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January 14, 2021

File: W2020L8-0003 and W2020X0005

Mark Cliffe-Phillips  
Mackenzie Valley Review Board  
200 Scotia Centre  
Box 938, 5102-50th Avenue  
Yellowknife, NT X1A 2N7

Sent by email

Dear Mark Cliffe-Phillips,

**Re: Rayrock Remediation Project – Notice of Preliminary Screening Determination – Applications for Type A Land Use Permit and Type A Water Licence – Remediation – former Rayrock mine, NT**

The Wek'èezhii Land and Water Board (Board) met on January 14, 2021 and considered the Applications from Crown-Indigenous Relations and Northern Affairs Canada – Contaminants and Remediation Division (CIRNAC-CARD)] for Land Use Permit (Permit) W2020X0005 and Water Licence (Licence) W2020L8-0003 for the Rayrock Remediation Project (Project) in accordance with the *Mackenzie Valley Resource Management Act* (MVRMA).

The Board conducted a preliminary screening based on the public record for the proceedings. Based on the evidence provided, the Board is satisfied the screening has been completed according to section 125 of the MVRMA and has decided **not to refer** the project to environmental assessment. The Board's reasons for decision, as required by section 121 of the MVRMA, are attached.

If the Board does not receive notice of referral to environmental assessment, it will continue with the regulatory process.

The Board and staff look forward to continued communications throughout the pause period. Please contact Ryan Fequet at (867) 765-4589 with any questions or concerns regarding this letter.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Joseph Mackenzie".

Joseph Mackenzie  
Wek'èezhii Land and Water Board, Chair

Copied to: Ron Breadmore, CIRNAC-CARD  
Blind Copied to: Rayrock Distribution List

Attached: Preliminary Screening Reasons for Decision



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## Reasons for Decision

<b>Reference/File Number:</b>	W2020X0005 and W2020L8-0003 (Type "A" Land Use Permit/Water Licence)
<b>Licensee:</b>	Crown-Indigenous Relations and Northern Affairs Canada – Contaminants and Remediation Division (CIRNAC-CARD)
<b>Subject:</b>	Type A Land Use Permit and Type A Water Licence Application – Preliminary Screening

## Decision from the Wek'èezhìi Land and Water Board Meeting of January 14, 2021

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### **1.0 Decision**

On January 14, 2021, the Wek'èezhìi Land and Water Board (the Board) met to consider the Applications by Crown-Indigenous and Northern Affairs Canada – Contaminants and Remediation Division (CIRNAC-CARD) for a Type A Land Use Permit (W2020X0005) and Type A Water Licence (W2020L8-0003).<sup>1,2</sup> The Board conducted a preliminary screening of the Applications according to subsection 124(1) of the *Mackenzie Valley Resource Management Act* (MVRMA) based on the application package and the public record for the proceeding. Based on the evidence provided, it is the Board's view that the proposed activities will not have a significant adverse impact on the environment or be a cause for public concern as set out in paragraph 125(1)(a) of the MVRMA. Therefore, the Board has decided not to refer the Project to Environmental Assessment.

In accordance with subsection 125(1.1) of the MVRMA, the Board shall not issue a licence, permit, or other authorization for the development before the end of 10 days after the day on which the Review Board received the report of the determination. If no referral to Environmental Assessment is received by January 24, 2021, the Board will continue with the Water Licensing and Land Use Permitting process as outlined in the Work Plan.

### **2.0 Background**

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<sup>1</sup> See WLWB ([www.wlwb.ca](http://www.wlwb.ca)) Online Registry for [W2020X0005 – Rayrock – Type A Land Use Permit Application – Sep 21 20](#)

<sup>2</sup> See WLWB Online registry for [W2020L8-0003 – Rayrock – Type A Water Licence Application – Sep 21 20](#)

CIRNAC-CARD submitted complete applications for a Type A Land Use Permit (W2020X0005) and Type A Water Licence (W2020L8-0003) on September 21, 2020.

The Rayrock Remediation Project (the Project) is the environmental remediation of historical metal mining and exploration properties including the Rayrock Uranium mine, the Sun Rose (Northland) Advanced Exploration site, the Horn Plateau (REX) exploration site, three Rayrock-affiliated drilling sites, the power line infrastructure between Rayrock and the Snare Hydroelectric Facility at Big Spruce Lake, and a Rayrock-affiliated storage area at the Barge Landing. CIRNAC-CARD is requesting a 7-year water licence term and a 5-year land use permit term.

In the Applications, CIRNAC-CARD states that the Project would include the following activities:

- Remediation of Mill Lake with the treatment and discharge of water from Mill Lake and treatment and encapsulation of lake sediments;
- Encapsulation of soil, tailings, and waste rock in former Mill Lake with construction of a clay Confined Disposal Facility (CDF);
- Blasting of bedrock for construction of drainage swale and creation of a channel as part of the Mill Lake remediation;
- Withdrawal of water and use for winter road construction;
- Uranium-impacted debris with concentrations above safe shipping levels and other materials may be buried in Mill Lake;
- Repairs to tailings caps of Tailings Containment Areas;
- Repairs to cap of Waste Dump;
- Closure of vent raises at Rayrock;
- Off-site removal of debris and materials within safe shipping limits for Uranium;
- Incineration or stockpiling for off-site disposal of waste from Camp operations;
- Capping waste rock and blast pits at Sun Rose site;
- Capping blast pits at Horn Plateau – Rex Showing
- Closure of an open shaft at Sun Rose site;
- Backfilling of trenches and blasted areas at Horn Plateau – REX Showing site;
- Burial or trucking out of soil with hazardous chemicals from exploration sites;
- Removal of non-hazardous waste from exploration sites;
- Removal of hazardous waste at barge landing site and power line site;
- Storage and use of explosives for site remediation and grading;
- Excavation and on-site disposal of accessible spilled tailings;
- Brush and vegetation clearing for access roads;
- Potential construction of access roads if expected existing alignments not available;
- Establishment of a camp at Rayrock site;
- Potential camp establishment at Sun Rose site;
- Withdrawal of water and use for non-potable and potable Camp operations;
- Withdrawal of water and use for dust control and washing;

- Grey water disposal;
- Use and regrading of borrow areas;
- Fuel storage for operations; and
- Use of light and heavy equipment on site.

## 2.1 Public Review

The Applications were distributed for public review on the Board’s Online Review System on September 29, 2020 and reviewers were encouraged to provide comments and recommendations (e.g., on impacts and mitigation measures) to assist with the Board’s preliminary screening determination. A draft Work Plan was developed by Board staff and distributed for comment with the Applications.<sup>3</sup> Comments on the draft Work Plan were received from parties by the deadline of October 13, 2020. No concerns with timelines were raised during the public review and no requests to extend the reviewer comment deadline were received; thus, the Board is satisfied that a reasonable period of notice was given to affected communities and First Nations, as required by subsections 63(2) and 63(3) of the Mackenzie Valley Resource Management Act (MVRMA). The Item for Review was updated to include the updated Work Plan.<sup>4</sup>

Comments and recommendations on the Applications were received from Crown-Indigenous Relations and Northern Affairs Canada Inspector (CIRNAC - Inspector), Environment and Climate Change Canada (ECCC), Fisheries and Oceans Canada (DFO), Government of Northwest Territories – Environment and Natural Resources (GNWT-ENR), Government of Northwest Territories – Lands (GNWT-Lands), Prince of Wales Northern Heritage Centre (PWNHC), Tłı̨chǫ Government (TG), and Wek’èezhìi Renewable Resources Board (WRRB). Comments and recommendations were received by the deadline of October 28, 2020, with the exception of three comments from ECCC (i.e., ECCC comments 12, 13, and 14) that were submitted after the deadline. Board staff also provided questions during the public review. CIRNAC-CARD provided responses by the response deadline of November 17, 2020, with the exception of an update to the response to GNWT-ENR comment 20 and the provision of a map of proposed SNP stations submitted after the deadline. Reviewer comments and recommendations, and proponent responses are available on the WLWB Online Registry.<sup>5</sup>

After the initial public review of the Applications, it was determined that additional information was required to assist the Board with the Preliminary Screening. An Information Request (IR) was issued to DFO and CIRNAC-CARD on November 29, 2020.<sup>6</sup> The IR included a request to CIRNAC-CARD to submit copies of the Human Health and Ecological Risk Assessments (HHERAs) conducted for the Rayrock and Sun Rose sites. As part of the public review of the Applications, the HHERAs were referenced in several comments and proponent responses regarding potential impacts and mitigations of the Project. CIRNAC-

<sup>3</sup> See WLWB Online Registry for [CIRNAC-CARD – Rayrock – Work Plan – DRAFT – Sept 29 20](#)

<sup>4</sup> See WLWB Online Registry for [W2020L8-0003 – CIRNAC-CARD – Rayrock – Work Plan – Oct 20 20](#)

<sup>5</sup> See WLWB Online Registry for [Rayrock – WL and LUP Applications – Review Summary and Attachments – Nov 17 20](#)

<sup>6</sup> See WLWB Online Registry for [Rayrock – Water Licence and Land Use Permit Applications – Information Request to CIRNAC-CARD and DFO – Nov 19 20](#)

CARD submitted the Rayrock and Sun Rose HHERAs on November 20, 2020.<sup>7,8</sup> As the HHERAs were not made available to Parties as part of the Applications, Parties were given an opportunity to submit comments and recommendations on the Applications in consideration of the HHERAs. The HHERAs were distributed for review on November 27, 2020. Comments and recommendations were received from ECCC, GNWT-ENR, and TG by the deadline of December 21, 2020. Board staff also provided questions during the public review. CIRNAC-CARD provided responses by the deadline of January 5, 2021. Reviewer comments and recommendations, and proponent responses are available on the WLWB Online Registry.<sup>9</sup> The Work Plan was updated to reflect the additional review timeframe for the HHERAs.<sup>10</sup>

### **3.0 Reasons for Decision**

#### **3.1 Preliminary Screening**

The Board completed a preliminary screening of the Applications in accordance with subsection 124(1) of the MVRMA. The preliminary screening identifies potential impacts and mitigations for the proposed activities. In accordance with section 125 of the MVRMA, the Board must conduct a preliminary screening of the Applications to determine whether the project might have a significant adverse impact on the environment or might be a cause for public concern.

