent pits.

### **The JAC requests that the Proponent:**

Explain why no contamination plume develops towards the pit during the post-restoration phase despite the strong hydraulic gradient converging at the end of operations. Correct the information if necessary.

## **CCE3-32 Effects of contact water from the east stockpile**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.1.5 (Ground water and surface water).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. sections 4.13 and 7.2.2 and Appendix J (section 7.3).

### **Context**

The Proponent states (WSP, July 2021: Appendix J, Section 7.3.3) that "the co-codisposal have no impact on the quality of streams CE1, CE3, CE4 and CE5" (*unofficial translation*). However, the Proponent also states (WSP, July 2021: Section 4.13.7) that "as provided in the mining plan, tailings and waste rock will be deposited in the southeast portion of the pit, once the mineral resources of interest have been removed.

The remainder of the pit will fill naturally with precipitation and groundwater to an equilibrium level with the water table. An overflow and ditches will be constructed to prevent overflow around the pit that could damage the environment. The flow will be directed towards the CE3 watercourse". This implies that contact water from the east stockpile, which encroaches on the flooded pit, will eventually be discharged into stream CE3.

**The JAC requests that the Proponent:**

Provide a complete description of the effects of contact water from the east stockpile on water quality in the flooded pit that will be discharged to stream CE3.

## Water Quality

### CCE3-33 Map illustrating infrastructure evolution during the construction phase

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.1 (Site preparation and construction).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.9.4.

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-60A.

#### Context

The 2021 EIS (WSP, July 2021: Section 4.9.4) describes water management during the construction phase and presents maps 4-8 through 4-10, depicting the timing of water management facilities at the 1<sup>st</sup>, 3<sup>rd</sup> and 12<sup>th</sup> month of construction. These maps were included in the additional answers to the second information request (WSP, October 2021: A-CCE-60A). This response from the Proponent provides additional information. Still, the maps provided remain difficult to read, and the information is incomplete. Similarly, the maps still do not indicate the direction of water flow from the temporary sedimentation ponds for each construction period.

#### The JAC requests that the Proponent:

Provide a legible version of maps 4-8 to 4-10 with a detailed and complete legend. Indicate the direction of flow of water from the temporary sedimentation ponds planned for each construction period.

### CCE3-34 Water balance and management in the construction phase

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.1 (Site preparation and construction).

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answers A-CCE-47, A-CCE-60A and B.

#### Context

According to the water balance for the construction phase (WSP, October 2021), water is expected to flow from the concrete batch plant to the north water management pond via runoff, with no water management structure to cross stream CE3 and upstream to the water treatment plant (WTP) planned during the construction phase. In addition, in response to A-CCE-60A and B regarding water management during the

construction phase, figure A-CCE-60A-3 and map A-CCE-60B show the direction of water flow from the facilities for construction material preparation to the planned WTP. ECCC notes that water flows through CE3 and up to the WTP without a pump station. The responses, maps and figures submitted do not explain how water from the ditches between the concrete batch plant and the area for construction material preparation would be directed to the WTP without affecting stream CE3.

In addition, the water balance (WSP, October 2021) does not include fire reserves and it remains unclear whether this reserve would be taken from an existing pond or whether a specific pond would be dedicated to it.

### **The JAC requests that the Proponent:**

- A) Provide more explanation on the planned development between the concrete batch plant, the area for construction material preparation (temporary ponds) and the WTP so as not to affect CE3. Add information on maps where appropriate.
- B) Include the planned fire water supply in the water balance for the construction phase and indicate where this intake will be located.

## **CCE3-35      Waterproofing of ditches around the ore pile**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.1 (Site preparation and construction).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.8.3.

### **Context**

In the 2021 EIS (WSP, July 2021: Section 4.8.3), it is mentioned that "the ore is classified as leachable for various parameters (As, Mn, Cu, Zn, etc.) as defined in Directive 019, and groundwater and surface water protection measures are planned for on-site ore storage. The ore pile and the industrial water pond (the one located between the camp and the concentrator) will be waterproofed with an HDPE geomembrane. The water draining from the pile will be directed to the industrial water pond, and the water from this pond will be recirculated directly to the concentrator."

It is then mentioned (subsection Drainage) that a gravity ditch would be built "to allow water that has been in contact with the stockpile to be discharged to the sedimentation pond in the industrial and administrative sector". However, it is not specified whether this particular ditch will be waterproofed.

Due to the characteristics of the water coming from the ore pile, ECCC believes that the gravity ditch should be waterproofed to avoid contamination of surface and groundwater.

### **The JAC requests that the Proponent:**

Clarify whether the perimeter ditch around the ore pile, allowing water to be directed to the industrial sector pond, would be impervious. If not, justify the approach taken.

## **CCE3-36 Management of water collected in temporary ponds during construction**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.1 (Site preparation and construction).

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answers A-CCE-60A and B.

### **Context**

In the additional answers to the second information request (WSP, October 2021: A-CCE-60A), it is stated, with regard to the water management infrastructure intended to collect runoff from stripped surfaces, that "the slopes will ensure a flow towards the ditches by diverting the runoff water to temporary sedimentation basins." It is further stated that water would be released to the environment downstream of water quality monitoring stations.

