

Review Comment Table

Board:	MVLWB
Review Item:	DIAND-GIANT - Management Plans Group 3 (Other) â€” MV2019X0007 and MV2007L8-0031 (7 of 7)
File(s):	MV2007L8-0031 MV2019X0007
Proponent:	DIAND - GIANT
Document(s):	Dust Management and Monitoring Plan (6.87 MB) Erosion and Sediment Management and Monitoring Plan (3.11 MB) Tailings Management and Monitoring Plan (8.93 MB) Wildlife and Wildlife Habitat Monitoring and Management Plan (1.32 MB) Technical Session Presentations (20 MB) Technical Session Agenda (5 MB) Technical Session Update (5 MB)
Item For Review Distributed On:	Apr 10 at 13:36 Distribution List
Reviewer Comments Due By:	May 30, 2019
Proponent Responses Due By:	June 25, 2019
Item Description:	<p>This is Review item number 7 of 7 associated with the Giant Mine Remediation Project. On April 8, 2019, an e-mail was distributed to the Giant Mine distribution list which provided a detailed explanation of the Online Review System (ORS) plan for the Giant Mine Remediation Project. If you did not receive an e-mail or require additional information, please contact Board staff identified below.</p> <p>Instructions The Giant Mine Remediation Team (GMRT) submitted Version 1.0 of the following plans: Dust Management and Monitoring Plan, Erosion and Sediment Management and Monitoring Plan, Tailings</p>

Management and Monitoring Plan, and Wildlife and Wildlife Habitat Monitoring and Management Plan as part of its Post-EA Information Package on April 1, 2019.

Reviewers are invited to submit comments, and recommendations using the Online Review System (ORS) by the review comment deadline specified below. If reviewers seek clarification on the submission, they are encouraged to correspond directly with the proponent prior to submitting comments and recommendations.

Reviewers may also wish to consider providing an overarching recommendation regarding whether the Board should approve the submission, to provide context for the comments and recommendations and assist the Board with its decision.

Please provide comments and recommendations on the following components of the Post-EA Information Package including:

- Dust Management and Monitoring Plan;
- Erosion and Sediment Management and Monitoring Plan;
- Tailings Management and Monitoring Plan; and
- Wildlife and Wildlife Habitat Monitoring and Management Plan.

When providing comments on a specific Plan, Program, or Report, please identify the document and the Section (if applicable) in the 'Topic' line.

Board staff would also like to note that further supporting documentation can be found in ORS reviews:

- DIAND-GIANT - Land Use Permit Application – MV2019X0007 (1 of 7)
- DIAND-GIANT - Water Licence Post-EA Information Package – MV2007L8-0031 (2 of 7)
- DIAND-GIANT - Management Plans Group 1 (Standard) – MV2019X0007 and MV2007L8-0031 (3 of 7)
- DIAND-GIANT - Preliminary Screening Information – MV2019X0007 and MV2007L8-0031 (4 of 7)
- DIAND-GIANT - Closure and Reclamation Plan – MV2019X0007 and MV2007L8-0031 (5 of 7)
- DIAND-GIANT - Management Plans Group 2 (Water) – MV2019X0007 and MV2007L8-0031 (6 of 7)

	<p>The documents that have been uploaded to this review are also available on our public Registry.</p> <p>If you have any questions or comments about the ORS or this review, please contact Board staff identified below:</p> <p>Shannon Allerston 867-766-7465 sallerston@mvlwb.com Tyree Mullaney 867-766-7464 tyree@mvlwb.com Kimberley Murray 867-766-7458 kmurray@mvlwb.com</p>
General Reviewer Information:	<p>The following organization has received this review by fax:</p> <p>NWT Metis Nation Tim Heron NWTMN IMA Coordinator (867) 872-3586</p>
Contact Information:	<p>Kim Murray (867) 766-7458 Shannon Allerston 867-766-7465 Tyree Mullaney 867-766-7464</p>

Comment Summary

City of Yellowknife: Kerry Penney				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Erosion and Sediment Monitoring Plan	<p>Comment Please provide some metrics on final site conditions.</p> <p>Recommendation For those areas outside the controlled area, the townsite and the TCAs: - what will the proportion and area of outcrop, developed and remediated, waterbodies and vegetated areas be? - Within those areas, please provide discussions on the typical arsenic conditions, maximum arsenic conditions, and the erodibility of the areas.</p>	<p>June 25: These metrics are valuable but not required for the Erosion and Sediment Management and Monitoring Plan (ESMMP) during remediation. They are more applicable to the CRP and for communicating risk. As per the closure guidance, final site conditions are discussed in Chapter 5 of the CRP for each major mine component including Contaminated Soils.</p>	

2	Erosion and Sediment Monitoring Plan - 3.2.2	<p>Comment Section 3.2.2 notes that "all activities undertaken in or near water require the installation of sediment control measures."</p> <p>Recommendation "Near water" is a judgement. For clarity, please provide either a numeric value or greater explanation as to the trigger when this would be required.</p>	<p>June 25: As per Part B of the Proposed Type A Land Use Permit for the Giant Mine Remediation Project submitted with the GMRP Water Licence Application Package, 'near water' is referred to as within 100 metres of the Ordinary High-Water Mark.</p>	
3	Erosion and Sediment Monitoring Plan - 3.2.2	<p>Comment The Waste Management Plan notes that the Erosion and Sediment Plan is home to the guidance for temporary pile management. This monitoring and management plan does not seem to provide much in the way of further detail on when mitigation and additional monitoring may be triggered.</p> <p>Recommendation Please update to provide appropriate information for temporary pile management.</p>	<p>June 25: The ESMMP would consider temporary piles as a component of various remediation activities on site that would undergo the site assessment as outlined in Section 4.2 of the ESMMP. The outcome of the site assessment would help to guide which Best Management Practices (BMPs) would be appropriate for addressing erosion and sediment management and monitoring of temporary piles. Table 4-6 of the ESMMP provides some guidance on stockpile management and subsequent BMP tables 4-7 to 4-13 provide various BMPs that are considered applicable to temporary pile management. The details of additional mitigation measures and additional monitoring required for each activity will be captured in the Design and Construction Plan that will be</p>	

			submitted to the MVLWB for review and approval.	
4	Erosion and Sediment Monitoring Plan - 4.2	<p>Comment Section 4.2 notes that the project is proposing to include erosional site assessment as part of a "design and construction plan". Its not clear if this would be part of a site-wide plan or with each individual construction plan. The Erosion and Sediment Monitoring Plan notes it in the singular or as part of a multi-activity plan, but the draft license notes multiple design and construction plans.</p> <p>Recommendation Please clarify the explanation. If possible, it would be valuable to understand the suite of information that accompanies each of the Design and Construction Plans.</p>	<p>June 25: The scope of the Design and Construction Plans is provided in the draft Water Licence in Part E, Condition 8, Schedule 2. Erosional site assessments will be part of each individual Design and Construction Plan as part of information provided under activity-specific monitoring and mitigation(Part E Condition 8, Schedule 2, Condition 1 (e)). The mitigation measures identified in each individual Design and Construction Plan will be consistent with the ESMMP, which is the overarching plan for the site.</p>	
5	Erosion and Sediment Monitoring Plan - 4.8	<p>Comment Table 4-8 discusses matters around permafrost protection.</p> <p>Recommendation Is there any existing permafrost mapping? It's not clear when/where this mitigation needs to be a matter of concern.</p>	<p>June 25: No, there is no permafrost map for the site. The GMRP assumes that permafrost could be encountered at most deeper locations on-site.</p>	
6	Erosion and Sediment Monitoring Plan	<p>Comment Use of the RUSLE approach produces a modelled amount of erosional potential. The project lays out their proposed evaluation of consequence, but other than a mention around chemical contaminants, there's no additional modifications due to the potential arsenic levels in the eroded material.</p> <p>Recommendation Please provide an explanation as to why this is not part of the</p>	<p>June 25: As part of Section 4.2.3 Step 3: Evaluation of Consequence/Risk Assessment of the Site Assessment Prior to Implementation of Work, the consequence of erosion and sedimentation is examined based on ecological consequences. In general, this will consider whether the</p>	