#### **3.2 Potential Impacts and Proposed Mitigations**

In the Applications, CIRNAC-CARD included identified potential environmental impacts of the undertaking and proposed mitigations in section 10 of the Type A Water Licence Application and in section 17 of the Type A Land Use Permit Application. In section 17, CIRNAC-CARD identified that all areas covered within the proposed Land Use Permit had been previously disturbed through historic industrial activity, and that additional potential environmental and resource impacts on the site would be minimal, with remedial actions mitigating “existing chronic impacts to the environment.” In section 10, CIRNAC-CARD outlined potential effects and mitigations from proposed remediation activities, and wrote that “proposed timing, duration and location of the remediation and restoration activities on the site should address any other potential environmental impacts.” The Board also conducted its own analysis of potential impacts and proposed mitigations of the Applications, which is summarized in Table 1 below.

The Board acknowledges that an overall net positive effect is expected as the result of a remediation project and that the purpose of the Rayrock Remediation Project is to address legacy impacts associated either directly or indirectly with uranium mining, milling, and exploration activities. However, similarly to the Giant Remediation Project, and as noted by the Mackenzie Valley Environmental Impact Review Board (the Review Board), “the intention for a Project to cause net benefits does not rule out the potential for it to result in significant effects. Even if the Project is beneficial overall, parts of the Project can cause

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<sup>7</sup> See WLWB Online Registry for [Rayrock – IR Response from CIRNAC-CARD – Rayrock HHERA – Nov 20 20](#)

<sup>8</sup> See WLWB Online Registry for [Rayrock – IR Response from CIRNAC-CARD – Sun Rose HHERA – Nov 20 20](#)

<sup>9</sup> See WLWB Online Registry for [Rayrock – WL and LUP Applications – HHERAs Review Summary – Jan 5 20](#)

<sup>10</sup> See WLWB Online Registry for [Rayrock – Work Plan – Nov 27 20](#)

significant impacts to certain valued components.”<sup>11</sup> Table 1 addresses potential impacts from the remediation activities.

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<sup>11</sup> See [Mackenzie Valley Environmental Impact Review Board Online Registry \(www.reviewboard.ca/registry\)](http://www.reviewboard.ca/registry) for *Report of Environmental Assessment – Giant Mine Remediation Project*; pg. 23

**Table 1: Summary of Potential Impacts of the proposed Applications and proposed Mitigations**

Potential Impact	Activity	Discussion of Concerns/Potential Impacts and Proposed Mitigations <i>Description of measures that can be applied to reduce potential impact, including consideration of cumulative impacts and climate change</i>	Board Analysis and Determination
Destabilization/erosion of soil; soil compaction and change in soil structure	Clearing of timber, brush, or vegetation mat, stripping and movement of overburden; use of motorized and heavy equipment, use and regrading of borrow areas	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications               <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts                   <ul style="list-style-type: none"> <li>▪ The Sediment and Erosion Control Plan (SECP) explains/describes that the clearing of vegetation/timber for roads and right-of-ways, use of borrow areas, and the stripping of overburden for remediation work, could create erosional issues and exposure of ground surfaces resulting in losses of soils.</li> </ul> </li> <li>○ Proposed Mitigations                   <ul style="list-style-type: none"> <li>▪ A Sediment and Erosion Control Plan (SECP) was submitted with the application and is proposed as a requirement of the Water Licence for Board approval. The proposed Plan includes the following mitigations: minimize stripping of topsoil, use of temporary erosion control measures, no construction over periods of significant rainfall, control and direct surface drainage, minimize rutting of ground surface, stripping of vegetation to be minimized, restoration of borrow areas, and stripped organics to be used for stabilization and erosion control.</li> </ul> </li> </ul> </li> <li>• Identified during the Public Review               <ul style="list-style-type: none"> <li>○ During the public review, Board staff asked several questions regarding uncertainty on the extent of potential impacts (WLWB staff comments 1-3).                   <ul style="list-style-type: none"> <li>▪ In response, CIRNAC-CARD explained that most work is to take place in previously developed areas and no sensitive land features had been identified in the area. CINTRAC-CARD stated that permafrost at site will mostly be associated with bedrock and soil</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described, the resolution of comments raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>

		<p>permafrost, and if it exists, will be in isolated pockets and very limited in area; and alteration of the permafrost regime will be minimal.</p> <ul style="list-style-type: none"> <li>• Additional potential mitigations identified by the Board: <ul style="list-style-type: none"> <li>○ Standard conditions (i.e., conditions 41, 42, 44, 45, 46, and 47 from the Standard Permit list) related to control or prevention of erosion can be included in the Permit/Licence to mitigate potential impacts.</li> <li>○ If needed, the Board may determine through the licensing/permitting process whether a management plan is required to address activities in permafrost areas.</li> </ul> </li> </ul>	
Soil Contamination	On-site storage or disposal of wastes; transfer, storage, and use of petroleum products and/or chemicals; transfer, storage, and use of explosives; disturbance and treatment of radioactive materials	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ The storage of wastes on site; transfer, storage, and use of chemicals/fuels; and transfer, storage and use of explosives can result in contamination through leaking and spills; and the storage of radioactive materials on site before removal/remediation could cause soil impacts. Wastes are expected to be from both project-generated and legacy sources.</li> <li>▪ Rayrock is a former Uranium Mine with nuclear waste substances in the form of radioactive tailings that will be stored indefinitely on site. Remediation will require disturbance and treatment of radioactive materials.</li> </ul> </li> <li>○ Proposed Mitigations <ul style="list-style-type: none"> <li>▪ A Waste Management Plan was submitted with the application and is being proposed as a requirement of the Water Licence for Board approval. The Plan includes protocols for the secure storage of fuels and waste oils, use of sumps for grey water, and establishment of sewage handling procedures. Updates to the Plan can be considered to address comments and recommendations from Parties. This</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described, the resolution of comments raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>



		<p>consideration of plan updates may apply to all plans identified as potential mitigations in this table.</p> <ul style="list-style-type: none"> <li>▪ A Spill Contingency Plan was submitted with the application and is being proposed as a requirement of the Water Licence for Board approval. The Plan can outline a spill response plan, proper storage of fuels and hazardous materials, use of secondary containment, fuel transfer areas, and appropriate training. The plan also accounts for storage of explosives separately and leaves the responsibility for storage/security/handling/use/removal of all explosives with qualified blasting contractor.</li> <li>▪ Rayrock is governed by the Canadian Nuclear Safety Commission (CNSC) under the Waste Nuclear Substance Licence (WNSL) W5-3208.0/2027. The CNSC administers the <i>Nuclear Safety and Control Act</i> and its regulations. The Licence ensures the site operations are maintained in accordance with the licensing basis for the facility and the intent of the licence. The Licence authorizes CIRNAC to possess, manage, and store, subject to the conditions of the licence, the nuclear substances that are associated with the historic uranium mine and mill wastes. CIRNAC will hold this licence in perpetuity.</li> <li>▪ Naturally Occurring Radioactive Material (NORM)-impacted waste is not to be disposed of in a regular landfill if it exceeds release limits published in <i>Canadian Guidelines for the Management of Naturally Occurring Radioactive Materials</i> (Health Canada, 2013). This would apply to wastes outside of the Rayrock site, remedial activities at Sunrose, and any other NORM-impacted materials found at other sites. These sites with higher radiation levels will have waste rock piles and blasted areas buried under clean oil or concrete as necessary, as per the RAP.</li> </ul>	
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		<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>▪ Hazardous wastes from all sites associated with the Project may be buried in Mill Lake or trucked away for off-site disposal, as per the RAP.</li> </ul> </li> </ul> </li> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ TG comment 7 noted that project-generated and legacy hazardous waste is to be shipped to an approved waste management facility for disposal but will be stored on site until transportation. The TG asked for more information regarding the length of time hazardous waste may be stored on site as it poses environmental and health hazards. <ul style="list-style-type: none"> <li>▪ In response CIRNAC-CARD noted that legacy wastes have been consolidated in a laydown, and when a water licence is in place, off-site disposal can be authorized. Wastes will be removed from site in a timely manner and CIRNAC-CARD stated that measures will be taken to ensure consolidated wastes do not impact local environment. Additional potential Board mitigation is detailed below.</li> </ul> </li> <li>○ GNWT-ENR comment 22 noted that the Waste Management Plan describes legacy hazardous wastes collected on site to include Asbestos-Containing Materials (ACM) and metals with lead-based paint to be stored in crates that could be damaged/destroyed and spill contents. The GNWT-ENR recommended that this material be included in the Spill Contingency Plan inventory. <ul style="list-style-type: none"> <li>▪ In response to GWNT-ENR comment 22, CIRNAC-CARD noted that legacy wastes collected to date of ACM and metals with lead-based paint will be added to the next version of the Spill Contingency Plan.</li> </ul> </li> <li>○ ECCC comment 6 noted that plants can uptake uranium from uranium rich soils and is likely to transfer through the food chain. <ul style="list-style-type: none"> <li>▪ In response, CIRNAC-CARD identified that the Human Health and Ecological Risk Assessment (HHERA) determined that vegetation and soil concentrations</li> </ul> </li> </ul> </li> </ul>	
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		<p>for metals and radionuclides did not pose an unacceptable risk to human health or the environment. CIRNAC-CARD noted that this was discussed with Kwetjjaà Elders during remedial options workouts which weighed the risk of removing mature vegetation against leaving the vegetation in place. The Board notes that the RAP section 5.3.5.2 includes the remedial options considered for impacted soils, and describes that CIRNAC and the TG agreed upon a hybrid option of leaving some soil in place and excavating some; during the RAP engagement it was agreed that impacted soil in mature vegetation stands or otherwise inaccessible would be left in place.</p> <ul style="list-style-type: none"> <li>○ The RAP indicates that roadways on-site at Rayrock are contaminated with spilled tailings and waste rock placement. The TG noted that the project does not identify a remediation approach for this (TG comment 28).</li> <li>○ In response to TG comment 28, CIRNAC-CARD stated that the Phase III ESA included sampling of mine haul roads. Any areas of roadbeds that exceed the remedial objective for gamma radiation (2.5 uSv/hr above background) will be remediated. Section 2.2.6.2 of the RAP identifies that the remedial objective for gamma dose rate at Rayrock is 2.5 micro Sieverts per hour (µSv/hr).TG comment 9 noted that soils around the site have been identified as containing contaminants of concern at concentrations greater than environmental quality guidelines. Uranium was noted in particular due to the long half-life of decay products and the TG asked whether the HHERA process will be repeated or built into the post-monitoring program. <ul style="list-style-type: none"> <li>▪ In response to TG comment 9, CIRNAC-CARD noted that if it is confirmed that site conditions have deteriorated from pre-remediation conditions then a follow up HHERA process may be warranted.</li> </ul> </li> </ul>	
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		<ul style="list-style-type: none"> <li>○ GWNT-ENR comment 3 from the HHERAs review asked for clarification on remediation activities for spilled tailings, and whether they align with the HHERA recommendations. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that the spilled tailings will be excavated and placed in the CDF, but in areas where they support larger plants or cannot be easily removed, will be left in place, as the tailings were shown to not hurt people or animals. CIRNAC-CARD stated that these proposed activities are in line with the HHERA.</li> </ul> </li> <li>○ WLWB comment 2 from the HHERAs review asked how long radioactivity was expected to be a potential hazard at each site based on the current status of the sites. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that radioactivity would continue to be an issue for the foreseeable future, and that remedial action is designed to reduce exposure but cannot eliminate the source. It was noted that the Sun Rose site mitigations proposed in the RAP will address radioactivity for the foreseeable future. It was also noted that the Rayrock mitigations proposed in the RAP will address radioactivity for the foreseeable future but may require minor maintenance to continue to achieve goals. This maintenance will be part of continued licensing under the CNSC (as referred to above).</li> </ul> </li> <li>• Additional potential mitigations identified by the Board <ul style="list-style-type: none"> <li>○ Standard conditions (i.e., Conditions 67, 68, 86, 87, 95, 97, and 98 from the Standard Land Use Permit Conditions List) related to use, storage, handling, and ultimate disposal of any chemical or toxic material and fuel storage can be included in the Permit to mitigate potential impacts.</li> <li>○ Standard conditions (i.e., Part I Conditions 1, 2, 3, and 11 from the Standard Water Licence Conditions list) related to Closure and Reclamation can be included in the Licence to mitigate potential impacts.</li> </ul> </li> </ul>	
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		<ul style="list-style-type: none"> <li>○ Any measures for waste removal as noted in response to TG comment 7 could be included in the Waste Management Plan and Spill Contingency Plan if deemed necessary.</li> </ul>	
Water flow or level changes	Withdrawal of water from a watercourse; diverting water	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ The Applications considered potential impacts of dewatering of Mill Lake and discharge after treatment to Sherman Lake to water levels.</li> <li>▪ The change to flow from Mill Lake during remediation to facilitate drainage through Mill Creek and stop Mill Lake from refilling may affect water flow or cause level changes.</li> <li>▪ The withdrawal of water for use on Rayrock South, Rayrock North, and Current Tłıchł Alignment winter roads, may impact water levels</li> <li>▪ The withdrawal of water for use in camp and dust suppression may impact water levels.</li> <li>▪ Excessive water extraction has the potential to impact fish and fish habitat, especially from ice-covered water bodies through oxygen depletion, loss of over-wintering habitat, and/or reductions in littoral habitat (see DFO Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut).</li> </ul> </li> <li>○ Proposed Mitigations <ul style="list-style-type: none"> <li>▪ The Remediation Action Plan outlines how impacts to the Sherman Lake level owing to withdrawal from Mill Lake were considered and determined there was a negligible effect on Sherman Lake water levels.</li> <li>▪ The RAP notes that all capped areas and the bottom of the lake will be made to drain into Sherman Lake through Mill Creek, which is the same place that the Mill Lake drains now.</li> <li>▪ The withdrawal expectations of water for camp operations, washing/dust control, and winter road</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>