Answer A-CCE-60B in the same document states that runoff and leachate would be diverted to temporary sedimentation ponds and directed to the main pond and then to the WTP.

Maps R-CCE-60A-1 through R-CCE-60A-3 and map R-CCE-60B show that the temporary ponds discussed in R-CCE-60A and R-CCE-60B are the same for the construction phase; however, water is conveyed to the environment in R-CCE-60A and to the construction WTP in R-CCE-60B.

In addition, answer A-CCE-60A indicates that the water would be discharged from the ponds and that only three parameters would be monitored. If the site is subject to them, this does not comply with the *Fisheries Act* or the *Metal and Diamond Mining Effluent Regulations* (MDMER).

### **The JAC requests that the Proponent:**

- A) Clarify how water would be managed downstream of the temporary ponds planned for the construction phase, i.e., whether the water would be released to the environment or directed to the construction phase WTP.
- B) Clarify that the monitoring program during the construction phase complies with the *Fisheries Act* and the MDMER and complete missing information as appropriate.

## **CCE3-37 Use of waste rock and overburden as construction materials**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.1 (Site preparation and construction).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. sections 4.4.3 and 4.7.

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-48B.



## Context

According to Sections 4.4.3 and 4.7 of the 2021 EIS (WSP, July 2021), overburden and waste rock would be used for infrastructure and road foundations. In the additional answers to the second information request (WSP, October 2021: A-CCE-48B), it is stated that waste rock would be used to improve and widen roads. However, no rationale is given as to whether this use would be safe for groundwater and surface water, given the results of leachate testing, including on waste rock. Only diabase is excluded as a construction material due to its geochemical characteristics (WSP, July 2021: Section 4.4.3). ECCC and NRCan believe that the Proponent's approach of exposing materials to weathering to leach metals before their use as a construction material presents significant uncertainties. This approach would not negate their reactivities and potential risks. It is therefore impossible to predict the actual leaching process in the field. The use of waste rock as construction material is not recommended due to its leachability and very high arsenic content.

### The JAC requests that the Proponent:

Plan and describe an alternative approach to exposing materials to the weather to leach metals before their use as construction materials.

## CCE3-38 Management of banded gneiss

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.1.2 (Geology and geochemistry).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.7.

## Context

Based on the kinetic results conducted on the waste rock and tailings, NRCan is satisfied with the management of waste rock and tailings in co-disposal. However, NRCan recommends that the banded gneiss (lithology "M2", 50% acid generating potential) be segregated to not be used as construction material. NRCan believes that co-disposal management (ideally placed in the tailings cells) is acceptable since testing shows low hydraulic permeability of the pits and the addition of clay as required.

### The JAC requests that the Proponent:

Indicate whether the separation of banded gneiss (lithology "M2", 50% acid generating potential) from other lithologies has been considered, so that it is not used as a construction material. If this option is not considered, the Proponent must propose an alternative. However, NRCan reiterates that the use of banded gneiss as a construction material is not acceptable.

## **CCE3-39 Use of geomembrane in ditches**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.1.2 (Geology and geochemistry).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.4.3.

### **Context**

NRCan considers the management of diabase in co-disposal to be satisfactory. Diabase should not be used as construction material, as proposed by the Proponent (WSP, July 2021: Section 4.4.3), and should ideally be placed in the tailings cells. However, the air leaching method for waste rock is not recommended, as kinetic testing shows that only 12-16% of the arsenic was released during the test period. The "M2" lithology (banded gneiss representing 14% of the material and 50% acid generating potential) should also be pre-segregated. In addition, the water should be collected and treated before being discharged to the environment.

NRCan recommends the use of geomembrane for the collection of runoff from the air leaching of waste rock. Due to its high arsenic content and leachability (and the presence of mercury), the storage of the ore on an HDPE geomembrane and collection of the water for recirculation to the concentrator as proposed by the Proponent is satisfactory. NRCan is satisfied with the Proponent's commitment to installing an impermeable geomembrane under the footprint of the ore pad and recommends the use of geomembrane in the ditches redirecting the collected water to the mill.

### **The JAC requests that the Proponent:**

Specify if it has considered installing a geomembrane in the ditches redirecting the collected water to the plant. If not, please explain.

## **CCE3-40 Building materials from the site**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.1 (Site preparation and construction).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.4.2.

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-49B.

### **Context**

In the additional answers to the second information request (WSP, October 2021: A-CCE-49B), it is stated that "construction material will come from the km 381 borrow pit at and the km 394 quarry, both already in

operation". The 2021 EIS (WSP, July 2021: Section 4.4.2, Map 4-4) shows several borrow pits at km 381, including BE-12 within the pit footprint and BE-13 or BE-14 that would be existing. ECCC believes that the borrow pit referred to in Answer A-CCE-49B is not clearly identifiable.

### **The JAC requests that the Proponent:**

Specify which borrow pits located at km 381 and mentioned in answer A-CCE-49B the Proponent plans to use.