		<p>erosion potential and subsequent mitigation requirements.</p>	<p>affected soils are a potential source of chemical contaminants; whether the activity is occurring near water bodies; and whether large areas will be exposed for extended periods. It is this step of the assessment that will evaluate potential arsenic levels in soils and eroded material that will help guide the level of effort for mitigation and monitoring.</p>	
7	<p>Erosion and Sediment Monitoring Plan</p>	<p>Comment The second passage in Section 4.3 discusses monitoring around 'In-water' works, including Yellowknife Bay. However, only one of the action bullets that follows relates to Yellowknife Bay, and that item is a engineering element, not something that involves monitoring (and/or subsequent links to management).</p> <p>Recommendation Please update to reflect the tools and efforts that the project will use to ensure that the work in Yellowknife Bay is completed so that sediment is moved off the area. As part of this, we hope that the project will use the climate record to identify ideal periods, establishing weather constraints before commencing in water activities and using predictive forecasts to help guide that work.</p>	<p>June 25: As per Section 4.3, a specific monitoring program will be developed based on the level of effort determined for mitigation and monitoring for each remediation activity. Prior to the commencement of remediation activities at site, including Yellowknife Bay, a Design and Construction Plan will be submitted to the MVLWB for review and approval that will include the proposed monitoring and mitigation plan for each activity. An important component of the Design and Construction Plan is to consider how best to minimize erosion and sedimentation of each activity through communicating, monitoring and adaptively managing work on site, in response to site and weather conditions. As part of the Site Assessment Prior to Implementation, procedural Best Management</p>	

			Practices (BMPs) will be considered for all remediation activities on-site. These are non-structural methods for reducing erosion and sediment transport through proper scheduling. As per Table 4-7: Scheduling BMPs include such things as maximizing favorable, observing environmental timing restrictions, and operating during fisheries window.	
8	Erosion and Sediment Monitoring Plan	<p>Comment Page 4-21 notes the need to coordinate traffic.</p> <p>Recommendation The City of Yellowknife had been hoping for more information on traffic management to ensure that impacts on residents and city infrastructure are minimized and there is sufficient information to provide for effective infrastructure management (either here or elsewhere in the document with a cross reference).</p>	<p>June 25: The GMRP will provide the Traffic Management Plan to the Board, however the Traffic Management Plan should not be considered for approval as it is intended to inform the dust and wildlife habitat management plans. The Traffic Management Plan will be specific to vehicle movement on-site and will provide details on areas where site vehicles and traffic from the wider area (i.e. off-site traffic) may interact. The GMRP will continue our dialogue with the City of Yellowknife and inform them well in advance of expected work and potential disruptions/increased traffic flow in and out of the Project site during active remediation.</p>	
9	Dust Management and	<p>Comment The project's intentions applying BMP's is confusing</p> <p>Recommendation Install BMPs early: What</p>	<p>June 25: A more appropriate term would be 'implementation' for BMPs, which could include scheduling and</p>	

	Monitoring Plan - Table 3.1-1	<p>does the project mean when it discusses installing BMPs as soon as possible. What is being installed? Sensitive Area Signage: Please provide a map indicating known sensitive areas (and what makes these areas sensitive). Maximize Favourable Weather: There is nothing in the CRP or this document that notes how the project will translate this management practice from a good intention to operational guidance.</p>	<p>staging of activities to consider seasons and changing weather conditions or the use of wind breaks for high-risk activities, for example. Regarding 'sensitive area signage' and 'maximize favourable weather', as indicated by the title of the table, these are best management practices to be considered on a site-wide basis and may not be applicable to all work at all times. For an example on how these BMPs are intended to be used: the construction plan for the relocation of tailings or contaminated soils would include timing considerations to minimize high-risk work during periods of high-winds. Similarly, determining 'areas sensitive to disturbance' will include such considerations as level of contamination, level of effort of remediation activity, media characteristics in the area and proximity to water.</p>	
10	Dust Management and Monitoring Plan - Table 3.1-1	<p>Comment Stockpile management and best practices is rather unclear. Recommendation Please provide additional details on the engineering constraints around stockpile construction, along with the conditions where water/suppressants will be used and when wind breaks will be employed.</p>	<p>June 25: During debris and material handling, loading, unloading, and material transfer operations, site personnel will handle material in a controlled and steady manner consistent with industry best practices for decontamination and deconstruction activities to minimize the creation or disturbance of dust.</p>	

			<p>Contractors will also be directed to minimize any material drop heights to reduce emission of fugitive dust. Measures will be put into place to restrict the height and volume of debris to allow for adequate coverage of stockpiles with water/chemical suppressant if required. Debris will be segregated and stockpiled when required, wetted or covered to prevent dust generation and to protect the debris from wind. During loading of the demolition debris, additional spray water will be utilized as required to control fugitive dust emissions from the operations. Windbreaks are used in cases where the construction activities need to continue without interruption. At a wind speed of 40 km/hr, higher windbreaks can mitigate the dust development when installed upwind of the predominant wind direction. Details such as the above will be conveyed through activity-specific instructions in Standard Operating Procedures. The GMRP will employ best management practices, including those referenced in the Fugitive Dust Assessment report by RWDI Air Inc. (2016) which was used in the development of the Dust MMP. General best</p>	
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			management practices for stockpile management will be included in revised relevant management plans.	
11	Dust Management and Monitoring Plan - Table 3.2	<p>Comment Section 3.2 discusses use of water as a dust suppressant. Existing mines have had a great deal of difficulty with controlling dust with water.</p> <p>Recommendation Please discuss: - what is the 'base case' regarding watering for dust control (e.g. what would the project be escalating from when additional mitigations are required) - what lessons have been learned from other large industrial sites and how is the proponent adjusting their approach?</p>	<p>June 25: Base-case is determined on a site-specific basis depending on type of media and location and is considered the normal. As is current practice, each day during remediation expected weather conditions are reviewed, and daily scopes of work executed to ensure frequency of application, and expected problematic areas are targeted to prevent dust migration. Action levels (for wind, dust, and for air monitors) and corresponding mitigations are outlined in the Dust MMP Table 5.1-1 and in the AQMP. Project implementation measures will be developed on a project specific basis and will be further developed during the detailed design stage of remediation projects. Some projects could require alternative (approved) suppressants to mitigate fugitive dust. In terms of lessons learned, dust suppression vendors identify the optimal products for industry to mitigate dust emissions from construction activities and haul roads. Biodegradable polymers and/or oil-based surfactants (such as canola oil) can be added to water to</p>	

			provide dust suppression on roadways and stockpiles for four to six months based upon roadway use and stockpile disruptions, after which the dust control effects begin to diminish. Lessons learned from other larger industrial sites, particularly in the North, will continue to be evaluated for applicability.	
12	Dust Management and Monitoring Plan - Table 3.3	<p>Comment Revegetation is listed as one of the BMPs for physical coverings.</p> <p>Recommendation The description notes that revegetation is impractical for short term or active reclamation. If this is unsuitable for the short-term for dust, please explain why seeding and hydro-seeding are listed as best management practices for erosion (table 4-11 in the erosion management plan). Secondly, to ensure common understanding, please provide definitions of short, short-medium, medium, and long term for reviewers (as part of the definition, please reference either years or the project phases found in section 1).</p>	<p>June 25: The perceived discrepancy may be in how terms are being applied. Revegetation could occur in one area which has undergone remediation and no further work is planned for that area even while the site itself is still under Phase 2 active remediation. In terms of time frames, the definitions could vary by mitigation or component being remediated but generally short-term could be considered weeks to months, short-medium term could be months, medium could be a couple years, and long-term is more than a couple years.</p>	
13	Dust Management and Monitoring Plan - Table 3.3	<p>Comment There are issues around common understanding and inconsistency within the closure documents.</p> <p>Recommendation Please explain how natural revegetation is a "best management practice"™, specifically noting what situations natural revegetation exceeds other</p>	<p>June 25: Natural revegetation is a best management practice as once established and self-sustaining it provides a number of benefits beyond the primary aim of dust control. These benefits include reduced or no maintenance</p>	