		<p>construction were outlined in Water Licence Application and stated that maximum annual withdrawals from each waterbody were proposed in accordance with a draft estimation method provided by the MVLWB.<sup>12</sup></p> <ul style="list-style-type: none"> <li>▪ For North and South Rayrock spur winter roads, the Application proposed a maximum annual withdrawal from each waterbody in accordance with the proposed estimation method provided by the Land and Water Boards of the Mackenzie Valley and stated that Maximum Annual Withdrawals may be modified following bathymetry surveys of the Lakes. For the Current Tł̄chq̄ Alignment, the Application states that sources will be based on “historical withdrawal sites”.</li> </ul> <ul style="list-style-type: none"> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ Since no specific lakes were identified as water sources to construct the current Tł̄chq̄ Winter Road, Board staff asked CIRNAC-CARD to clarify whether it was to be considered as part of the application, and how potential impacts from use of water sources for mitigated/managed. (WLWB staff comment 10). <ul style="list-style-type: none"> <li>▪ In response, CIRNAC-CARD confirmed that water use for winter road construction along the current Tł̄chq̄ Winter Road alignment was part of the scope of the application. CIRNAC-CARD stated that it was unsure at this time, if construction of the Tł̄chq̄ Winter Road will be required for the Project (i.e., if there will be realignment or if the remediation contractor will need to overbuild to meet required capacity) and that clarity on mitigations for water withdrawal for winter road building will be obtained from proposals and plans of the remediation contractor in the autumn of</li> </ul> </li> </ul> </li> </ul>	
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<sup>12</sup> See WLWB website for [DRAFT - Method for Determining Available Winter Water Volumes for Small-Scale Projects](#)

		<p>2021. The Board understands ‘overbuild’ to mean addition of ice or snow thickness on the existing road.</p> <ul style="list-style-type: none"> <li>▪ It was noted in the Land Use Permit Application that CIRNAC-CARD requested a 100 m buffer to either side of the current Tł̨chq Winter Road alignment if necessary, and no concerns were raised during the review. The Board notes that if a change this alignment and footprint specifications were to be necessary, additional screening may be required.</li> <li>○ Board staff also asked for clarification on water use outlined in Section 7 of the Water Licence Application, and how capacity of water sources from Sherman Lake, Mill Lake, and Chico Lake were calculated (WLWB comment 9). <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded with methods for capacity calculations, and the available capacity for Sherman Lake.</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>• Additional mitigations identified by the Board <ul style="list-style-type: none"> <li>○ Standard conditions (i.e., Part D, conditions 1 and 2 from the Water Licence Standard Conditions List) related to water use can be included in the Licence to mitigate potential impacts.</li> <li>○ If needed, the Board may determine through the licensing/permitting process whether a management plan is required to address water use.</li> <li>○ The Board may consider conditions related to the 2010 DFO Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut and/or DRAFT - Method for Determining Available Winter Water Volumes for Small-Scale Projects in the licensing and permitting process.</li> </ul> </li> </ul>	
Drainage pattern changes	Withdrawal of water from a watercourse; diverting water; watercourse alteration	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Sherman Lake levels could be impacted by receiving water from Mill Lake (from Water Licence Application). The Remediation Action Plan outlines</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the resolution of comments raised by Parties, the Board does not believe these activities associated with the Applications might have a</li> </ul>

		<p>how impacts to the Sherman Lake level owing to withdrawal from Mill Lake were considered and it was determined there was a negligible effect on Sherman Lake water levels.</p> <ul style="list-style-type: none"> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ Board staff asked if withdrawal and diversion of water from Mill Lake along with the watercourse alteration where Mill Creek leaves Mill Lake could affect drainage pattern of Mill Creek and Kwets̓tia (WLWB staff comment 25). <ul style="list-style-type: none"> <li>▪ In response CIRNAC-CARD noted that the Mill Lake watershed will not be changed. The quantity of water flowing through Mill Creek after construction should be the same or greater than is currently flowing (as the evaporation losses will be minimal and more of the water reporting to the watershed may flow through the creek). Therefore, impacts to Mill Stream and Kwets̓tia are not expected.</li> <li>▪ The Board notes the RAP describes that all capped areas and the bottom of the lake will be made to drain into Sherman Lake through Mill Creek, which is the same place that the Mill Lake drains now.</li> </ul> </li> </ul> </li> </ul>	<p>significant adverse impact on the environment or might be a cause of public concern.</p>
<p>Changes in water quality</p>	<p>Construction and use of a watercourse crossing (temporary winter road crossings and temporary crossing of Mill Stream); direct or indirect disposal of waste into water; excavation or stockpiling of earth or gravel adjacent to a watercourse; use of motorized or heavy equipment adjacent to, within, or through a watercourse; construction and long-term performance of CDF in Mill Lake</p>	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Construction of temporary winter road water crossing at Emile River or Marian River and the temporary crossing of Mill Stream could affect water quality through erosional issues.</li> <li>▪ Discharge of treated effluent to Sherman Lake and seepage/runoff from site could affect water quality.</li> <li>▪ Migration of water and sediment can impact downstream ecological receptors including aquatic and terrestrial systems (from SECP); turbidity and sedimentation from construction works can impact aquatic environments.</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described, the resolution of comments raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>