## **CCE3-41 Presence and role of pond no. 4 during construction and operation**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 3.2.1 (Site preparation and construction) and 3.2.2 (Operation).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Sections 4.8.3, 4.9.4 and maps 4-2, 4-5, 4-6, 4-7 and 4-10.

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-60A.

### **Context**

At the construction phase, a pond appears on map 4-10 (WSP, July 2021: Section 4.9.4), between the future ore pile and the industrial sector. A sampling station is planned there according to map R-CCE-60A-3 (WSP, October 2021). Section 4.8.3 of the 2021 EIS (WSP, July 2021) indicates, for the construction phase, that "the ROM pad will be graded at a 2% downslope to a gravity ditch and pumping station (if required in detailed engineering) to allow water that has been in contact with the stockpile to be discharged to the sedimentation pond in the industrial and administrative sector". It is understood that role of the pond includes water quality sampling during construction.

However, its presence is sporadic on the maps provided for the operation phase. For example, this pond is absent from maps 4-2 (Industrial and Administrative Area General Arrangement) and 4-7 (Operation Phase Water Management, paper version provided), whereas it is present on maps 4-5, 4-6 (Mine Site General Arrangement - Year 2 and 13) and 4-7 (digital version p. 4-74). Its role is not clearly described either.

### **The JAC requests that the Proponent:**

- A) Clarify the presence and role of pond no. 4 in water management during the construction and operation phases.
- B) Provide a more detailed map of this pond for the construction and operation phases, if applicable.

## **CCE3-42 Use of the northeast stockpile at the beginning of the operation phase**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.2

(Operation).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Sections 4.5.2 and 4.8.2.

## Context

The 2021 EIS (WSP, July 2021: Section 4.8.2) states that "for the first five years of operation, the fine tailings would be concentrated in the northeast stockpile for possible reuse at the plant." The same section states that "tailings will be placed inside the waste rock cells of the East waste rock and tailings storage facility during the first four years of mine operation." Furthermore, map 4-5 (Mine Site General Arrangement - Year 2) shows that the northeast waste rock pile has not yet been developed in year 2 of operation. Therefore, there is a contradiction in terms of the use of the pits for tailings disposal during the operation phase.

## The JAC requests that the Proponent:

Describe in which stockpile(s) the tailings would be deposited and in what sequence throughout the operation phase.

## CCE3-43 Management of waste rock and tailings piles based on geochemical characterization data

## References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.2 (Operation).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.8.2.

## Context

According to the 2021 EIS (WSP, July 2021: Section 4.8.2), the co-disposal method "was not chosen based on the geochemical characteristics of the materials to be stored, although the geochemical characteristics of the materials were considered." ECCC believes that it is important to know the geochemical characteristics used in selecting the co-disposal method.

## The JAC requests that the Proponent:

- A) Clarify the sentence in Section 4.8.2 (p. 4-58) as to whether or not geochemical characteristics were considered in selecting the method.
- B) Justify the co-disposal method chosen based on the materials' geochemical (leachable) characteristics to be stored, if applicable.

## **CCE3-44 Efficiency of the water treatment plant**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.2 (Operation).

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-57A.

### **Context**

The WTP was described in the additional answers to the second information request (WSP, October 2021). However, treatment unit efficiency levels during construction and operation are provided without justification.

### **The JAC requests that the Proponent:**

Document the expected treatment efficacy levels. For example, the Proponent could provide technical documents and publications in peer or manufacturer journals of mining WTPs similar to those provided to document the efficiency levels that have been stated.

## **CCE3-45 Sludge in the bottom of retention ponds**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 3.2.2 (Operation) and 3.2.3 (Decommissioning and abandonment).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.9.2.

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-57A.

### **Context**

According to the 2021 EIS (WSP, July 2021: Section 4.9.2), "sludge will accumulate in the water management ponds throughout the project. We have not yet assessed the expected sludge quantities. This is an operational constraint that should be managed in compliance with applicable laws and regulations. A specialized contractor will remove the accumulated sludge from the ponds if required. This sludge will then be analyzed and managed accordingly. [...] Concerning the disposal of the treated sludge, when disposal is required, it will be analyzed and will either be directed to the tailings and waste rock facility or considered as contaminated soils or residual hazardous materials after discussion with MELCC representatives". In addition, answer A-CCE-57A (WSP, October 2021) states that "the sludge will be transported to authorized disposal areas on the site."

ECCC believes that the information provided by the Proponent regarding sludge is incomplete, particularly

in terms of how it would be managed and where it would be directed.

### **The JAC requests that the Proponent:**

Clarify the management of sludge from the ponds and specify the location of the planned "authorized" areas.

## **CCE3-46 Impacts on watercourses other than the CE2 during the operation and post-operation phases**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.2 (Changes to ground water and surface water).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc, Appendix J (sections 5.1 and 8.2).