		<p>management practices to mitigate the concern (in this case, dust). As part of this discussion, please discuss the timescales involved with natural revegetation vs active methods. Comparisons with revegetation efforts at Con Mine would be instructive for reviewers.</p>	<p>requirements, reduced or no water requirement, additional wildlife habitat, maintenance of biologically active soil profile, no chemical inputs to soil, and aesthetically pleasing. A number of scenarios make the use of revegetation an appropriate dust management strategy: Medium or long-term time frame for suppression; Little or no access to area required by construction or monitoring personnel i.e. a low trafficked area; Adjacent to existing vegetated area; Area requiring dust control is visible to public. Natural revegetation is suitable for use over time scales that allow for the vegetation to become established (i.e., >3 years), however this can be used in conjunction with mulching which can reduce dust generation during the time it takes for the vegetation to become established. The wet and chemical suppression of dust is appropriate for immediate, very short term (hours) up to the short term. However both methods (wet or chemical suppression) require reapplication at appropriate intervals if dust management is to continue. These dust management methods are more suitable for high traffic or high activity areas. Pros and cons of short</p>	
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			<p>term dust suppressants are contained in Table 3.2-1 of the Dust Management and Monitoring Plan. Physical covering of areas and wind reduction methods can also be applied to areas, but require installation of either a physical cover, roughness elements (e.g., rocks, tires, straw bales), or screens. These methods can cost more than dust management through other methods and may require maintenance depending on the dust suppression method chosen and the time frame of its application. E.g., long term use of plastic sheeting as a method of dust suppression would require replacement of the sheeting regularly as the sheeting was punctured or broke down; or, a fence installed to act a wind break may require maintenance every few years. These methods can be very effective, however the costs associated may not be warranted for long term use and over medium-long term revegetation may be also be cheaper. Seed application is preferable to natural revegetation as a means of dust control due to the shorter time frames for the establishment of vegetation. For Con Mine, seeding with native grass seeds produced vegetation</p>	
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			within one season, whereas natural revegetation to multiple seasons and was only effective in small areas immediately adjacent to the pre-existing vegetation	
14	Dust Management and Monitoring Plan - Section 5	<p>Comment Monitoring and Response Framework: Nothing in the monitoring section ties into weather forecasting or using a meteorological modelling approach to help establish tiered monitoring or impose action constraints. Instead of adopting the forward looking approach favoured by the Review Board, it instead utilizes an approach that is reactionary - where avoidable effects are going to happen.</p> <p>Recommendation Please refine the Dust Management Plan to address the requirements of the Review Board's measures and suggestions regarding dust (Measure 20, Suggestions 11, 12). In our opinion, formally incorporating modelling and forecasting into the management actions to reduce dust seems readily practical. However, if the project does not believe it needs to do this, please provide a rationale as to why forecasts and climate modeling are not going to be used in a systematic way.</p>	<p>June 25: The GMRP has practiced a model of continuous improvement in terms of proactive dust management on site. The MCM is well versed on existing site conditions, maintaining facilities such as the tailings containment areas in such a manner as to minimize the potential of fugitive dust with the timely application of dust suppressant. The GMRP and MCM receives daily meteorological forecasts to help inform site activities in the short-term, as well as wind thresholds outlined in Table 5.1-1 of the Dust MMP which are realistic thresholds based on historic data. As well, the Project has incorporated consideration to the scheduling and staging of activities for seasonal variability as a best management practice, based on historic wind patterns and Traditional Knowledge which has been shared with the GMRP. This consideration to timing for activities will be incorporated into the GMRP schedule for remediation activities, similarly to</p>	

			<p>timing considerations for the A-shaft deconstruction which was scheduled based on input from YKDFN elders. As well, the GMRP will include the text of Measure 20 and Suggestion 12 into the revised version of the Dust MMP as a very clear reminder of our commitment.</p>	
15	Dust Management and Monitoring Plan - Section 5.1.1	<p>Comment As a starting point for reviewers, it would be helpful if the project included weather conditions for significant past dust events. This would provide a baseline.</p> <p>Recommendation Update the plan with weather conditions for significant past dust events.</p>	<p>June 25: The revised Dust MMP will include in Section 1.0 a subsection which includes text of relevant EA Measures and Suggestions as well as text on past dust events.</p>	
16	Dust Management and Monitoring Plan - Section 5.1.1	<p>Comment Wind Thresholds and Action Level Response: The effort and structure is appreciated, but the nature of the plan seems somewhat limited and particularly reactive rather than being responsive as risk increases. As risk increases, the mitigations are mostly 'more of the same' with potential/qualified options that are left to the discretion of an unknown decision maker.</p> <p>Recommendation The City would like greater context to be included to better understand what options are available to the project and how using those options will result in increased mitigation.</p>	<p>June 25: The MCM is in control of all activities occurring on site and as such are the party responsible for actions including suspension of activities. Monitoring of dust and air quality on site is controlled by professional companies who are always in direct contact with the appropriate incident response team for action including dust exceedances. During activities or projects that include higher risk of dust migration, appropriate mitigation measures, such as water tanks or water trucks and activity-specific air quality monitors, are strategically placed around high risk</p>	

			activities so that all trained workers could instantly take corrective actions in the event of any air monitor exceedances or visual notifications of airborne dust emissions. Exact mitigation measures will be developed on a project or task specific basis and will be further developed during the detailed design phases of each component and will be included in Design and Construction Plans.	
17	Dust Management and Monitoring Plan - Section 5.1.1 - Level 1	<p>Comment Increased Frequency of Security Patrols:</p> <p>Recommendation Please explain what the level of frequency will be (e.g. from what value to what value). Secondly, please explain what mitigation this response is expected to provide.</p>	<p>June 25: Currently on-site Security are responsible for patrolling all areas throughout the site. There are approximately 60 locations in which security performs a check in and this is done at a minimum of 5 times daily. As required, the frequency of patrols can be increased to identify any areas of concern. Their presence is critical in noticing any unusual activity in locations around site. Security always have direct contact with the appropriate incident response leaders to provide immediate action.</p>	
18	Dust Management and Monitoring Plan - Section 5.1.1 - Level 1	<p>Comment Dust suppression/Watering</p> <p>Recommendation Please provide clarification on how the amounts of water being dispensed will be increased. From what level to what level? What are the qualifiers</p>	<p>June 25: Levels of water will be specific to the size and the nature of each specific project. Additional qualifiers that aid in the decision include characteristics of the media,</p>	

		that need to be considered in terms of appropriateness (moisture levels, temperature etc.).	particle sizes, rate of absorption/evaporation, humidity levels, size of exposed area, and wind speeds.	
19	Dust Management and Monitoring Plan - Section 5.1.1 - Level 1	<p>Comment Dust suppression/Watering</p> <p>Recommendation This is a mitigation proposed in other developments, yet the issues around dust generation remain. How will this project do better?</p>	<p>June 25: The nature of the media will determine the level of suppression being used. Water is the initial option due to its relatively low application costs and its effectiveness. Project specific strategies will be employed in order to combat dust emissions on a case by case basis.</p>	
20	Dust Management and Monitoring Plan - Section 5.1.1 - Level 1	<p>Comment Dust management - Site Administration - Please explain who will be responsible for mitigations relating to dust. There may be a large number of 'Closure activities' underway.</p> <p>Recommendation Is each contractor responsible for their action? Who is responsible for common parts of the site? What are the mitigative tools if one contractor fails to live up to their responsibilities - particularly if they are simply one part of a larger problem?</p>	<p>June 25: The MCM is in control of all activities occurring on site and as such are the primary decision maker for actions including suspension of any activities. Each subcontractor is responsible for dust mitigation measures at their specific work sites, with overall site dust mitigation under the surface care and maintenance contractor. The MCM is responsible for enforcing their subcontractors' contracts, which include dust mitigation. Monitoring of dust and air quality on site is controlled by professional companies who are always in direct contact with the appropriate incident response team for action including air quality exceedances.</p>	