		<ul style="list-style-type: none"> <li>▪ Exposed soils adjacent to water bodies can erode and cause sedimentation, including stockpiled organics and borrow materials (from SECP).</li> <li>▪ Operation of equipment in a watercourse could cause sedimentation and erosion issues.</li> <li>○ Proposed Mitigations: <ul style="list-style-type: none"> <li>▪ The SECP is proposed as a requirement of the Water Licence for Board approval includes the following: crossings will be designed to prevent shoreline erosion during use and after abandonment and melt; the Mill Stream crossing will have a preliminary assessment of drainage and erosion potential prior to construction, and sediment and erosion control measures will be required to contain sediment and erosion from use of trail and crossing.</li> <li>▪ As per a draft Water Licence submitted with the Application, Effluent Quality Criteria (EQC) are to be established for Discharge of treated water from Mill Lake; Aquatic Effects Monitoring Program (AEMP) to be in place to monitor for effects from the Discharge and mitigate as necessary; and a Surveillance Network Program (SNP) also to be in place for water sampling throughout waterbodies.</li> <li>▪ The SECP also details the mitigative measures to minimize impacts of construction activities. This would include requiring quarry operations to not be established within 100 m of ordinary high water mark of any waterbody or watercourse.</li> <li>▪ Per the Land Use Permit Application, capping of sources of contaminations (tailings and waste rock) during remediation would mitigate contamination of run-off/groundwater.</li> </ul> </li> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ The submitted Spill Contingency Plan states that if water is not sufficient alternative measures such as calcium chloride flakes</li> </ul> </li> </ul>	
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		<p>may be used for dust control. The TG noted that runoff of calcium chloride to waterways could affect aquatic vegetation and lead to oxygen depletion in water bodies (TG comment 11).</p> <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD wrote that its approved dust control agents include calcium chloride but preference would be given to biodegradable, cellulose-based products with minimal environmental impact and have been used successfully on other remediation projects. Additional potential Board mitigation is detailed below.</li> </ul> <p>○ Parties commented on potential of seepage from the in situ waste rock, soils, and tailings to impact the receiving water bodies (ECCC 10, 11; WLWB comment 1). ECCC recommended that the proponent confirm the HHERA conclusions regarding waste rock and soil left in place through monitoring (comment 2 from the HHERA review).</p> <ul style="list-style-type: none"> <li>▪ In response to ECCC comments 10 and 11, CIRNAC-CARD noted that the soils, waste rock, and tailings left in place are generally of low volume and limited metal concentrations and were not identified in the HHERA as risks to human health or the environment. For ECCC comment 2 from the HHERA, CIRNAC-CARD responded that the residual soil left is expected to be comprised of a thin veneer on top of bedrock, and cannot identify practical methods of monitoring these locations aside from additional soil sampling, which is not expected to provide different results. In response to the WLWB comment, CIRNAC-CARD responded that the risk associated would be realized at receiving water bodies, and with the exception of Mill Lake, both HHERAs indicated that the water bodies at the sites did not represent a human or environmental risk. CIRNAC-CARD noted that if any actions were to have created a seepage risk, it would have been quantified in the HHERAs. Additional potential Board mitigation is detailed below.</li> </ul>	
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		<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>▪ In response to WLWB comment 1, CIRNAC-CARD noted that waste rock at Sun Rose would be covered, and that the waste rock has had no measurable impact on down-gradient waterbodies, and as such did not present a risk that would require monitoring of distant down gradient water bodies.</li> </ul> </li> <li>○ TG comments 59 and 64 from the HHERAs review asked about sampling for potential contaminated runoff/ponded water/drainage from the Sun Rose site. The TG asked about potential for ponded water to be periodically consumed by wildlife. <ul style="list-style-type: none"> <li>▪ In response to TG's comments, CIRNAC-CARD responded that only small quantities of water (likely less than 1 m<sup>3</sup>) were expected to collect and pool, and therefore sampling would not provide meaningful results. CIRNAC-CARD also noted that this ponded water would not be considered a reliable source of drinking water on a regular basis, and would not be anticipated to significantly change predicted annual dose to ecological receptors. Additional potential Board mitigation is detailed below.</li> </ul> </li> <li>○ ECCC comment 4 noted that the Mill Lake clay lined Confined Disposal Facility (CDF) could have potential seepage over time as the CDF will become saturated. <ul style="list-style-type: none"> <li>▪ In response CIRNAC-CARD wrote that the cap of the CDF will be graded to promote drainage and the project's sediment remediation expert has informed CIRNAC that the cap will not become saturated. The CDF will include a sump and seepage will be monitored post-remediation but seepage is not expected to be significant. Additional potential Board mitigation is detailed below.</li> </ul> </li> <li>○ ECCC comment 5 and GNWT-ENR comment 12 noted respectively that radionuclides and zinc were not included in the discharge parameter measures.</li> </ul>	
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		<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded the parameters for the Ra-226 and Pb-210 radionuclides will be monitored as part of the AEMP, and could be included in the EQCs. CIRNAC-CARD also noted that Zinc would be included in the screening criteria, and that the EQCs listed in the Application should be replaced with those in the AEMP.</li> </ul> </li> <li>○ GNWT-ENR comment 32 noted that remedial work of the Tailings Containment Areas (TCAs) may cause release of tailings to waterbody, which could trigger TSS action levels and indicate that there are additional metal loadings.           <ul style="list-style-type: none"> <li>▪ In response CIRNAC-CARD noted that SNP monitoring stations have been established in the Alpha Lake section of Sherman Lake, Beta Lake, and Gamma Lake to measure potential changes in water quality due to civil works on the Tailings Containment Areas (TCAs) and the AEMP will address water quality issues and action levels with respect to these monitoring points.</li> </ul> </li> <li>○ The TG stated that there “is some concern regarding the design, implementation, build and long term performance of the CDF to be constructed in Mill Lake” and recommended independent verification of the design and approach may be warranted (TG comment 27). In addition, the TG specifically identified design considerations.           <ul style="list-style-type: none"> <li>▪ In response CIRNAC-CARD wrote that the CDF design will continue to be discussed with the Tłı̨chǫ and Independent Peer Review Panel (IPRP) in November 2020 and will include input from CIRNAC-CARD’s IPRP and the Tłı̨chǫ. Additional potential mitigation is detailed below.</li> </ul> </li> </ul> </li> <li>• Additional potential mitigations identified by the Board:       <ul style="list-style-type: none"> <li>○ Standard conditions (i.e., Conditions 7, 8, 9, 38, 40, 48, 49, 50, 51, 52, 53, 54, 55 from the Standard Land Use Permit Condition List) related to location and area, and control or prevention of</li> </ul> </li> </ul>	
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		<p>erosion can be included in the Permit to mitigate potential impacts.</p> <ul style="list-style-type: none"> <li>○ Standard conditions (i.e., Part F Conditions 1, 2, 3, 9, 13, 14, 18, and 20; Part G Conditions 1, 3, 6, and 7; and Part H Conditions 1 and 2) related to Waste and Water Management, and Aquatic Effects Monitoring, Spill Contingency Planning can be included in the Licence to mitigate potential impacts.</li> <li>○ The Board may choose to establish EQC and SNP stations in the Water Licence in order to protect the downstream Receiving Environment (from both direct and potentially cumulative effects), based on the MVLWB Water and Effluent Quality Management Policy. Standard conditions Part F conditions 19, 21, and 22 related to Effluent Quality Criteria can be included in the Licence.</li> <li>○ The Board may consider a requirement for a seepage monitoring plan through the Water Licensing process.</li> <li>○ The Board may choose to include licence condition requirements for submissions related to the CDF Design, construction, and/or monitoring. The Board may consider the need for an independent review of CDF submissions, as requested by the TG comment 27.</li> <li>○ With respect to TG comment 11, the Board may consider revisions to management plans and studies to address the potential use of calcium chloride for dust suppression.</li> </ul>	
Changes to aquatic habitat; effects to aquatic species health	Direct or indirect disposal of waste into water; Use of motorized or heavy equipment adjacent to, within, or through a watercourse; withdrawal of water from a watercourse	<ul style="list-style-type: none"> <li>● Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential impacts <ul style="list-style-type: none"> <li>▪ Operation of equipment in or adjacent to aquatic environments is expected for remediation work and could create sedimentation issues in aquatic habitats.</li> <li>▪ Withdrawal of water could affect health depending on the volume of water withdrawn and location of withdrawal.</li> <li>▪ Disposal of wastewater from treatment of Mill lake water or indirect flow from sites to aquatic environment could have effects on health.</li> </ul> </li> <li>○ Proposed Mitigations</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Based on the mitigations described, the resolution of comments raised by parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Water Licence Application includes proposed mitigations of any equipment operation in or adjacent to aquatic environments will be minimized and conducted under strict sediment and erosion control measures; disturbance to aquatic environment will be limited to Mill Lake (habitat is already impacted and requires remediation); sediment and erosion control measures to be used as required; turbidity monitoring to be used for all in/near stream activities.</li> <li>▪ CIRNAC-CARD has proposed maximum annual withdrawals from each waterbody, with calculations specific to winter water withdrawal as per the <i>DFO Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut</i> (June 2010), and verification/measurement of water withdrawal locations prior to withdrawal to ensure level under ice water and as deep as possible.</li> <li>▪ From the proposed Water Licence draft submitted by CIRNAC-CARD, an AEMP can monitor effects of discharge of treated water from Mill Lake to Sherman Lake; the use of Effluent Quality Criteria (EQC) can manage discharge concentrations after treatment.</li> </ul> <ul style="list-style-type: none"> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ Having two waste treatment systems for Mill Lake effluent discharging to Sherman Lake could have impacts to fish and fish habitat due to rise in water levels (DFO comment 1; GNWT-ENR comment 3). <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that hydrological studies were conducted under a maximum volume of water discharge at 3000 m<sup>3</sup> per day which would account for two waste treatment systems. This daily discharge represents 0.17% of the receiving Sherman Lake volume. Based on this information CIRNAC does not anticipate these volumes will cause an issue.</li> </ul> </li> </ul> </li> </ul>	
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		<ul style="list-style-type: none"> <li>○ Withdrawal of water for winter road construction could affect fish health through direct contact with piping (DFO comment 3). <ul style="list-style-type: none"> <li>▪ The DFO interim code of practice for end-of-pipe fish protection screens for small water intakes is to be used for water withdrawal for water usage related to the project (response to DFO comment 3). The Board notes that this is also a Standard Water Licence condition under Part D, condition 6.</li> </ul> </li> <li>○ GNWT-ENR comment 1 noted that the timing of discharge from water treatment facility to Sherman Lake may have impacts to aquatic species. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that the discharge rate and window will be determined by the Remediation Contractor following procurement.</li> </ul> </li> <li>○ GNWT-ENR comment 16 noted that it needs to be ensured that discharge to the receiving environment is not acutely toxic. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that a condition in water licence can stipulate that discharge to receiving environment isn't acutely toxic; it is anticipated by CIRNAC that given low and strict criteria being applied to discharge, acute toxicity is unlikely. The Board notes that there is a Standard Water Licence condition related to acute toxicity under Part F, condition 20.</li> </ul> </li> <li>○ GNWT-ENR comment 9 and TG comments 14, 32, 36, 40, 41, 43, and 44 from the HHERAs review were in relation to benthic sampling. The TG stated additional benthic surveys were warranted. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded with additional information on how the benthic data was collected and treated in the HHERAs, and noted that benthic monitoring is included as part of the AEMP Design Plan. The Board notes that the Standard Water Licence Conditions includes a condition for the submission of an AEMP Design Plan for approval (Part G, condition 2).</li> </ul> </li> </ul>	
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		<ul style="list-style-type: none"> <li>○ DFO comment 2 noted that the method selected for treated effluent discharge to Sherman Lake may have potential impacts on fish habitat. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that the AEMP will outline the discharge area, and the design of the Plan is intended to monitor for potential aquatic effects due to discharge, including monitoring of fish and fish habitat; CIRNAC noted it will continue to engage with DFO after the AEMP is submitted and through project execution.</li> </ul> </li> <li>○ DFO comment 4 noted that low energy blasting required for Mill Lake work may impact fish and fish habitat of Sherman lake (DFO comment 4). <ul style="list-style-type: none"> <li>▪ In response, CIRNAC-CARD noted that it was considered unlikely that the blasting would produce a pressure that would affect Sherman lake, but CIRNAC-CARD indicated guidance/input from DFO would be appreciated.</li> </ul> </li> <li>● Additional potential mitigations identified by the Board: <ul style="list-style-type: none"> <li>○ The Board may consider licence requirements for a diffuser construction plan and/or dewatering plan.</li> <li>○ The Board may consider licence requirements for a Discharge Management Plan as per Standard Water Licence Conditions Part F, condition 14, with respect to GNWT-ENR comment 1.</li> <li>○ In the response to an Information Request from the WLWB, DFO clarified that the Request for Review process to be used by CIRNAC and DFO with respect to the Rayrock project will assess the potential for harmful alteration, disruption or destruction of fish habitat for projects near water and that DFO ensures that potential impacts to fish and fish habitat are avoided, mitigated or appropriately offset.<sup>13</sup></li> </ul> </li> </ul>	
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<sup>13</sup> See WLWB Online Registry for [Rayrock – Information Request Response from DFO – Nov 25 20](#)