### **Context**

In the 2021 EIS (WSP, July 2021: Appendix J, section 8.2), the Proponent states that "the co-disposal piles have no impact on the quality of streams CE1, CE3, CE4 and CE5. Only the CE2 watercourse will be impacted, notably by concentrations from the northeast stockpile" (*unofficial translation*). However, the southwest stockpile and part of the northeast stockpile are located in the watershed of stream CE3, indicating a potential influence of these stockpiles on the water quality of this stream. Consequently, the water quality of the section of stream CE3 crossing the mine site has a high potential to be influenced by all the structures on either side (stockpiles, haul roads, etc.). The impact of the stockpiles and infrastructure on the water quality of stream CE3 (as well as on the widening of CE3, which forms a lake between the northeast stockpile and the industrial and administrative sector) does not appear to have been mentioned or considered in the study. It would appear that no impact is anticipated.

In addition, the 2021 EIS (WSP, July 2021: Appendix J, section 5.1) states that "flows were measured in streams CE2, CE3, CE4 and CE5 located near the future infrastructures. However, the low-flow rates are still estimated values. Therefore, these results are orders of magnitude and must be considered with caution and discernment" (*unofficial translation*). This indicates an additional uncertainty regarding the project's effects on water quality in the watercourses.

### **The JAC requests that the Proponent:**

- A) Justify the absence of an assessment of the impact on water quality of watercourses other than CE2, given their proximity to the infrastructures, the presence of stockpiles in their watersheds and the estimated flow rates. Particular attention must be paid to CE3, including its widening between the northeast stockpile and the industrial and administrative sectors.
- B) If applicable, describe the impact on streams other than CE2.

## **CCE3-47      Changes in arsenic concentrations under the stockpiles**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 6.2.2 (Changes to ground water and surface water).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix J (Section 7.3.1).

### **Context**

In the 2021 EIS (WSP, July 2021: Appendix, 7.3.1), figure 4 presents cross-sectional views of the evolution of arsenic concentrations in the area of the northeast stockpile. However, these analyses are not presented for the other stockpiles, while maps 15 and 16 show arsenic concentrations exceeding 0.1 mg/l in groundwater beneath other stockpiles.

### **The JAC requests that the Proponent:**

- A) Justify why the evolution of arsenic concentrations is presented only under the northeast stockpile.
- B) If applicable, present the evolution of arsenic concentrations under the other stockpiles.

## **CCE3-48      Water management during the restoration, closure and post-closure phases**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 3.2.3 (Decommissioning and abandonment) and 6.2.2 (Changes to ground water and surface water).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.9.2.

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-57A.

### **Context**

In the additional answers to the second information request (WSP, October 2021: A-CCE-57A), the Proponent refers only to the requirements of Directive 019 for post-operation follow-up. The requirements of the MDMER and the *Fisheries Act* have not been considered. The description of management according to federal requirements was not carried out.

### **The JAC requests that the Proponent:**

Consider federal regulations in the post-operation follow-up program.

## **CCE3-49 Environmental monitoring and follow-up programs**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 8.1 (Follow-up program).

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-60A.

### **Context**

In the additional answers to the second information request (WSP, October 2021: A-CCE-60A), the Proponent describes monitoring that appears to be consistent with MELCC requirements. However, the *Fisheries Act* applies federally, and the mine site could be subject to the MDMER during the construction phase if the conditions applied (see scope of the Regulations, subsection 2(1) and Comment 3 on this subject). The monitoring program could therefore be different from that described in answer A-CCE-60A.

### **The JAC requests that the Proponent:**

Consider the *Fisheries Act* and MDMER in the monitoring program during the construction phase and complete missing information in the monitoring program as appropriate.

## **Comments and advice for the Proponent**

### **Commentaire 3 Water balance and management in the construction phase**

#### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.1 (Site preparation and construction).

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answers A-CCE-47, A-CCE-60A and B.

#### **Comments and advice**

The construction phase water balance (WSP, October 2021: A-CCE-47) indicates that 360 m<sup>3</sup>/day of WTP outflow would be directed to the effluent (CE2). ECCC noted that this flow is greater than 50 m<sup>3</sup>/day; therefore, the mine could be subject to the MDMER even at the construction phase (see scope of the Regulations, subsection 2(1)).

### **Commentaire 4 Material from the quarry at km 394**



## References

CEAA (2018). *CEAA (2018). Guidelines for the Preparation of an Environmental Impact Statement*. Section 3.2.1 (Site preparation and construction).

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-48D and Appendix A-CCE-48.

## Context

In the additional answers to the second information request (WSP, October 2021: A-CCE-48D), the Proponent states that material from the existing quarry at km 394 would be used in the construction phase and that the quarry "has all the required permits to operate (Appendix CCE-48) and is already in operation. Material from the quarry is authorized for road and ditch construction". Appendix CCE-48 refers to a material quality characterization study for this quarry but does not state that the material has no leaching or acid generating potential.

## Comments and advice

ECCC believes that any material imported from outside the mine site will have to meet certain conditions regarding their geochemical qualities (absence of metal leaching and acid generation potential).

## Wetlands

### CCE3-50 Effects of drawdown around the pit on wetlands

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 6.1.4 (Riparian and wetland environments), 6.3.2 (Migratory birds) and 6.3.3 (Species at risk).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Sections 7.3.1 and 10.4.5, Appendix J (section 6.1.3).