21	Dust Management and Monitoring Plan - Section 5.1.1 - Level 1	<p>Comment Employ basic BMP's.</p> <p>Recommendation Please explain what BMPs are available at this stage which are not already enacted, particularly when the management plan states that they're going to get them installed early (table 3.1-1).</p>	<p>June 25: The BMPs employed at this stage would be a continuation of previously established or implemented BMPs (as outlined in Section 4 of the Dust MMP) including, but not limited to: application of dust suppressant to tailings containment areas and roads, as applicable; systematic surveillance of site; covering of tailings during transport (as applicable). The text in Table 5.1-1 regarding "Employ basic BMPs" would be more accurately reflected as "Continue employment of basic BMPs". This text in Table 5.1-1 will be updated in the revised Dust MMP.</p>	
22	Dust Management and Monitoring Plan - Section 5.1.1 - Level 1	<p>Comment Quantitative Dust Levels</p> <p>Recommendation Please explain what this means "what are the levels? From what instrumentation?"</p>	<p>June 25: This would indicate an increase in measurable PM10 (particulate matter with a diameter of 10 microns or less) or TSP (total suspended particulates, but below the Risk-Based Action Levels (RBAL), at the air monitoring stations monitored by the air monitoring contractor. (Site perimeter RBAL for 15-minute average PM10 concentrations is 159 ug/m3 and the RBAL for 15-minute average TSP concentrations is 333 ug/m3).</p>	
23	Dust Management and	<p>Comment General/structure</p> <p>Recommendation Overall, its not clear what</p>	<p>June 25: As noted in Table 5.1-1, the mitigations would include an</p>	

	Monitoring Plan - Section 5.1.1 - Level 1	mitigations will be applied in this response (it seems that the response itself should be the mitigations rather than noting that they may be called on).	increase in mitigations measures already being applied. For example, on-site security patrol upwards of 60 locations across site a minimum of 5 times per day, each day. With moderate and high winds, security patrols would increase in frequency.	
24	Dust Management and Monitoring Plan - Section 5.1.1 - Level 2	Comment Vigilance Recommendation How does the increased patrolling help to mitigate the risk? Again, please provide context on the operational nature of this response “ given that there is already increased patrolling from level 1, what action will this response result in?	June 25: The GMRP's goal is to identify any problematic areas and remove the potential for fugitive dust to leave the Giant Mine site. With greater presence around site, sporadic gusting winds will be easier to identify. The GMRP will action appropriate staff so immediate efforts of applying dust suppressant can be focused on locations of fugitive dust. Any fugitive dust is to be reported immediately to the MCM for actioning.	
25	Dust Management and Monitoring Plan - Section 5.1.1 - Level 2	Comment Dust suppression Recommendation Again, please provide greater context on operational response. Given that the project is already employing water as a dust suppressant in 'non-wind warning situations' and at level 1, what level of action and consequential mitigation can be expected?	June 25: The nature of the problematic media will determine the level of suppression being used. Water is the initial option due to its relatively low application costs and its effectiveness. Project specific strategies will be employed in order to combat dust emissions on a case by case basis (such as depending on type of media, area exposed, level of contamination) which could include periods of continuous visual	

			monitoring, perimeter dust suppression stations that will allow for immediate mitigation measures, or continuous watering of high concern areas.	
26	Dust Management and Monitoring Plan - Section 5.1.1 - Level 2	<p>Comment Reduce disturbance</p> <p>Recommendation It seems that it may be difficult to use physical covers or wind blocks when already at a level two wind event, particularly when "high-dust" work is not being halted. This mitigation seems to have more value if it was used proactively, tied to predictive parts of the plan.</p>	<p>June 25: The professional air monitoring contractor provides meteorological forecasts daily to the MCM and GMRP. The City of Yellowknife is correct that it would be difficult to employ physical covers when conditions are already at a level 2 or 3 wind event. Mitigation measures such as temporary physical covers would be employed as required based on meteorological forecasts, prior to an event. Text will be added to Table 5.1-1 to clarify intent. Design and Construction Plans will also include activity-specific mitigations for wind erosion, as applicable, to be implemented proactively.</p>	
27	Dust Management and Monitoring Plan - Section 5.1.1 - Level 2	<p>Comment Work suspension</p> <p>Recommendation "High-dust activities may be suspended if mitigation measures are not successful." Please provide greater precision on when these activities would be suspended to improve clarity on when/how the project intends to provide source control.</p>	<p>June 25: The GMRP's goal is to keep all employees, members of the public, and the surrounding environment safe. The risk associated with the media and activities being conducted along with evaluating the existing and future site weather conditions when a Level 2 wind threshold (as outlined in Table 5.1-1)</p>	

			is reached would determine the decision for suspending work. Work suspension is accounted for in Tables 5.1-1, 5.2-1 of the Dust MMP, as well as Tables 8-1 to 8-3 of the AQMP. As the Contingencies, presented in draft in Appendix D of the Dust MMP, are further developed prior to remediation commencement, work suspension will continue to be presented there.	
28	Dust Management and Monitoring Plan - Section 5.1.1 - Level 2	<p>Comment Resumption of work</p> <p>Recommendation Is it appropriate to return to work when wind is at level 1 or should the high emission work wait until the wind threshold is at zero?</p>	<p>June 25: The GMRP's goal is to keep all employees, members of the public, and the surrounding environment safe. The resumption of work will be once wind thresholds are back to within Level 1 but also taking in to account future site weather conditions and the risk associated with the media. Construction plans will incorporate site-wide dust management techniques, taking into account the likelihood of dust generation by source area, as per section 6.0.</p>	
29	Dust Management and Monitoring Plan - Section 5.1.1 - Level 2	<p>Comment High Risk vs. High Dust - The final bullet discusses high risk. The risk of generating dust and particulate is not incorporated into the responses - only the observed or measured results.</p> <p>Recommendation Please explain how risk of dust generation will be used to guide the</p>	<p>June 25: The risk of dust generation is considered for all Project activities and is discussed at a Project level as well as operationally at site. Construction plans will incorporate the likelihood of dust generation, taking into account the source of</p>	

		projects wind event framework responses. - It feels like there needs to be greater clarity or information passing from the dust risk evaluation in section 6 to the events considered in section 5.	potential dust, media type, contamination levels, and activity planned.	
30	Dust Management and Monitoring Plan - Section 5.1.1 - Level 3	<p>Comment Vigilance</p> <p>Recommendation After moving from routine to level 1 and level 2, its not clear how vigilance is being increased? Please explain the operational nature of this response.</p>	<p>June 25: Increased levels of vigilance at Level 3 will be implemented on a project specific basis and for areas of concern at this level. A potential example at this level could include increased individuals place around site allowing for a more comprehensive visual inspections at all problematic areas to ensure that appropriate incident response teams can be employed to specific locations for mitigative measures. Vigilance employed will depend on the media, existing site weather conditions and future site weather conditions.</p>	
31	Dust Management and Monitoring Plan - Section 5.1.1 - Level 3	<p>Comment Dust suppression</p> <p>Recommendation Again, please provide greater context on operational nature of the response relative to previous efforts.</p>	<p>June 25: The nature of the media will determine the level of suppression being used. Water is the initial option due to its relatively low application costs and its effectiveness. Project specific strategies will be employed in order to combat dust emissions on a case by case bases which could include periods of continuous visual monitoring or perimeter dust</p>	