Changes in air quality	Mobilization and operation of equipment for construction and operational activities; use of incinerator.	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Increased dust levels could result from equipment on site and cause changes to air quality.</li> </ul> </li> <li>○ Proposed Mitigations: <ul style="list-style-type: none"> <li>▪ The SECP submitted with the application, and proposed as a requirement of the Water Licence for Board approval, includes dust controls; control transport of dust and fine soil by wind; apply water to roads and trails as necessary; visual inspections for dusty conditions; stop work that releases dust on high-wind days; apply dust control product to areas of exposed soil; apply calcium chloride to roads if water application is insufficient; air quality monitoring is to be conducted at two sites for uranium, copper, and airborne dust, and checked against Health Canada guidelines.</li> </ul> </li> </ul> </li> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ TG comment 63 noted that improper incineration of an incinerator can release significant pollution. <ul style="list-style-type: none"> <li>▪ In response CIRNAC-CARD outlined that the selected Remediation contractor is expected to supply an incinerator that is appropriate for the operation that they propose, and meets or exceeds all applicable regulations.</li> </ul> </li> </ul> </li> <li>• Additional potential mitigation identified by the Board: <ul style="list-style-type: none"> <li>○ The Board may consider whether incinerator specifications should be included in the WMP.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described, the resolution of comments raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>
Harm to living things (from air)	Mobilization and operation of equipment for construction and operational activities; exposure of soils and tailings	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Dust and windblown tailings are a concern on-site for worker health and safety during the summer months.</li> </ul> </li> <li>○ Proposed Mitigations</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described above and the resolution of comments raised by Parties, and the ability to resolve uncertainty through the licensing and permitting</li> </ul>

		<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>▪ The SECP submitted with the Applications, and proposed as a requirement of the Water Licence for Board approval, includes dust controls; control transport of dust and fine soil by wind; apply water to roads and trails as necessary; visual inspections for dusty conditions; stop work that releases dust on high-wind days; apply dust control product to areas of exposed soil; apply calcium chloride to roads if water application is insufficient; stopping work if dust particulate concentrations are detected above requirements; air quality monitoring is to be conducted at two sites for uranium, copper, and airborne dust, and check against Health Canada guidelines. The Board notes that the SECP addresses impacts of dust deposition throughout the site in addition to sediment and erosion.</li> </ul> </li> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ TG comment 72 identifies that increased dust levels could result from equipment on site and affect livings things. The TG recommended that air quality monitoring of total suspended particulate (TSP), particulate matter 10 (PM<sub>10</sub>), and particulate matter 2.5 (PM<sub>2.5</sub>) should be conducted in real time to ensure maximum protection of workers and the environment. The TG noted that CIRNAC-CARD should consider dust generation at the Sun Rose site and if monitoring/mitigation is required. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD noted that the SECP includes plans for particulate monitoring. The Board also notes that s. 1.3.2 of the SECP identifies that Sediment and Erosion Controls (SEC) appropriate for locations will be implemented, including at borrow sources that will be used for capping.</li> <li>▪ In response, CIRNAC-CARD wrote that the Sun Rose site scope is short enough in schedule and limited in work so dust generation is not considered likely to be an issue.</li> </ul> </li> </ul> </li> </ul>	<p>process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</p>
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		<ul style="list-style-type: none"> <li>○ ECCC comment 3 noted that dust generation during Mill Lake sediment dewatering/drying process and movement could be potentially hazardous and stated that alternative methods such as geotubes may contain the sediment particles during the dewatering/drying process (ECCC comment 3). <ul style="list-style-type: none"> <li>▪ In response, CIRNAC-CARD wrote that it anticipated that geotextile tubes will be used in the dewatering process and exposed sediments will require dust management. CIRNAC-CARD also noted that it was expected that the Remediation Contractor’s Sediment and Erosion Control Plan will address all forms of migrant dust.</li> </ul> </li> <li>● Additional potential mitigations identified by the Board <ul style="list-style-type: none"> <li>○ The Board may consider a licence condition requirement for a dewatering plan.</li> <li>○ The Board may consider Reclamation research plans for uncertainties related to Closure Planning</li> </ul> </li> </ul>	
Direct loss of vegetation	Clearing of timber, brush, or vegetation mat; stripping of overburden; construction, maintenance and operation of lines, trails, or rights-of-way; construction of structures; reclamation activities; use of motorized and heavy equipment; transfer, storage, and use of petroleum products and/or chemicals; excavation or stockpiling of earth and/or soil	<ul style="list-style-type: none"> <li>● Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Clearing for remediation/reclamation activities, roads/right-of-ways, and structures could require removal of vegetation.</li> <li>▪ Activities requiring use of equipment could affect vegetation.</li> <li>▪ Spills during transfer, storage, and use of petroleum products and/or chemicals might directly impact vegetation.</li> <li>▪ If earth/soil is stockpiled on top of vegetation, there could be a direct loss.</li> </ul> </li> <li>○ Proposed Mitigations: <ul style="list-style-type: none"> <li>▪ The SECP submitted with the application and proposed as a requirement of the Water Licence for Board approval includes a number of mitigations including: minimize stripping of topsoil and vegetation, minimize exposure of bare soil, prevent</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Some loss of vegetation as a result of the Project appears inevitable but the responses and information provided indicate that all efforts will be made to keep this at a minimum.</li> <li>● Based on the mitigations described and the resolution of comments raised by Parties, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>

		<p>rutting of ground surface through grading, landscape management, and alternative routings, no operation of equipment on ground unless snow-covered.</p> <ul style="list-style-type: none"> <li>▪ The RAP includes a number of mitigations such as: in areas of impacted soils that don't pose a risk to human, vegetative, or human health, leave vegetation and soils in place; any timber salvaged will be offered to community groups; stockpiling of materials is to occur on already disturbed areas.</li> <li>▪ Water Licence and Land Use Permit Applications indicate that existing access routes through the site will be utilized where possible, and winter road access routes will use existing alignments with minimal ground disturbance and vegetation removal. Where possible clearance will be limited to previously disturbed areas; the only areas to be accessed that have never been disturbed are for borrow material for remediation. Revegetation will occur in disturbed areas and include bio-engineering approaches.</li> <li>▪ A Spill Contingency Plan submitted with the application and proposed as a requirement of the Water Licence for Board approval, includes ensuring the containment of spills on land and training of employees for spill prevention and spill response plan.</li> </ul> <ul style="list-style-type: none"> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ ECCC comment 7 noted that vegetation around areas of contaminated soils is expected/assumed to be contaminated and should be removed and disposed of in the CDF. <ul style="list-style-type: none"> <li>▪ In response, CIRNAC-CARD responded that the HHERA deemed vegetation around contaminated soils that is to be removed is not of remedial concern and clearing only needs to include standard disposal (bucking up and dispersal in adjacent bush).</li> </ul> </li> </ul> </li> </ul>	
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		<ul style="list-style-type: none"> <li>○ Endangered vegetation species Hairy Braya and Special Concern vegetation species Mackenzie Hairgrass and Nahanni Aster were identified to exist or potentially exist at the project sites, and WLWB staff asked about potential impacts and mitigations for these species (WLWB staff comment 6). <ul style="list-style-type: none"> <li>▪ In response CIRNAC-CARD noted that areas of most site disturbance were expected to be at former Rayrock airstrip borrow area and the Sun Main rock stockpile WR1 capping area; pre-disturbance surveys of these areas are to be undertaken, and any sensitive species identified would be re-located prior to construction.</li> </ul> </li> <li>○ Board staff asked about uncertainty regarding what vegetation might be removed or compacted during the Project and the extent of potential removal/compaction (WLWB staff comment 4). <ul style="list-style-type: none"> <li>▪ As part of its response, CIRNAC-CARD clarified that the vegetation in the Rayrock area falls in the Great Slave Upland HB Ecoregion, which is characterized by a “mixed forest cover of black spruce, jack pine, and paper birch (Ecosystem Classification Group 2008)”. CIRNAC-CARD also wrote that all vegetation in borrow source areas will be stripped and saved for rehabilitation; vegetation along road alignments will be bucked up and deposited on sides of trail or saved for rehabilitation; vegetation in the camp will be thinned but not cleared.</li> </ul> </li> <li>● Additional potential mitigations identified by the Board <ul style="list-style-type: none"> <li>○ Standard conditions (i.e., conditions 11, 81, and 101 from the Standard Permit List) with respect to right-of-way widths and vegetation can be included in the Permit to mitigate potential impacts.</li> </ul> </li> </ul>	
Compaction of vegetation	Clearing of timber, brush, or vegetation mat; stripping of	<ul style="list-style-type: none"> <li>● Identified/Explained in the Application <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Based on the mitigations described, the lack of concerns</li> </ul>