#### Context

In general, ECCC believes that the potential environmental effects on wetlands and their functions have been adequately assessed but remains concerned about the potential effects of the drawdown of the water table on wetlands (during the operation phase). This potential drawdown could result in the loss or modification of habitats for migratory birds and species at risk that use these habitats. ECCC believes that a monitoring program should be implemented to measure the effects of pit dewatering on wetlands.

Section 10.4.5 of the 2021 EIS (WSP, July 2021) mentions that the vegetation monitoring program and hydrology around the periphery of the infrastructures would allow for the evaluation of indirect effects and the reassessment of the areas to be compensated. It also states that "the monitoring method will include the detailed inventory of vegetation in the survey plots located along transects, in a 25 m band" and that "the first inventory will be carried out at during the site construction phase and monitoring will continue over a five-year period, on years 1, 3 and 5."

However, map 7-1 (WSP, July 2021: Section 7.3.1), describing the drawdown at the end of the operating period (final dewatering), shows that this drawdown would reach areas beyond the 25-metre zone around the mine infrastructure. For example, a one-metre drawdown is predicted over 300 metres on the south side of the pit. In addition, the sections presented in Appendix J of the 2021 EIS (WSP, July 2021: Section 6.1.3, Figures 2 and 3) do not allow for an impact assessment on wetlands.

Furthermore, ECCC believes that installing piezometers intersecting the wetlands in the vicinity of the pit and accompanied by vegetation cover monitoring would be an effective method to measure the effect of the drawdown of the water table in these environments. Piezometric monitoring would measure the rate of groundwater drawdown, while vegetation monitoring would measure changes that are likely to occur over a longer period.

#### The JAC requests that the Proponent:

- A) Re-evaluate the indirect effects of the pit drawdown (and mine water pumping) on wetlands based on the predictions presented in map 7-1.
- B) Evaluate the relevance of conducting a piezometric survey intersecting the wetlands near the pit to measure the effect of lowering the water table on these environments.
- C) Review the spatial and temporal scope of wetland monitoring. The duration and extent of the monitoring should be justified on a scientific basis. The duration of the monitoring should cover the entire operation phase and be long enough to follow the effect of the maximum drawdown on wetlands. It should exceed

the 25-metre zone around the infrastructure to capture the extent of drawdown.

# Cree Use of Land and Resources for Traditional Purposes

## CCE3-51 Effect of increased road traffic and mining operations during geese and moose hunting season

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 5 (Consultation with Indigenous Nations and concerns raised) and 6.3.4 (Indigenous peoples).

WSP (September 2019). *Answers to Questions and Comments Received from the CEAA as part of the Environmental Impact Study Review*. Report produced for Galaxy Lithium (Canada) Inc. Answer A-8.

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Sections 1.6, 4.12 and 7.4.

### Context

In section 7.4.1 of the 2021 EIS (WSP, July 2021), the Proponent mentions that the increase in traffic on the Billy-Diamond Highway would be 10 to 12 trucks per day during the operation phase. However, in section 7.4.2, the Proponent indicates that the Billy-Diamond Highway would receive 154 truck passages per week, or 22 trucks per day, during this same phase. In mitigation measure UTT 06, the Proponent mentions that it would favour stopping production during the hunting season (approximately ten days), but it does not indicate the number of transports anticipated at that time.

In section 1.6.2 of the 2021 EIS (WSP, July 2021), the Proponent indicates that truck tonnage has increased from 61.5 tonnes to 100 tonnes. During the July 20, 2021 meeting between the Proponent, the Impact Assessment Agency of Canada and the Cree Nation Government, it was specified that this number referred to the trucks on site. The type of trucks that would be used on the Billy-Diamond road was not specified.

Blasting is another aspect likely to have negative effects on access to the territory and on the experience of the territory, particularly during the annual goose and moose hunting periods. The Proponent indicates in mitigation measure VIB 01 that employees and the population in the vicinity will be notified of the blasting schedule. However, the Proponent did not mention the possibility of reducing the number of blasting operations during the hunting season.

### The JAC requests that the Proponent:

- A) Specify the types of trucks and tonnage for each type of haul on the Billy-Diamond Highway during the construction, operation and decommissioning phases.
- B) Estimate the number of transports planned on the Billy-Diamond Highway during goose and moose hunting seasons. Compare to regular operating periods.

The Proponent is encouraged to present the above information in a comparative table. The table should be reproduced for each type of transportation (e.g., spodumene transportation to Matagami, waste disposal, materials, workers, procurement, waste management, etc.).

### Transportation on the Billy-Diamond Highway

| Step                 | Type of vehicle | Vehicle dimensions (or visual with dimensions) | Vehicle tonnage | Number of transports per vehicle (day) | Number of transports per vehicle (night) | Number of return trips | Start interval |
|----------------------|-----------------|--|-----------------|--|--|------------------------|----------------|
| Construction         |                 |  |                 |  |  |                        |                |
| Operation            |                 |  |                 |  |  |                        |                |
| Moose hunting season |                 |  |                 |  |  |                        |                |
| Goose hunting season |                 |  |                 |  |  |                        |                |
| Restoration          |                 |  |                 |  |  |                        |                |

C) Estimate the number of blasts during goose and moose hunting seasons and compare to regular operating periods. Specify the frequency, type of blasting and anticipated blasting restriction times. The Proponent is encouraged to present the information in a comparative table.