			suppression stations that will allow for immediate mitigation measures. Dust suppression at this level will be dependent on factors such as, but not limited to, characteristic of the media, site conditions, current and future weather conditions, location and exposure of the media.	
32	Dust Management and Monitoring Plan - Section 5.1.1 - Level 3	<p>Comment Reduce disturbance</p> <p>Recommendation Again, please provide greater context on operational nature of the response relative to previous efforts at a lower threshold.</p>	<p>June 25: The level of mitigation required for this action will be dependent on many different factors including, but not limited to, the risk associated with the media and existing and future weather conditions. Implementation of these mitigative measures will be on a task and site-specific basis.</p>	
33	Dust Management and Monitoring Plan - Section 5.1.1 - Level 3	<p>Comment Suspend High-Risk and High-dust activity</p> <p>Recommendation As wind speed increases, so does the erosional ability and power. Please provide comments on why medium risk or mediums dust generating activities (as classified in figure 6.2.1) are not considered for suspension.</p>	<p>June 25: Medium risk and medium dust generating activities will be included in Table 5.1-1 Level 3 response actions as potential for suspension. This response will be a project-specific basis, dependent on factors such as media type and duration of activity.</p>	
34	Dust Management and Monitoring Plan - Section 5.3	<p>Comment Section 5.3 notes that the results of AQMP will provide "immediate feedback" on the efficacy of the dust management practices.</p> <p>Recommendation Please explain how and why the monitoring of the AQMP are not</p>	<p>June 25: Air monitoring results are provided in real-time (apart from analytical filter results) to the air monitoring contractor who is in direct contact with the MCM, as required. As noted in the text immediately preceding Table 5.1-1 in</p>	

		being used as a line of evidence for triggering mitigations such as those noted in the plan.	Section 5.1 of the Dust MMP, air quality monitoring results supercede wind and dust level responses and require immediate action to investigate and mitigate the cause.	
35	Dust Management and Monitoring Plan - Section 6	Comment Table 6.2-1 Risk Rating Recommendation Values at Risk: What VAR does the project currently incorporate into its risk ratings? - How does this use the Valued Components as guidance (Section 1.4.2 Updated Project Description)? - For each of those Valued Components, please list the VAR that the project is seeking to protect.	June 25: The 'Values at Risk' (VAR) section of Table 6.2-1 is referring to those Valued Components as outlined in Section 1.4.2 of the Updated Project Description. The revised Dust MMP will clarify that intention. The VAR is not speaking to a separate list of components.	
36	Dust Management and Monitoring Plan - Section 6	Comment Table 6.2-1 Risk Rating Recommendation Please provide numeric/further descriptions for "immediately adjacent" to upwind but "X distance" and the range value used in the downwind risk metric.	June 25: The text in Table 6.2-1 will be modified in the next revision of the Dust Management and Monitoring Plan.	
37	Dust Management and Monitoring Plan - Section 6	Comment Table 6.2-1 Risk Rating: Arsenic Load Recommendation It seems likely that the risk rating is designed to focus on impacts. Given the uncertainty around land use on site and the potential uses for the receiving area off lease, the boundary of arsenic between Low and Moderate risks should be 160 mg/kg.	June 25: The applicable remedial criteria for areas being remediated to residential soil standards (Townsite) will involve achieving a soil quality criteria of 160 mg/kg arsenic. (Please refer to CPR Appendix 5.4A: Remedial Strategy for Contaminated Soil and Sediment document submitted with the GMRP Water License Application Package.) The determination of when a satisfactory level of remediation has been	

			completed will be assessed with confirmatory sampling. The specific details of remediation strategies will be completed in the design stage, prior to the scheduled start date of a component. As such, the GMRP believes Table 6.2-1 is appropriate as it stands.	
38	Dust Management and Monitoring Plan - Section 6	<p>Comment Many of the same concerns exist for this part as found in Section 5. Beyond the concerns already noted, a number of the items mentioned are not found in Section 5.</p> <p>Recommendation Overall, this plan would benefit greatly from additional focus and revision with an eye to how the uncertain items found in the plan would translate into operational constraints and actions.</p>	<p>June 25: Operational constraints and actions will be laid out in more detailed design stages of the remediation projects and be presented in the next version of the Dust MMP focusing on Phase 2 operations, as well as through Design and Construction Plans for specific components.</p>	
39	Dust Management and Monitoring Plan - Section 6	<p>Comment Its worth noting the number of qualifiers used in these sections.</p> <p>Recommendation At a minimum, when qualified language such as 'may' is applied then the authors need to provide insight into when that trigger would be met. A better resolution would be to improve the precision of the language used.</p>	<p>June 25: All reasonable efforts are, and will be, made to ensure dust generation is minimized. This is a priority emphasized to all those working at site. The term 'may' is used as many determinations will be on a project-specific basis, taking into consideration media type, wind direction, mitigations in place and those readily available.</p>	
40	Dust Management and Monitoring Plan - Page 6-6	<p>Comment On page 6-6, the plan notes that "all water [associated with demolition] will be collected and managed within the footprint of each building and disposed of appropriately according to the Waste Management and</p>	<p>June 25: This will be captured in the next version of the waste management and monitoring plan, to be submitted post Water Licence issuance. Methods for capturing this</p>	

		<p>Monitoring Plan". In reviewing the Waste Management Plan, there does not seem to be any reference of this as a specific item or as a waste stream (section 4 of the waste management plan) that needs to be managed.</p> <p>Recommendation - The project must clarify and improve the consistency of the plans, indicating how the water will be treated. - Confirm that waste water which has been used in building demolition be treated and discharged through the water treatment plant.</p>	<p>water used as suppressant will be presented in the Waste MMP as wastewater, as well as during detailed construction plans per component, as was done with the Roaster deconstruction.</p>	
41	<p>Dust Management and Monitoring Plan - Section 7.2 Monitoring and Contingencies</p>	<p>Comment If monitoring shows that Air Quality at the site is reflective of the background levels, the City would be open to collaborative agreement towards scaling back the program.</p> <p>Recommendation Language that reflects reasonable arrival at agreement rather than simply 'committing to consult' would seem to be more appropriate.</p>	<p>June 25: The language will be clarified in the revised Dust MMP to confirm engagement with all affected parties, including the City, would occur during considerations for scaling back the program post-remediation.</p>	
42	<p>Tailings Management and Monitoring Plan</p>	<p>Comment The project places a great deal of reliance on the Surface Design Engagement to help guide their efforts. During that process the highest scoring option initially featured vegetated covers for the tailings and the pits.</p> <p>Recommendation The project is very conclusive when it references the SDE as the driving force behind the design of the TCA. However, it should be noted that there were strong alternatives.</p>	<p>June 25: The GMRP recognizes that there are alternatives to the design of the TCA however it was noted that during the Environmental Assessment there was a perception that vegetation could potentially be a pathway for contamination to escape through the cover. Mechanisms of concern included metal uptake by vegetation. Further, the presence of vegetation would encourage fauna and humans to access the area (i.e.,</p>	

			burrowing animals and all-terrain vehicles, both of which could compromise the cover).	
43	Tailings Management and Monitoring Plan	<p>Comment The assessment of the DAR considered the TCA covers as land with an industrial level of contamination that would be suitable for other land uses with restrictions. This was the 2nd specific objective of the Remediation Plan.</p> <p>Recommendation What are the suitable land uses for the TCA and what constraints would necessarily be applied to each potential option? For each of those options, please provide a discussion for the necessary engineering and preparation to advance the component to a point where the use would be possible. Please note any specific considerations when dealing with the South Pond versus the other TCAs.</p>	<p>June 25: Any land use of the TCAs will be restricted. This is in line with Measure 24 of the EA which aims to restrict access to the tailings cap area. Land use restrictions for the former South Pond area have not yet been established.</p>	
44	Tailings Management and Monitoring Plan - 3.3	<p>Comment Section 3.3 discusses the monitoring plans and notes that the project will monitor a number of 'performance criteria.' For example, the engineered cover will monitor physical stability, free draining, thermal stability, and vegetation. These types of criteria need to be explained and incorporated into the closure criteria found in Table 2. The proposed monitoring is essential for effective management, but much is not being appropriately linked to criteria which would demonstrate the adequacy of the closure efforts. The majority of monitoring</p>	<p>June 25: The GMRP does not agree that the performance criteria indicated in the TMMP should automatically be considered "closure criteria", or necessarily inform an Adaptive Management Plan with triggers and management responses. Many of the aspects to be monitored provide useful engineering information that can inform understanding of the long term performance of the facility, without necessarily forming the basis of a</p>	