	<p>overburden; construction, maintenance and operation of lines, trails, or rights-of-way; construction of structures; reclamation activities; use of motorized and heavy equipment</p>	<ul style="list-style-type: none"> <li>▪ Remediation and supporting activities could cause compaction of vegetation directly or through use of equipment over vegetation, or stockpiling of materials on vegetated areas</li> <li>○ Proposed Mitigations <ul style="list-style-type: none"> <li>▪ The SECP was submitted with the application and proposed as a requirement of the Water Licence for Board approval.</li> <li>▪ CIRNAC-CARD identified that the current permit for the site includes the condition shall be no off-road vehicle travel in areas unless snow-covered.</li> <li>▪ The Water Licence Application indicates that existing access routes through the site will be utilized where possible, and winter road access routes will use existing alignments with minimal ground disturbance and vegetation removal.</li> <li>▪ The RAP indicates that stockpiling of materials is to occur on already disturbed areas.</li> </ul> </li> <li>• Additional potential mitigations identified by the Board <ul style="list-style-type: none"> <li>○ Standard conditions (i.e., conditions 9, 26, 31, 44, 45, 46, and 47 from the Standard Permit List) related to vegetation can be included in the Permit to mitigate potential impacts.</li> </ul> </li> </ul>	<p>raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</p>
<p>Direct loss or removal of habitat, dens, or nests</p>	<p>Clearing of timber, brush, or vegetation mat</p>	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Clearing activities could affect habitat, dens, or nests</li> </ul> </li> <li>○ Proposed Mitigations: <ul style="list-style-type: none"> <li>▪ The Wildlife Management and Monitoring Plan (WMMP) submitted with the application includes: preconstruction surveys in areas to be disturbed to confirm rare/endangered species not present; minimize areas requiring disturbance of vegetation; vegetation clearing avoided during migratory bird nesting period (if required do bird surveys in consultation with territorial and federal authorities).</li> </ul> </li> </ul> </li> <li>• Identified during the Public Review</li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described, the resolution of comments raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>

		<ul style="list-style-type: none"> <li>○ Rayrock project sites are in nesting zones B7 and C8 where regional nesting period for migratory birds extends from early May to late August; clearing of forested areas and demolition of buildings and infrastructure could affect nesting (ECCC comment 13). <ul style="list-style-type: none"> <li>▪ In response to ECCC comment 13, CIRNAC-CARD wrote that it plans to avoid vegetation clearing during the migratory bird nesting period (early May to late August), and if area avoidance is not possible due to site activities, nest surveys will be conducted prior to activity.</li> </ul> </li> <li>○ Unoccupied raptor nests may be affected by vegetation clearing or ground clearing and were not mentioned in the WMMP (GNWT-ENR comment 43). <ul style="list-style-type: none"> <li>▪ In response to GNWT-ENR comment 43, CIRNAC-CARD noted that the WMMP will be updated to include unoccupied raptor nests, and provisions to contact GNWT-ENR in the event of requiring a General Wildlife Permit to determine if a permit to disturb or destroy a nest/eggs can be obtained if disturbance or destruction of an unoccupied raptor nest cannot be avoided and all other mitigation options have been ruled out.</li> </ul> </li> <li>○ WRRB comment 9 noted that site activity could affect bat roosts and hibernaculum; bat hibernaculum are protected under the NWT Wildlife Act 51(2). <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that appropriate survey methods were to be used in consultation with GNWT-ENR and ECCC.</li> </ul> </li> <li>○ The form or extent of disturbance to direct habitat loss from surface disturbances was unclear (WLWB staff comment 8) <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that habitat disturbance is associated with the sourcing of borrow material, and up to 22 ha may be disturbed.</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>● Additional potential mitigations identified by the Board</li> </ul>	
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		<ul style="list-style-type: none"> <li>○ Standard condition (i.e., condition 70, from the Standard Permit List) related to wildlife habitat can be included in the Permit to mitigate potential impacts.</li> <li>○ The Board may choose to include a licence condition requirement for the WMMP to mitigate threat of serious harm to wildlife and habitat (as per WRRB comment 3).</li> </ul>	
Direct injury or mortality of wildlife	Stripping of overburden; construction of structures; increased traffic risk to wildlife	<ul style="list-style-type: none"> <li>● Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Operation of equipment in stripping, construction, and general site traffic could directly injure or cause mortality of wildlife due to operation of heavy equipment and movement of overburden.</li> <li>▪ Stripped areas of overburden could be left uneven and pose a risk to wildlife.</li> </ul> </li> <li>○ Proposed Mitigations: <ul style="list-style-type: none"> <li>▪ The WMMP submitted with the Application outlines potential mitigations including re-construction surveys; regrade/contour/revegetate borrow sources/excavations/capped areas; a wildlife Monitor is to accompany work crews; project schedules will be developed to consider wildlife presence and key life stages; and speed limits to be established.</li> </ul> </li> </ul> </li> <li>● Additional potential mitigations identified by the Board <ul style="list-style-type: none"> <li>○ The Board may choose to include a licence condition requirement for the WMMP to mitigate threat of serious harm to wildlife and habitat (as per WRRB comment 3).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Based on the mitigations described, the lack of concerns raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>
Effects on wildlife health	Construction of structures; noise; transfer, storage, and use of petroleum products and/or chemicals; on-site disposal of domestic wastes; residual impacts from Gamma/Beta/Alpha Lakes	<ul style="list-style-type: none"> <li>● Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Spills of and access to petroleum products and/or chemicals on site could be detrimental to wildlife health.</li> <li>▪ Domestic wastes being disposed of on-site might pose a risk to wildlife.</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Based on the mitigations described, the resolution of comments raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not</li> </ul>



		<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>▪ Impacts to Mill Lake represent a risk to wildlife in the area, with aquatic receptors at the greatest risk (Land Use Permit Application).</li> </ul> </li> <li>○ Proposed Mitigations:           <ul style="list-style-type: none"> <li>▪ As per the WMMP submitted with the Application, mitigations can include: demolitions to be staged to minimize impacts and reduce dust production; hazardous waste products to be stored in secured containers in north borrow area and transported to licensed facilities as soon as practical; workers to adhere to Spill Contingency Plan; and outlined wildlife deterrent actions if there is a risk to wildlife; burning of scrap wood to be under controlled conditions and in areas of minimal surrounding vegetation.</li> <li>▪ Remediation of Mill Lake area will address risks to wildlife from Mill Lake due to the nature of Mill Lake being identified as a risk in itself (Land Use Permit Application).</li> </ul> </li> </ul> </li> <li>• Identified during the Public Review       <ul style="list-style-type: none"> <li>○ The WMMP does not include a reference to surveys for nests or bat hibernaculum prior to demolition of infrastructure (WRRB comment 8).           <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that Section 4.3 of the WMMP is to include requirement of surveys of bat hibernaculum prior to demolition</li> </ul> </li> <li>○ Additional noise through blasting activities may be harmful and can cause indirect disturbance to large mammal species including boreal caribou (WRRB comments 6 and 10); visual scans for wildlife prior to activities can be limited in success on the ground (GNWT-ENR comment 44 and WRRB comment 11).           <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD wrote that blasting is only to proceed if no large animals are detected; blasting to be preceded with air horn blasts to deter wildlife from the areas but could expect short term impacts to fauna; the pre-blast survey will be with a 500 m</li> </ul> </li> </ul> </li> </ul>	<p>believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</p>
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		<p>survey radius within 1 hour before the blasting (response to WRRB comments 6 and 10); and cross referencing boreal caribou collar data will be included in pre-blast visual scan surveys for which CIRNAC will connect with GNWT-ENR for incorporation.</p> <ul style="list-style-type: none"> <li>○ GNWT-ENR comment 46 noted that the project area overlaps with the ranges of the NWT listed and/or prelisted species Boreal Caribou, Barren-ground Caribou (excluding the Porcupine herd), and Little Brown Myotis. However, based on the nature, scale, scope, and location of the project, the likelihood of impacts to these species can be avoided or minimized if wildlife recommendations are implemented and wildlife mitigation and monitoring measures are applied (GNWT-ENR comment 46). These general recommendations were outlined in GNWT-ENR comments 47, 48, 49, 50, 51, and 52. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded to the general recommendations outlining how they were being incorporated in the Project.</li> </ul> </li> <li>○ Uncertainty was identified regarding impacts in Gamma/Beta/Alpha Lakes regarding downstream environment for benthic invertebrates and consequently for beaver/muskrat (TG comments 24 and 29). TG comments 46, 48, and 53 from the HHERAs review also recommended that further study/sampling of beaver/receptor samples from Gamma Lake was warranted. <ul style="list-style-type: none"> <li>▪ In response to TG comment 29, CIRNAC-CARD committed to supporting additional field studies (also applicable to TG comment 24). However, with the more recent responses submitted in the HHERAs review, it is unclear if these are still being considered by CIRNAC-CARD (see below).</li> <li>▪ In response to TG comments 46, 48, and 53 from the HHERA, CIRNAC-CARD responded that Gamma Lake was very small and does not have habitat to support</li> </ul> </li> </ul>	
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		<p>populations of these animals, and that negative effects were not expected.</p> <ul style="list-style-type: none"> <li>▪ The Board may consider additional mitigations as detailed below.</li> </ul> <ul style="list-style-type: none"> <li>○ TG comment 96 noted that the Mill Lake drainage area and eventual basin will pose a risk to wildlife during the project. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that the Mill Lake and basin area will have wildlife deterrence via site activity; the area is expected to be one of the busiest areas on site. The Board notes the submitted WMMP describes the proposed deterrents.</li> </ul> </li> <li>○ Handling of hazardous waste and disturbance to habitat is likely to pose a threat of serious harm to wildlife and habitat but the WRRB believes that the WMMP sufficiently mitigates serious adverse impacts from the Project (WRRB comment 3).</li> <li>○ Monitoring should be undertaken to avoid disturbance to wildlife and identify effectiveness of mitigations and/or identify where further mitigation is required (GNWT-ENR comment 51). <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that the WMMP's Wildlife Sighting Log and Wildlife Site Surveillance protocol to be followed as per Section 5.1.</li> </ul> </li> <li>○ Migratory birds have been observed using Mill Lake which contains levels of contaminants exceeding CCME and Thompson guidelines; mitigation and monitoring plan should include collection of detailed information on seasonal abundance and behaviour of birds using Mill Lake (ECCC comment 12). <ul style="list-style-type: none"> <li>▪ In response CIRNAC-CARD noted that the Bird Nest Monitoring Protocol includes twice-weekly monitoring surveys for nesting activities in the site area and would capture the seasonal abundance of migratory birds at Mill Lake. All migratory bird reports and observations will be reported monthly and summarized in Water Licence Annual Report.</li> </ul> </li> </ul> <p>• Additional potential mitigations identified by the Board</p>	
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		<ul style="list-style-type: none"> <li>○ The Board may choose to include a licence condition requirement for the WMMP to mitigate threat of serious harm to wildlife and habitat (as per WRRB comment 3). The Board notes that the Tłjchq Agreement s 12.5.1 requires that the WMMP is reviewed by the WRRB.</li> <li>○ Revisions to the WMMP through the WRRB or WLWB Boards' processes can be used to address any necessary changes or remaining uncertainty.</li> <li>○ With respect to the TG's recommendation regarding beaver sampling, the Board notes that the need for beaver sampling can be further discussed through this licensing/permitting process. The TG attributes potential impacts to beaver to the potential impacts to benthics. The Board may choose to include AEMP-related benthic sampling requirements as per Standard Water Licence conditions, including a requirement for response plans which describe the actions that will be taken by the Licensee in response to an Action Level exceedance. The Board notes that monitoring of beavers and associated habitat may be incorporated into the WMMP and/or closure criteria related to beavers may be incorporated into a CRP.</li> </ul>	
Human-wildlife conflicts	Increased human presence; on-site storage or disposal of wastes	<ul style="list-style-type: none"> <li>● Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Increased human presence in the area due to remediation work and camp establishment; expect short-term indirect disturbance (Land Use Permit Application).</li> </ul> </li> <li>○ Proposed Mitigations: <ul style="list-style-type: none"> <li>▪ A WMMP submitted with the application includes details for: potential use of wildlife deterrents by designated Wildlife Monitors; food wastes to be stored in closed/secured containers between regular incineration or removal from site; waste management awareness training; littering and feeding of wildlife prohibited; and the Waste Management Program to be monitored for efficiency and adaptive management used to improve the plan.</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● Based on the mitigations described, the resolution of comments raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>