### CCE3-52 Integration of the tallymen of the Cree First Nation of Waswanipi into the monitoring committee

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 5 (Consultation with Indigenous Nations and concerns raised) and 6.3.4 (Indigenous peoples).

WSP (September 2019). *Answers to Questions and Comments Received from the CEAA as part of the Environmental Impact Study Review*. Report produced for Galaxy Lithium (Canada) Inc. Answers A-97 and A-101.

WSP (June 2020). *Answer to Second Information Request (1<sup>st</sup> part) Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-28.

JAC Consultations on the Proponent's Environmental Impact Statement - Tallymen of the Cree First Nation of Waswanipi (November 2020).

#### Context

In its answer A-97 (WSP, September 2019), the Proponent plans to set up a monitoring committee whose mandate would be "to exchange information on the project and environment. It will also act as a platform to discuss the efficiency of mitigation/compensation measures implemented by Galaxy and to address concerns that may arise throughout the various phases of the project (construction, operation and dismantling phases)." The Proponent states that "the committee shall include at least one representative of the municipal sector, one representative of the economic sector, one member of the public and, if applicable, one representative of an Indigenous community consulted by the Government with respect to the project. At this stage of the project, the following representatives are expected to be part of the monitoring committee:

- Representatives of Galaxy, including the Eastmain Community Liaison Officer (CLO);
- Representatives of the Eeyou Istchee James Bay Regional Government;
- Representatives of the Eastmain, Waswanipi and Waskaganish Band Councils or designated community members;

- Traplines RE02, VC33, VC35 and R08 tallymen, or designated representatives;
- Representative from Matagami".

During the November 2020 consultations, the tallymen of the Cree First Nation of Waswanipi expressed their desire to join the monitoring committee. They recommended that this committee be a forum for discussing concerns about the project's effects on their land use during the life of the project.

### **The JAC requests that the Proponent:**

Specify whether it intends to involve the tallymen of the Cree First Nation of Waswanipi in the monitoring committee. If not, please explain.

## **CCE3-53 Project Committees**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 5 (Consultation with Indigenous Nations and concerns raised) and 6.3.4 (Indigenous peoples)

WSP (July 2021, version 2). *Environmental Impact Assessment*. Report produced for Galaxy Lithium (Canada) Inc. Sections 5.7.2, 7.1.3 and 7.4.1.

### **Context**

The 2021 EIS (WSP, July 2021) refers to the numerous committees that would be established during the life of the mining project. As required by Quebec's *Loi modifiant la Loi sur les mines* (section 101.0.3), the Proponent will have to set up a monitoring committee. In addition, the mitigation measures mention the existence of a communications committee, an environment committee, a labour reclassification assistance committee and a monitoring committee.

### **The JAC requests that the Proponent:**

- A) Specify, with the help of a table, the names of all the committees that will be created for the proper functioning of the project, as well as their responsibilities, decision-making powers, composition and lifespan (pre-construction, construction, operation and restoration phases).
- B) Indicate whether committees will be established in response to the Impact and Benefit Agreement. If so, provide a table listing their names, responsibilities, membership and life spans.

## **CCE3-54 Terms of use of the electrical charging stations**

### **References**

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 5 (Consultation with Indigenous Nations and concerns raised) and 6.3.4 (Indigenous peoples).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 4.16.2.

## Context

In the 2021 EIS (WSP, July 2021), the Proponent notes that it wishes to reduce GHG emissions through the acquisition of electric auxiliary vehicles such as forklifts, buses and pickup trucks. To this end, the Proponent mentions the installation of electric charging stations in the community of Eastmain. However, the Proponent does not provide details on how the charging stations will be used.

### The JAC requests that the Proponent:

- A) Specify the number of electric charging stations and their intended use during the mine operation and decommissioning phase. Would these electric charging stations be used only for buses carrying passengers or also by other vehicles, including, for example, vehicles from the community of Eastmain?
- B) Specify who would be responsible for paying the electricity costs associated with their use. Specify whether, after the mine closes, the electric charging stations would be removed or left for use by the community of Eastmain and whether the community would have to pay the electricity costs.

## CCE3-55 Dimensions of the clay berm along the stripped area

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 5 (Consultation with Indigenous Nations and concerns raised) and 6.3.4 (Indigenous Peoples).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 7.3.

## Context

In section 7.3.1 of the 2021 EIS (WSP, July 2021), the Proponent indicates that there would be a 50-metre buffer strip around the infrastructures, including a 35-metre protective strip that would be stripped to protect the infrastructures from potential forest fires. In mitigation measure VEG 07, it adds that it plans to design a clay berm along the aforementioned stripped areas to avoid draining wetlands around the infrastructures. The Proponent does not specify the dimensions of the clay berm.