		<p>currently linked to management purposes is visual inspections. Parties have pushed for development of more effective criteria and direct linkages to monitoring and adaptive management. This is another area where improvements can be made</p> <p>Recommendation Prior to January 1st, 2021, the project should submit an updated Tailings Management Plan for approval. This update will incorporate any new Board directions on Closure Objectives and Criteria as well as feature the incorporation of themes and design tolerances of items currently denoted as "Performance Criteria" to demonstrate meeting the Closure Objectives. Together, these criteria will serve to inform an Adaptive Management Plan with clear triggers and management responses.</p>	<p>"closure criteria" which must be met in order confirm successful performance. For example, thermal monitoring is planned to identify if freezing of the tailings under the cover should occur, and the development of permafrost over time. While the development of permafrost in the tailings may be beneficial, and useful to understand, in no way does the TCA closure require permafrost to develop in order to be successful. Similarly, the growth of vegetation on the cover may eventually require that maintenance activities be undertaken, but would not suggest that cover is failing to meet closure criteria. The TMMP will be revised once the final design and construction plan has been completed.</p>	
45	Tailings Management and Monitoring Plan - 4.1.1	<p>Comment Section 4.1.1 notes that 'revegetation' will be used for erosion control purposes as typical closure maintenance. There are no descriptors or metrics to establish what the project means by revegetation. Generally, the CRP envisions doing nothing and hoping vegetation returns and this is another uncertainty.</p> <p>Recommendation This needs to be clarified "including definitions and metrics as to when it will be used and what constitutes success.</p>	<p>June 25: The purpose of revegetation is strictly functional, for the control of erosion of fine-grained sediments that may be exposed at surface following remediation works. As such the performance of revegetation is measured through metrics related to erosion, as well as through confirmation that native species are used in the revegetation efforts. Vegetation is not considered a "do-nothing" option, and actions</p>	

			identified in Section 4.1.1 of the TMMP include seeding, fertilization, hydroseeding, weeding, and mulch placement.	
46	Wildlife and Wildlife Habitat Management and Monitoring Plan	<p>Comment Wildlife provided a set of review comments to the Project on September 21st, 2018.</p> <p>Recommendation It is unclear what regulatory role ENR will play or if they are satisfied with the current plan.</p>	<p>June 25: The WWHMMP serves to meet a number of regulatory requirements, as outlined in Table 1, including those set by the GNWT-ENR, such as the Wildlife Act and Species at Risk (NWT) Act. Throughout the monitoring process, ENR will be contacted in the event of a wildlife incident or issue to receive additional direction, permits or approvals (section 4 WWHMMP). Wildlife sightings/activities will also be logged and made available to the GNWT to review (section 5 & 6 WWHMMP). GNWT ENR-Wildlife also reviewed the GMRP's responses to pre-engagement comments by GNWT ENR Wildlife (which were submitted as part of the application package) and indicated to the GMRP they have no additional concerns or questions regarding the current GMRP's WWHMMP that was submitted to the MVLWB with the April 1 submission. GNWT ENR Wildlife also conducted a preliminary assessment on whether a Wildlife Management and Monitoring Plan (WMMP) was</p>	

			<p>required for the Giant Mine Remediation Project under Section 95(1)(a-d) of the Wildlife Act. ENR's preliminary assessment was that a WMMP was not required. A formal decision will be made as per ENR's Wildlife Management and Monitoring Plan Guidelines on whether a WMMP is required following the review of the public comments that were received by the Mackenzie Valley Land and Water Board (MVLWB) on Giant Mine's land use permit and Water Licence application. A copy of the Minister's decision, with rationale, will be submitted to the MVLWB to be posted on the public registry. It is the intention of the GRMP to maintain an up-to-date Wildlife and Wildlife Habitat Management and Monitoring Plan.</p>	
47	<p>Wildlife and Wildlife Habitat Management and Monitoring Plan - 4.3.1</p>	<p>Comment Management of Attractants: How will the waste management plan enforce requirements to properly address disposal of wildlife attractants? Large developments have particular troubles during the construction phase due to the transient contractor staffing. Given that this project will be almost entirely completed by contractors, specific focus is required. Recommendation Please explain how the monitoring, assessment and adaptive</p>	<p>June 25: The Waste Management and Monitoring Plan will closely follow the procedures and practices of other contaminated sites and operating mines in the region, and will incorporate the lessons learned from past activities at the GMRP in regular updates. This plan will be enforced by the MCM, who maintains a consistent presence on site, to prevent wildlife attraction and</p>	

		<p>management will be conducted as it relates to wildlife attractants. In particular, please illustrate the lessons learned from past projects.</p>	<p>avoid interaction with humans and the Project. To minimize wildlife attractants, waste management awareness has been implemented, littering and feeding wildlife is prohibited, and food waste managed. The plan will be monitored and reviewed at least annually to identify areas of improvement. Site surveillance monitoring, as outlined in the WWHMMP, will provide systematic and current information of wildlife activity on Site and direct feedback regarding the effectiveness of wildlife mitigations. Surveillance includes areas of the Site where there is risk of wildlife attractants (such as waste management areas) and any deviations detected will be reported back to the mine manager immediately, as well as noted in monthly reports. The WWHMMP incorporates learnings from the current care and maintenance operations including learnings from on-site interactions with black bears and nesting birds (Section 5.2). The Lessons Learned section in WWHMMP will be updated during MMP updates to include additional learnings as work continues on Site.</p>	
48	Wildlife and Wildlife Habitat	<p>Comment The mine is found within Yellowknife limits, with high use in the</p>	<p>June 25: As per appendix C of the WWHMMP, bear sightings will be</p>	

	Management and Monitoring Plan - Section 5	neighbouring areas. Recommendation If large predators are observed at the site, how will the project notify users in and around the area?	reported to ENR. The GMRP also communicates with ENR regarding wolf sightings in common use areas, such as the City of Yellowknife marina. The GMRP also maintains a wildlife log made available to the GNWT-ENR.	
49	Wildlife and Wildlife Habitat Management and Monitoring Plan - Section 6	Comment It is not clear who will be accepting and reviewing reports associated with the WHHPP or with what frequency. Recommendation Who are the monthly, annual, and comprehensive reports being submitted to and what is their review procedure?	June 25: The reports (monthly, annual, and comprehensive) will be submitted to the MVLWB for posting on their registry. As outlined in section 6.2, interested parties will be engaged in the review of monitoring results and identification of adaptive management approaches for revised versions of the WWHMMP. This engagement could take place through GMRP Working Group meetings and/or the Giant Mine Advisory Committee (GMAC), or other applicable meetings.	

Environment and Climate Change Canada: Eva Walker

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	General File	Comment (doc) ECCC Cover Letter Recommendation		
2	Species at Risk Giant Mine Remediation Project Wildlife and Wildlife Habitat	Comment Environment and Climate Change Canada (ECCC) notes that in Table 1 of the Giant Mine Remediation Project Wildlife and Wildlife Habitat Management and Monitoring Plan (WWHMMP) the application of the Species at Risk Act requires revision. As	June 25: The GMRP will update Table 1 in the WWHMMP to accurately reflect the application of SARA prohibitions in the revised version.	