		<ul style="list-style-type: none"> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ Storage of food and food contaminated wastes might attract animals; if food and food contaminated plastics are not incinerated, they will likely be a wildlife attractant (TG comment 58). <ul style="list-style-type: none"> <li>▪ In response, CIRNAC-CARD noted that the selected incinerator will comply with all regulatory requirements and be operated in accordance with manufacturer’s recommendations.</li> </ul> </li> <li>○ Cooking and food wastes can be wildlife attractants (TG comments 92, 93, and 94). <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD wrote that the remediation contractor will be required to develop a WMMP that considers food preparation and wastes as potential wildlife attractions and how methods of storage, preparation and disposal will be considered in context of wildlife attraction; kitchen configuration to be considered by remediation contractor in WMMP or SCP; section 4.2 of WMMP notes that “proper management of food and food wastes will also reduce chance of wildlife encroachment of the working area”.</li> </ul> </li> </ul> </li> <li>• Additional potential mitigations identified by the Board: <ul style="list-style-type: none"> <li>○ The Board may require an updated Waste Management Plan to address the proper storage and handling of wastes and mitigate potential attractants.</li> </ul> </li> </ul>	
Change to or loss of heritage resources	Construction, maintenance, and operation of lines, trails, or rights-of-way	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Limited Archaeological Impact Assessments (AIA) have been conducted on site.</li> </ul> </li> <li>○ Proposed Mitigations: <ul style="list-style-type: none"> <li>▪ As per Remedial Action Plan, AIAs to be conducted early in project to determine if there are any impacts to construction; assessment activities to be</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described, the resolution of comments raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities</li> </ul>

		<p>conducted for all-season road, winter road locations, and proposed borrow soil locations prior to construction.</p> <ul style="list-style-type: none"> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ Proposed remediation activities may place archaeological sites at risk of impact (GNWT-PWNHC comment 1). GNWT-PWNHC made recommendation regarding on site practices and archaeological overview requirements. <ul style="list-style-type: none"> <li>▪ In response CIRNAC-CARD responded that the Remediation contractor was to adhere to findings and recommendations of the AIA as related to archaeological buffers, site disturbance, and site discovery; CIRNAC is to ensure opportunities given to PWNHC to attend site and Tłjchq involvement will be ensured in AIA process.</li> </ul> </li> </ul> </li> <li>• Additional potential mitigations identified by the Board: <ul style="list-style-type: none"> <li>○ Standard conditions (i.e. conditions 75, 76, 77, 78, 79, and 80) from the Standard Permit list) related to protection of historical, archaeological, and burial sites can be included in the Permit to mitigate potential impacts.</li> </ul> </li> </ul>	<p>associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</p>
Increased human health hazard	On-site storage or disposal of wastes; operating in a remote location inaccessible or not easily accessible by emergency aid; direct or indirect deposit of waste into water; residual lake contaminants; ongoing radioactivity levels	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Potential risks from deposit of treated waste from Mill Lake and other indirect flow from site.</li> <li>▪ The Tłjchq have historical and current concerns regarding Rayrock.</li> </ul> </li> <li>○ Proposed Mitigations <ul style="list-style-type: none"> <li>▪ Measures for Sunrose and REX Plateau - Remedial Action Plan references the <i>Canadian Guidelines for the Management of Naturally Occurring Radioactive Materials (NORM) (Health Canada, 2014)</i>, which applies for the Sunrose and REX Plateau sites; dose constraint of 0.3 mSv per year applied; the Rayrock Project Team considers established remedial</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described, the resolution of comments raised by Parties, and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>

		<p>objective of 1 <math>\mu\text{Sv/h}</math> averaged over 1 ha surface area above background or a maximum spot dose in excess of 2.5 <math>\mu\text{Sv/h}</math> above local background valid; the plan is to cap impacted soils with concrete cap or clay cap depending on the location.</p> <ul style="list-style-type: none"> <li>▪ To mitigate additional risks from isolated work sites, the Emergency Management and Fire Protection Plan has established emergency procedures outlines for project evacuation, safety mitigations, and standing operating procedures in place for critical incident management.</li> <li>▪ To mitigate potential risks from discharge of effluent, the AEMP can monitor water, fish, benthos, and sediment quality in Sherman Lake prior to, during, and after remediation activities. The draft AEMP Design Plan submitted includes a Response Framework and associated triggers for Response Plans.<sup>14</sup></li> <li>▪ As previously discussed in the section regarding soil contamination, Rayrock is governed by the CNSC under WNSL W5-3208.0/2027, which will be held in perpetuity.</li> <li>▪ To mitigate historical and current concerns from the Tjichq regarding Rayrock, consultation and cooperative knowledge gathering has occurred since 2010 with the Tjichq to reduce concerns. Remedial action is needed to fully address issues. Cleaning up of sites will improve perception that past mining activities have been properly conclude (Land Use Permit Application).</li> </ul> <ul style="list-style-type: none"> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ Isolated location of site gives increased risk to human health if an incident were to occur (TG comment 102) and radioactive</li> </ul> </li> </ul>	
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<sup>14</sup> See WLWB Online Registry for [Rayrock – AEMP Design Plan – V 1.0 – Dec 18 20](#)

		<p>materials being stored and disposed of on-site potentially remain a risk around the mill workings and spilled tailings areas (TG comment 25).</p> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>▪ A Site Specific Health and Safety Plan (SSHSP) is to be developed by Remediation Contractor to capture all aspects of work scope and mitigate potential impacts to people (response to TG comment 25). The SSHSP to include development of comprehensive Radiation Protection Program and specific procedures regarding remote work and inclusion of considerations for safety and security of site personnel (response to TG comments 25 and 102).</li> </ul> </li> <li>○ Exposure of workers to radioactivity at project sites is possible, and there may be potential for radon exposure at the Rayrock and Sun Rose sites (TG comments 13 and 71). <ul style="list-style-type: none"> <li>▪ Radiation Protection Program will have specific procedures including the designation of a Radiation Safety Officer and Nuclear Energy Workers and dosimeter use. Gamma radiation exposures above safe limits for works will be reported by CIRNAC to CNSC (response to TG comment 13). The Remediation Contractor will also develop a Radiation Protection Program that includes details for radon monitoring and satisfies requirements of CNSC (response to TG comment 71).</li> </ul> </li> <li>○ Potential risk associated with Gamma Lake regarding contaminant concentrations in lake sediments should be discussed, and Beta Lake and Alpha Lake may require further study (TG comment 32). <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that the potential risk to ecological and human receptors as results of Gamma Lake sediment and surface water contaminant exposures was considered in HHERA. The Board notes that section 6.1.4.2 of the HHERA states that results from calculated SI values for benthic invertebrates indicate the potential for effects in benthic</li> </ul> </li> </ul>	
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		<p>invertebrate communities in Gamma Lake. In addition, CIRNAC-CARD identified that the AEMP will also include monitoring of surface water and sediment quality of Gamma Lake (and others). The Board may consider additional study as noted below.</p> <ul style="list-style-type: none"> <li>○ A number of comments were raised during the public review of the HHERAs with respect to data, parameters and assumptions made regarding modelling for radioactivity exposure (GNWT-ENR comments 4 and 25; TG comments 2, 5, 6, 7, 11, 19, 20, 45, 50, 56, 76, and 77). Both GNWT-ENR requested additional rationale be provided on the use of the dose constraint limit of 1 mSv/year instead of 0.3 mSv/year. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD's response described Health Canada's Guidelines as including the dose constraint limit as 0.3 mSv and the annual dose limit of 1 mSv. CIRNAC-CARD adopted the 1 mSv/year as consistent with the annual dose limit. CIRNAC-CARD described that a dose constraint is an upper value on the annual dose that members of the public should receive from a planned operation or single source, to ensure that the public do not exceed the annual dose limit of 1 mSv in a year from multiple sources. The Canadian NORM Guidelines note exceedance of the 0.3 mSv does not imply a failure to comply with the recommendations of the NORM Guidelines but that further investigation is needed. Rayrock was considered to be the only source of radiological exposure to someone camping in the area and thus the use of the annual dose limit is appropriate.<sup>15</sup></li> <li>▪ CIRNAC-CARD also provided rationale for selection of modelling assumptions for time spent at site, the assessment of toddlers/children on site, potential exposure areas, and expected exposures.</li> </ul> </li> </ul>	
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<sup>15</sup> Health Canada (2013). *Canadian Guidelines for Management of Naturally Occurring Radioactive Materials (NORM)*. Revised 2011.