### The JAC requests that the Proponent:

- A) Clarify whether the exclusion zone for traditional activities referred to in mitigation measure CIR 04 is the same as the 50-metre buffer strip planned by the Proponent.
- B) Specify if a clay berm is planned along the stripped area, and if so, justify. Specify the height and width of the berm.
- C) Provide a map delineating the berm around the security perimeter.

## CCE3-56 Toponymy

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 5 (Consultation with Indigenous Nations and concerns raised) and 6.1.9 (Indigenous Peoples).

JAC consultations on the Proponent's Environmental Impact Statement - Crees of the Waskaganish First Nation (October 2019), Eastmain Cree Nation (December 2019) and Waswanipi Cree First Nation (November 2020)

## Context

During the consultations on the Proponent's EIS, the Impact Assessment Agency of Canada and the Cree Nation Government noted that different toponymy was used to name the watercourses and sites included in the Proponent's study. This difference in naming caused some difficulties in understanding and led to several comments from members of the Nations consulted and the JAC. The Cree Nations would like to conduct a study of the place names with the Proponent to arrive at a common understanding and thus encourage adequate monitoring of the project by all stakeholders.

### **The JAC requests that the Proponent:**

Specify if it is possible to carry out a toponymic guide of the Cree names in the study area in collaboration with the Cree Nations. If not, please explain.

## **CCE3-57 Indigenous Consultations**

## References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 5 (Consultation with Indigenous Nations and concerns raised) and 6.3.4 (Indigenous peoples).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 5.4.1.3.

## Context

Since the 2018 EIS, the Proponent has conducted several consultations detailed in section 5.4.1.3 of the 2021 EIS (WSP, July 2021). The Proponent made presentations on the changes to the project to the RE02, VC33 and VC35 tallymen (February 4 and 8, 2021), to the Cree First Nation of Waswanipi (February 9, 2021) and to some 20 Cree community members and stakeholders (April 14, 2021). The Proponent indicates that guests have suggested further community consultations be held at a later date.

### **The JAC requests that the Proponent:**

- A) Specify if other presentations or communications are planned or have been made with the Cree communities of Eastmain, Waswanipi, Nemaska and Waskaganish since April 2021.
- B) Provide the minutes of the February 9, 2021, and April 14, 2021 meetings, noting the number of members present for each community and the discussion points addressed.



## Monitoring and Follow-up Program

### CCE3-58 Nitrogen dioxide (NO<sub>2</sub>) monitoring

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 8 (Follow-up and monitoring programs).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix E to Appendix C (Section 7).

#### Context

The Proponent suggests "visual" monitoring of NO<sub>2</sub> during blasting (WSP, July 2021: Appendix E of Appendix C: Section 7), considering that sub-optimal detonation would be indicative of conditions favourable to NO<sub>2</sub> formation: "Monitoring of the potential emission of NO<sub>2</sub> during blasting will be carried out mainly by observing blast events. NO<sub>2</sub> emissions occur primarily when detonation conditions are sub-optimal. The presence of larger rocks and weaker than projected front movements will be used as indicators to qualify the effectiveness of the detonation of the explosives."

HC believes that, given the results of the modelling study, the uncertainty surrounding the initial NO<sub>2</sub> concentrations used in the modelling, and the fact that NO<sub>2</sub> is a non-threshold substance, the Proponent should consider monitoring NO<sub>2</sub> (in the same way as for the monitoring of PM<sub>2.5</sub>, PM<sub>tot</sub>, PM<sub>10</sub> and metals already planned) at the beginning of the construction phase (because of near exceedances at the truck stop) and at least for the first year of operation. The relevance of continuing the monitoring beyond this date may be re-evaluated in light of the results.

#### The JAC requests that the Proponent:

Consider adding NO<sub>2</sub> monitoring at the beginning of the construction phase and during the first year of operation, at a minimum. This monitoring could be reviewed based on the results obtained after comparing the 1-hour NAAQS for NO<sub>2</sub> and the EIS predictions.

### CCE3-59 Adaptive management criteria for air contaminants

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 8 (Follow-up and monitoring programs).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Section 6.2.10 and Appendix E of Appendix C.

## Context

The Proponent states that it would set up a system at the monitoring station that would transmit air quality data to a control room and that would generate alarms under certain conditions. A survey would be conducted when the result (rolling average) exceeded 80% of the MELCC (*standard*) norm (WSP, July 2021: Appendix E of Annex C). While the principle of continuous improvement is part of the plan, the Proponent would be well advised to justify its choice of 80% as the threshold for triggering an investigation of an increase in a contaminant in the air. This is particularly important for non-threshold substances, such as NO<sub>2</sub> and PM<sub>2.5</sub>, as adverse health effects may occur below the applicable criteria and standards. Therefore, the NAAQS values should not be seen as a licence to pollute until these concentrations are reached (clean region principle).

Site-specific data were not used to establish the initial concentrations included in the modelling. Therefore, there is uncertainty with respect to baseline (pre-project) concentrations in the study area. Because the project is in a remote location, the Proponent has indicated that pre-project air quality would be "good" (WSP, July 2021: Section 6.2.10). The Proponent should use all technologically and economically feasible means to prevent deterioration of air quality, not just target standards.