	Management and Monitoring Plan, Table 1	currently worded, it implies that Species at Risk Act (SARA) prohibitions do not apply on territorial lands unless an order is in place. SARA prohibitions for migratory birds, protected under the Migratory Birds Convention Act, and aquatic species, under the Fisheries Act, apply everywhere in Canada regardless of land tenure. Recommendation Environment and Climate Change Canada (ECCC) recommends that the Giant Mine Remediation Team (the Proponent) revise Table 1 to accurately reflect the application of SARA prohibitions.		
3	Migratory Birds Giant Mine Remediation Project Wildlife and Wildlife Habitat Management and Monitoring Plan, Table 1	Comment Table 1 describes migratory birds protected under the Migratory Birds Convention Act to include waterfowl, cranes, shorebirds, and songbirds. ECCC notes that "cranes", or genus Grus, represent a single species in the Project area. The use of "waterbirds" in this instance is more appropriate as it includes not only cranes, but loon, grebe, gull, tern and rail species. Recommendation ECCC recommends changing "cranes" for the bird group "waterbirds" when describing migratory birds.	June 25: The GMRP commits to changing 'cranes' to 'waterbirds' in the revised version of the WWHMMP.	
4	Species at Risk Listings Giant Mine Remediation Project Wildlife and Wildlife	Comment Table 2 presents species of concern potentially occurring at the Project site. ECCC notes that the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status of Common Nighthawk and Olive-sided Flycatcher has been lowered	June 25: Table 2 will be updated during any updates to the WWHMMP, as needed, to reflect new species assessments or listings as well as the current status of	

	Habitat Management and Monitoring Plan, Table 2	to Special Concern. Recommendation ECCC recommends that Table 2 be updated throughout the life of the Project to reflect new species assessments or listings as well as the current status of species of concern.	species of concern will be reflected in annual reports.	
5	Migratory Birds Giant Mine Remediation Project Wildlife and Wildlife Habitat Management and Monitoring Giant Mine Remediation Project Plan, Sections 4.3 and 5.5.1, Wildlife and Wildlife Habitat Management and Monitoring Plan, Appendix B, Sections 3.1 and 5.2, and Wildlife Incident Record	Comment ECCC notes in sections of the Wildlife and Wildlife Habitat Management and Monitoring Plan (WVHMP) that ECCC is not listed as one of the contacts for wildlife mortalities, incidents, advice and permits, particularly as they relate to migratory birds. As described in Table 1, ECCC is responsible for migratory birds protected under the Migratory Birds Convention Act. Recommendation ECCC recommends that the WVHMP be updated to ensure that all staff responsible for implementing the WVMP are aware that ECCC should be notified for all wildlife mortalities, incidents and contacted for advice or permits related to migratory birds. Wildlife Enforcement Division can be reached at ec.dalfnordwednorth.ec@canada.ca and the Environmental Protection Operations Division and the Canadian Wildlife Service can be contacted at ec.eenordrpntnoeanorthpnrnwt.ec@canada.ca.	June 25: The contact information provided for ECCC, along with GNWT-ENR wildlife information will be included in the next version of the WVHMMP.	
6	Bank Swallows Giant Mine	Comment In section 3.2, there is a cautionary note to pay special attention in quarries for	June 25: The revised WVHMMP will include text in Section 3.2	

	<p>Remediation Project Wildlife and Wildlife Habitat Management and Monitoring Plan, Appendix B, Bird Nest Monitoring Protocol, Sections 3.2 and 3.5</p>	<p>signs of nesting bank swallows and that pile slopes should be kept to less than 70 degrees as per ECCC guidance. Prevention is key to minimizing any work delays caused by nesting swallows. Reporting in Section 3.5 should also include notifying the Giant Mine Remediation Project on-site Environmental Manager when inactive slopes greater than 70 degrees are observed Recommendation ECCC recommends that inactive stockpiles with slopes greater than 70 degrees be reported to the Giant Mine Remediation Project on-site Environmental Manager so that appropriate action can be taken.</p>	<p>regarding the recommendation to report inactive stockpiles greater than 70 degrees to the on-site Environmental Manager so that appropriate action can be taken.</p>	
7	<p>Bank Swallows Giant Mine Remediation Project Wildlife and Wildlife Habitat Management and Monitoring Plan, Appendix C</p>	<p>Comment (doc) Section 3.2 of Appendix B refers to the ECCC pamphlet: Bank Swallow in sand pits and quarries. This pamphlet should be added to the relevant brochures and pamphlets section in Appendix C. Recommendation ECCC recommends adding the attached Bank Swallow pamphlet to Appendix C.</p>	<p>June 25: The GMRP team recognizes the importance of protecting this species of concern and has already included mitigations from this pamphlet within the WWHMMP. The following relevant mitigations from the pamphlet included in the WWHMMP are: Stock-pile slopes will be maintained at less than 70 degrees to discourage nesting of bank swallows; Stock-pile slopes will be searched for bank swallow nesting activity at least twice per week during migratory bird nesting season (early May to mid-August), using the protocols described in the Bird Nesting Survey; and In the event of the presence of</p>	

			birds nesting on structure or in areas where the bird, nest or eggs may be at risk, the Environmental Manager will contact GNWT-ENR and consider establishing a buffer zone around the nest to restrict activity that may disturb the nest.	
8	<p>Toxicological Risk Assessment Giant Mine Remediation Project Wildlife and Wildlife Habitat Management and Monitoring Plan, Section 5.3.2 CanNorth 2018. Giant Mine Human Health and Ecological Risk Assessment. Cygnus Environmental 2004. Giant Mine Migratory Bird Survey. Golder 2015. Giant Mine Bi</p>	<p>Comment Section 5.3.2 of the WWHMMP states that a toxicological risk assessment reported that animals that consume insects are at greater risk of taking up contaminants, but effects appear limited to small mammals. Golder (2015, 2016) noted that bird species most likely to be affected by contaminants at the Project are waterfowl, waterbirds, and shorebirds due to their attraction to areas in and around water, where contaminants tend to be more accessible. Although the ecological risk assessment included wildlife receptors for waterfowl (Mallard and Merganser) and waterbirds (Horned Grebe) as well as consideration for other species of conservation concern, no receptor was selected to represent shorebirds. Baker Creek was identified in Cygnus Environmental bird survey report (2004) as a "significant rearing area for shorebirds". In addition, Red-necked Phalarope, a shorebird species, is included in Table 2 of the WWHMMP as a species of concern potentially occurring at the Project. Further, shorebird species have been identified as at risk of contamination in other ecological risk assessments for projects in the</p>	<p>June 25: For the 2018 HHERA, Environment and Climate Change Canada reviewed the Problem Formulation for the ERA as well as the draft report to ensure that any concerns that they had were being addressed. At no time was any concern raised about the evaluation of shorebirds. It is noted that the sediments in Baker Creek are going to be dredged as part of the GMRP, as well as areas of shoreline dredged or capped to reduce exposure to arsenic concentrations. The 2018 HHERA evaluated a Horned Grebe (species at risk) whose diet mainly consists of benthic invertebrates and sediments as well as a Swallow whose diet is 100% emergent insects. The benthic invertebrate concentrations as well as the emergent insect concentrations which were assumed to be 1/10 of the concentrations in benthic invertebrates are over estimated in the 2018 HHERA. Therefore, the</p>	

		<p>North. ECCC has concerns that there may be a gap in the ecological risk assessment section of the human health and ecological risk assessment (HHERA). This gap of not including shorebirds, which may be at greater risk of exposure to contaminants, should be addressed to fulfill responsibilities with respect to subsection 5.1 of the Migratory Birds Convention Act and Section 79(2) of the Species at Risk Act.</p> <p>Recommendation ECCC recommends that an ecological risk assessment be conducted for an appropriate shorebird wildlife receptor.</p>	<p>inclusion of these two wildlife receptors encompasses the diet of a shorebird and the GMRP does not consider it necessary to conduct an additional ecological risk assessment.</p>	
9	<p>Environmental Impact of Dust Suppressant Activities Giant Mine Remediation Project Dust Management and Monitoring Plan - Section 3.2 Short term dust suppressants</p>	<p>Comment ECCC notes that application of water is planned as a dust suppressant activity for all dust sources (see Table 3.2-1 Best Management Practices-Short Term Dust Suppressants). The plan does not consider the potential for runoff of applied water to act as a source of contamination (including Arsenic) to nearby water bodies.</p> <p>Recommendation ECCC recommends that the Proponent evaluate the potential for dust suppressant activities to act as a source of contamination to nearby water bodies. ECCC also recommends that the Proponent identify mitigation measures if dust suppression activities are found to have the potential to become a source of contamination.</p>	<p>June 25: The GMRP believe the Water MMP, Proposed Surveillance Network Program (SNP) and the Standard Operating Procedure for Effluent and Water Sampling (which outlines SNP and operational monitoring program details), all of which are included as part of the Application Package, adequately account for this recommendation on a site-wide as well as project-specific basis. This will further be addressed on a project specific basis through construction plans and is also dependent on the location of the tasks being completed.</p>	
10	<p>Canadian Ambient Air Quality</p>	<p>Comment Table 4-2 of the Air Quality Monitoring Plan (AQMP) lists the air quality monitoring criteria that are used in the</p>	<p>June 25: As noted, the GMRP uses the Guideline for Ambient Air Quality Standards in the Northwest</p>	