		<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD noted that the major decay products of uranium that contribute to the radiological dose were considered in the HHERAs, and considering other decay products does not materially add to the dose.</li> </ul> </li> <li>○ TG comments 1, 9, and 60 from the HHERAs review refer to proposed radiological monitoring. TG asked if a monitoring program would be developed post-remediation to track further changes, and why radon was not considered in the HHERA.           <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that gamma radiation and radon gas measurements would be completed following remediation, and that risks identified at site were very low with remedial actions to further reduce site risks. Alpha radiation is to be addressed through capping of areas with clean soil. It was noted that there were no apparent trends of increasing or decreasing radon concentrations observed, and radon was not considered for the risk assessment. In September 2020, short term radon detectors were placed at 10 locations on the site and confirmed reported concentrations were below the Government of Canada Radon Guidelines for indoor air in buildings. Long-term radon detectors have also been installed at Rayrock and Sun Rose with results available in late 2021.</li> </ul> </li> <li>○ As previously referred to, WLWB comment 2 from the HHERAs review asked how long radioactivity was expected to be a potential hazard at each site based on the current status of the sites.           <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that radioactivity would continue to be an issue for the foreseeable future, and that remedial action is designed to reduce exposure but cannot eliminate the source. Further details from the response can be found in the Soil Contamination section of the table above.</li> </ul> </li> </ul> </li> </ul>	
		<ul style="list-style-type: none"> <li>• Additional potential mitigations identified by the Board</li> </ul>	

		<ul style="list-style-type: none"> <li>○ The Board may consider the requirement for additional study of Gamma, Alpha, Beta, and other lake sediment and surface water contaminants and potential risks as required (see TG comment 32).</li> </ul>	
Economic opportunities or losses	Construction, maintenance, and operation of lines, trails, or rights-of-ways; construction of structures; long term monitoring	<ul style="list-style-type: none"> <li>• Identified/Explained in the Applications <ul style="list-style-type: none"> <li>○ Discussion of Concerns/Potential Impacts <ul style="list-style-type: none"> <li>▪ Economic opportunities present with ongoing remediation work and expected long term monitoring.</li> </ul> </li> <li>○ Proposed Mitigations <ul style="list-style-type: none"> <li>▪ Remedial Action Plan Closure Criteria includes that remediation contracts to be structured to maximize opportunities for Indigenous and northern businesses to the extent practicable; use of Government of Canada procurement tools to offer preference to Indigenous suppliers if available; use Indigenous Opportunities Considerations in contractor tenders; communication of socio-economic opportunities and benefits; increase and maintain participation in community-based monitoring initiatives.</li> </ul> </li> </ul> </li> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ The potential for contracting opportunities has not always been made available to Tłjchq and sub-contractors have not always had strong relationships to the TG (TG comment 5). <ul style="list-style-type: none"> <li>▪ In response CIRNAC-CARD noted that in the 2019 and 2020 field seasons Prime contractor was in direct contact with Tłjchq subcontractors to improve communication and socio-economic opportunities for Tłjchq, but recognized that here is room for improvement in this regard.</li> </ul> </li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described and the resolution of comments raised by Parties, the Board does not believe these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</li> </ul>
Community impacts	Increased visitor presence in communities; communication of risk	<ul style="list-style-type: none"> <li>• Identified during the Public Review <ul style="list-style-type: none"> <li>○ The TG identified potential social impacts expected for nearby communities due to larger work force expected based on camp capacity and recommended CIRNAC conduct social impact</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described and the resolution of comments raised by Parties, the Board does not believe</li> </ul>

		<p>workshops before and during the remediation project (TG comment 14).</p> <ul style="list-style-type: none"> <li>▪ In response to TG comment 14, CIRNAC-CARD wrote that pre- and post-Social Impact Workshops can be held with the Tłjchq, and information regarding community impacts from work camps to be discussed at workshops. The objective is to increase awareness of known and potential impacts, and where possible identify and deliver awareness/prevention training programs.</li> <li>○ The language in the applications and supporting documents should reflect the risk at site prior to remediation; inaccurate language might minimize the risk (TG comments 17, 22, 23, 26, 31, 39, 43, 56, and 70). <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD noted that clear language was attempted to be used when discussing risk. When it is written that there is no risk, it is meant that there is no actionable risk, no risk that requires remedial action, or the level of risk does not indicate potential population effects on plants and animals. CIRNAC-CARD explained that this is to avoid nuance from the HHERA in communicating little risk when it “requires a great deal of explanation to contextualize the ‘little’.” (response to TG comment 56).</li> </ul> </li> <li>○ There is little reference to a Tłjchq-led risk communication plan in the Applications (TG comment 20). <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD is developing a joint Risk Communication Strategy with the Tłjchq that will address risks associated with issues of radiation safety and the Mill Area and Mill Lake (response to TG comments 20, 26, 39, and 43). This commitment is considered essential to address concerns which may be a trigger for an EA.</li> </ul> </li> </ul>	<p>these activities associated with the Applications might have a significant adverse impact on the environment or might be a cause of public concern.</p>
<p>General impact to all previously identified impacts</p>	<p>Interruption of remedial activities</p>	<ul style="list-style-type: none"> <li>• Identified during the Public Review</li> </ul>	<ul style="list-style-type: none"> <li>• Based on the mitigations described, the resolution of comments raised by Parties,</li> </ul>

		<ul style="list-style-type: none"> <li>○ WLWB HHERA comment 3 asked about how CIRNAC-CARD had evaluated potential risks if work plans were interrupted, and how it anticipated dealing with any work plan disruptions. <ul style="list-style-type: none"> <li>▪ CIRNAC-CARD responded that potential risks were considered and planned for in accordance with the Federal Contaminated Sites Management Framework, and that the risk assessment shows that human and environmental risk that continues until remediation occurs. CIRNAC-CARD noted that CIRNAC is fully committed to addressing these risks. The Public Services and Procurement Canada procurement process will select a contractor who has demonstrated that they can complete all phases of the intended work. CIRNAC-CARD noted that if remediation were to create any new risks to human health or the environment, the HHERAs and Remedial Action Plan would be revisited based on new information.</li> </ul> </li> <li>● Additional potential mitigations identified by the Board <ul style="list-style-type: none"> <li>○ The Board may require contingencies to be detailed in a CRP or management plan to address potential interruption of remedial activities.</li> </ul> </li> </ul>	<p>and the ability to resolve uncertainty through the licensing and permitting process, the Board does not believe this activity associated with the Project might have a significant adverse impact on the environment or might be a cause of public concern.</p>
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A number of comments and questions were raised regarding the rationale, data, methods, and assumptions used for the HHERAs during the review of the HHERAs in relation to the Applications.<sup>16</sup> CIRNAC-CARD provided rationale, clarification, and/or additional information as appropriate, and indicated that no changes to conclusions were made based on suggested changes to inputs. At this time, the Board believes that any outstanding concerns regarding the HHERAs can be resolved through the licensing and permitting process. The Board notes that in response to WLWB comment 3 regarding the HHERAs review, CIRNAC-CARD responded that if remediation were to create any new risks to human health or the environment, the HHERAs and Remedial Action Plan would be revisited based on new information.

### 3.3 Summary of Potential Environmental Impacts

Based on the evidence provided above, the Board considered whether the Project might have a significant adverse impact on the environment. Mitigation measures for various potential impacts are specifically identified in Table 1 above. The Board is of the opinion that uncertainties regarding potential impacts from undecided methods of the Project can be addressed through the licensing and permitting process and required submissions to the Board. In general, impacts of the Project on the environment can be mitigated through:

- The use of Water Licence and Land Use Permit conditions of two general types (as listed below), both of which will be discussed in further detail by all Parties through the Water Licensing and Land Use Permitting process (as set out in the Work Plan established by the WLWB). The conditions in the Licence and Permit would be finalized by the Board following completion of the licensing and permitting proceeding and after providing opportunities for comments from all Parties and the public:
  1. Standard conditions as per the MVLWB's *Standard Land Use Permit Conditions and Standard Water Licence Conditions and Schedules*,<sup>17,18</sup> and
  2. New or unique conditions that may be needed to mitigate specific aspects of the Project that may not be covered by standard conditions, and which may be established by the Board as per the MVLWB's *Standard Process for New Conditions*.<sup>19</sup>

Updates to plans to include identified potential mitigations can be considered to address comments and recommendations from Parties.

### 3.4 Summary of Cause for Public Concern

In addition to determining if the development might have a significant adverse impact on the environment, the Board must also consider whether a proposed development might be a cause of public

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<sup>16</sup> Including ECCC comments 1, 3, 4, 5, 6, and 12, and GNWT-ENR comments 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, and 27, and TG comments 4, 8, 10, 12, 13, 15, 16, 17, 18, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 33, 34, 35, 37, 38, 39, 42, 47, 49, 51, 52, 54, 56 and 57.

<sup>17</sup> See WLWB website for [MVLWB Standard Land Use Permit Conditions Template Version 2.3](#)

<sup>18</sup> See WLWB website for [MVLWB Standard Water Licence Conditions and Schedules - Basic](#)

<sup>19</sup> See WLWB website for [MVLWB Standard Process for New Conditions \(2013\)](#)

concern. Although public concern may be less clearly defined than the questions related to significant adverse environmental impacts, it is the Board's responsibility to evaluate public concern as a potential trigger for an Environmental Assessment.

The Board notes that no reviewers voiced public concern in review of the application. While concerns regarding risk communication and specific elements of how the project will be conducted were identified through the Preliminary Screening assessment, mitigations for these issues were identified. Public concern regarding the state of the current site was identified in comments from the Tłıchǵ Government (TG comment 6); however, the Board's assessment has concluded that these do not represent concerns with the Project itself. The TG noted that the "ongoing remediation efforts are helping to restore confidence in Tłıchǵ citizens' [sic] ability to use Rayrock once again in the future. The extent to which this is a reality will only be understood once the site has been properly restored" (TG comment 3).

### **3.5 Preliminary Screening Recommendations from Reviewers**

No Parties made specific recommendations regarding the screening determination.

### **3.6 Conclusion**

The Board has reviewed all the evidence received from CIRNAC-CARD and reviewers with respect to the Preliminary Screening of the proposed Project. Based on the information provided in the Applications and the public review, mitigations available to the Board, lack of public concern, and absence of comments indicating that this Application should be referred to the Review Board, it is the Board's view that the proposed Project will not have a significant adverse impact on the environment or be a cause of public concern and therefore, has decided not to refer the Project to Environmental Assessment. If the Board does not receive a notice of referral to environmental assessment by January 24, 2021, the Board will continue with the Water Licensing and Land Use Permitting process as outlined in the Work Plan.

### **4.0 Remaining Process**

As per the current Work Plan, the next steps are pending the 10 day pause period as per subsection 125(1.1) of the MVRMA. A draft agenda for a scheduled Technical Session in January 2021 will be distributed to Parties in January 2021.

**Signed the 14<sup>th</sup> Day of January, 2021, on behalf of the Wek'èezhii Land and Water Board**



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Witness



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Joseph Mackenzie  
Chair, Wek'èezhii Land and Water Board