## The JAC requests that the Proponent:

Justify or revisit the use of 80% of the provincial standard as a trigger for investigation and possible additional mitigation measures. Consider the development of project-specific mitigation triggers that take into account pre-project baseline concentrations and air zone management levels for each pollutant.

If the Proponent chooses to use air zone management levels as a guide, it is important to note that the statistical form of the CAAQS (e.g., 3-year average) may not be appropriate for developing triggers for short time periods. Other considerations such as public complaints, wind speed and visual observations may also be used to develop triggers for additional mitigation measures.

## CCE3-60 Blasting and strong/dominant winds

### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 8 (Follow-up and monitoring programs).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix E to Appendix C (Section 3.2.1).

## Context

The Proponent mentions that blasting would be restricted during periods of high winds or when prevailing winds may carry dust to sensitive areas (e.g., at the km 381 truck stop) [WSP, July 2021: Appendix E of Appendix C, Section 3.2.1].

## The JAC requests that the Proponent:

Define high winds and specify the mechanism that would detect dust transport to the truck stop.

## CCE3-61 Monitoring in game meat

### References

HC (2018). *Guidance for Evaluating Human Health Impacts in Environmental Assessments: Country Foods*.

WSP (October 2021). *Additional Answers to the Second Information Request Received from the Impact Assessment Agency of Canada as part of the Environmental Review of the Project*. Answer A-CCE-18.

### Context

In response to A-CCE-18, the Proponent mentions that, in addition to air and water quality monitoring, annual monitoring of metal levels in plants and a five-year monitoring program for these same metals in game tissues would be carried out (WSP, October 2021). HC recommends that the selected approaches be justified to confirm their validity (HC, 2018).

### The JAC requests that the Proponent:

Justify the choice of a sampling campaign every five years for the game tissue monitoring program and specify the duration of the monitoring (project phases).

## Comments and advice for the Proponent

### Commentaire 1 Objectives of monitoring versus follow-up for air quality

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Section 8 (Follow-up and monitoring programs).

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. Appendix E to Appendix C (Section 5).

#### Context

In Section 5 of the preliminary dust management plan (WSP, July 2021: Appendix E of Appendix C), the Proponent describes the objective of the air quality monitoring program as primarily a provincial regulatory compliance exercise: "The objective of the ambient air quality monitoring program will be to measure the impact of mining activities on local and regional air quality and to determine the compliance and acceptability of mining activities in relation to the applicable standards and criteria presented in the document *Normes et critères québécois de qualité de l'atmosphère*, version 6, MELCC (2018)."

## **Comments and advice**

HC believes that, in the context of this project subject to the *Canadian Environmental Assessment Act (2012)*, the NAAQS and the principle of protection of clean areas should also be considered as comparison criteria to verify the predictions of the EIS.

## Description of the Project

### CCE3-62 Storage and manufacture of explosives

#### References

CEAA (2018). *Guidelines for the Preparation of an Environmental Impact Statement*. Sections 3.3.1 (Project activities - Description of explosives manufacturing and storage) and 3.2.2 (Operation - explosives manufacturing, use and storage).

WSP (December 2019). *Answers to Precision Request on Answer to Questions (1<sup>st</sup> series) from the Canadian Environmental Assessment Agency as part of the Environmental Review of the Project*. Report produced for Galaxy Lithium (Canada) Inc. A-AD-17.

WSP (July 2021, version 2). *Environmental Impact Statement*. Report produced for Galaxy Lithium (Canada) Inc. sections 4.11.10 and 9.3.7.

#### Context

In its response to the first information request, the Proponent provided details on activities related to the manufacture and storage of explosives (WSP, December 2019: R-AD-17). However, this information is not presented in the 2021 EIS (WSP, July 2021).

The Proponent indicated that ANFO (ammonium-nitrate-fuel-oil) blending would be done on-site in a plant designed, installed and operated by the explosives manufacturer. All permits would be in their name (WSP, July 2021: Section 4.11.10). The project would therefore include, in addition to storage, the manufacture of explosives. This project component is not clearly identified in the 2021 EIS (WSP, July 2021). For the purposes of the *Explosives Act*, this distinction is essential.

In addition, the Proponent states that the location of the explosives storage facility was chosen to comply with minimum safety distances (WSP, July 2021: section 4.11.10, map 4-1). However, in addition to the proposed location of the explosives storage facility, map 4-1 does not show any other explosives facilities. It does not indicate the safe distances between the explosive facilities and the project components.

The Proponent also indicated that detonators would be stored in a particular room (WSP, July 2021: Section 4.11.10). NRCAN notes that detonators must be stored in a separate building, such as a detonator storage room, powder magazine or depot. In addition, NRCAN states that the specialized contractor will be required to obtain a factory licence for the manufacture of explosives in addition to other permits required under the *Explosives Act*.

#### The JAC requests that the Proponent:

- A) Specify if the project involves the storage and manufacture of explosives.
- B) Add to map 4-1 all facilities related to explosives.
- C) Specify whether the detonators would be stored in a separate building such as a detonator storage facility, powder magazine or depot. Illustrate this building(s) on map 4-1.