StandardsGiant Mine Remediation Project Dust Management and Monitoring Plan Appendix F - Air Quality Monitoring Plan - Section 4.2 Ambient air quality criteria	<p>evaluation of monitoring results. For Fine Particulate mater (diameter of 2.5 &micro;m or less, PM2.5), nitrogen dioxide (NO2) and Sulphur Dioxide (SO2), the Canadian Ambient Air Quality Standards (CAAQS) were not applied. Rather, territorial standards were used for these parameters, which are less stringent than the CAAQS. ECCC would like to note, that the request to compare to the CAAQS is intended to evaluate the nature and severity of the project&rsquo;s impact on air quality levels and the resulting mitigation measures that may be required to maintain good air quality levels in the region. Although the CAAQS are not legally binding, federal, provincial, and territorial governments have agreed to work collaboratively to implement actions to improve air quality and to report on the achievement of the CAAQS on a regular basis. The CAAQS are underpinned by air quality management levels that call for progressively more rigorous actions by jurisdictions as air quality approaches or exceeds the CAAQS. While not intended to be used as enforceable standards to be achieved at the project perimeter, during an environmental assessment process the CAAQS may be used in conjunction with the results from air quality modelling to predict the impact of a project on downwind locations, including communities and sensitive receptors.</p> <p>Recommendation ECCC recommends that</p>	Territories (2014), as well Ontario Ambient Air Quality Standards (2012) where NWT standards do not exist. (The 24-hr average PM2.5 concentrations for both the CAAQS and NWT standards are 28 ug/m3.) The GMRP believes the AQMP to be robust and will continue to work with the Government of the Northwest Territories as they develop NWT Air Regulations, as well as re-evaluate the AQMP (including criteria) during the life of the Project.	
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		the Proponent update AQMP to apply the CAAQS, as they are the most stringent air quality standards.		
11	Air Quality Data and Adaptive Management Giant Mine Remediation Project Dust Management and Monitoring Plan and Appendix F - Giant Mine Remediation Project Air Quality Monitoring Plan	<p>Comment The Dust Management and Monitoring Plan (Section 5.3) includes Risk-based action levels (RBAL) which establish thresholds for the immediate initiation of dust suppression and related activities. The RBAL is based on monitored PM10 concentrations at both Perimeter and Community monitoring stations. It is not clear how other monitored air quality parameters such as metal concentrations (including arsenic), fine particulate matter (PM2.5), and nitrogen dioxide (NO2) will be used to inform adaptive management. Likewise, apart from RBAL-triggered alarms, it is not clear how frequently this data will be reviewed. Continuously monitored parameters, such as PM10, PM2.5, NO2, are generally available as real-time data (minute or hourly averages). This could allow immediate response based on criteria exceedances. In contrast, integrated samples such as 24-hour PM samples, including metals, must be collected, sent to a laboratory and analyzed before the data is available. It is unclear how quickly airborne metal data will be available in this plan, and whether this data will be used to inform adaptive management to reduce airborne arsenic concentrations.</p> <p>Recommendation ECCC recommends that the Proponent clarify how all monitored</p>	<p>June 25: The GMRP measures TSP and PM10 with continuously calculated 15-minute average concentrations at the site perimeter stations as well as integrated filter based 24-hr average concentrations for TSP and PM10, with post-exposure filter monitoring for antimony, arsenic, lead, nickel, and iron. Community stations measure PM2.5 and PM10 on a continuous basis, recorded hourly. Integrated filter based 24-hr average concentrations samples are analyzed for antimony, arsenic, iron, lead, and nickel. Asbestos is also filter-based 24-hr average sampling. NO2 is measured on a continuous basis and recorded hourly. These results are sent in real-time to the air quality monitoring contractor who is in direct contact with the MCM, as well as CIRNAC and PSPC as required. Filter analysis results are typically received approximately 3 weeks post sample date. Real-time as well as filter analysis results are used by Site as a feedback loop to ensure mitigations are effective, adaptively managing on a site-wide and project-</p>	

		parameters will be used in the adaptive management of airborne contaminants arising from the Project. In addition, ECCC requests that the frequency of up-to-date data availability be incorporated into the discussion of adaptive management of airborne contaminants.	specific nature. Weekly air quality reports are sent by CIRNAC to a distribution list, as well as posted on the GNWT air quality website, along with the data and annual air reports.	
12	Monitoring parameters and perimeter sites Giant Mine Remediation Project Dust Management and Monitoring Plan - Section 5.3.2 and Appendix F - Giant Mine Remediation Project Air Quality Monitoring Plan, Table 4-1	<p>Comment Dust Management and Monitoring Plan (Section 5.3.2) indicates that perimeter-monitoring stations will only monitor for total suspended particulates (TSP) and PM10. However, the AQMP indicates that perimeter stations will also monitor for metals including arsenic (24-hour samples) in Table 4-1. The RBALs, which act as triggers to initiate dust suppression activities, are based on the 95th percentile of concentrations of arsenic measured in soil (6120 mg/kg). The maximum concentration, however, was measured to be 87000 mg/kg. Thus, if material with very high concentrations of arsenic is disturbed, there is a possibility that the RBAL may not be triggered, but high airborne concentrations of arsenic are generated. As a result, monitoring of arsenic at the perimeter stations is necessary to confirm that airborne concentrations of arsenic remain below ambient air quality standards (Ontario Ambient Air Quality Criteria).</p> <p>Recommendation ECCC recommends that the Proponent monitor for metals, including arsenic, at the perimeter stations.</p>	<p>June 25: The GMRP confirms that metals, including arsenic, are currently being monitored at all perimeter stations, as well as community stations, as per the AQMP. Section 5.3.2 of the Dust MMP will be revised to reflect this in future versions.</p>	

13	<p>Tailings Management Giant Mine Remediation Project ‘ Tailings Management and Monitoring Plan. Ver. 1 Section: 2.2 Tailings Containment Area Closure Plan</p>	<p>Comment The Proponent states that, "Removal of tailings and dams from the South Pond area will reduce the overall Tailings Containment Area (TCA) footprint and remove tailings from a watershed that flows towards Yellowknife Bay. Similar to water from the TCA spillways, water from the reclaimed South Pond area will be retained and managed prior to discharge during the adaptive management phase. It is expected that for the first years of the adaptive management phase runoff from the South Pond could require treatment as residual arsenic from the reclaimed area may affect water quality. It is anticipated that the water quality will eventually be suitable for discharge, without need for cover placement in the former South Pond area. However, if after several years the runoff quality is not seen to be improving, additional rehabilitation activities may be undertaken". ECCC notes that Figure 5.6-10 shows that flow from the reclaimed South Pond flows south to Yellowknife Bay. It is not clear if Dam #7 will remain in place until the water quality improves as indicated. In addition, the Proponent did not indicate how long they anticipate monitoring water quality until runoff meets the discharge criteria for the project and is suitable for discharge to Yellowknife Bay. Without a cover placed on the South Pond area, the Proponent will have to demonstrate that long-term water quality</p>	<p>June 25: Options for the South Pond area and the selection process that resulted in the current design are presented in the Closure and Reclamation Plan, Appendix 5.6B Tailings Remedial Options Report, specifically in Section 5.0. As described in the CRP Section 5.6.6.9, Dam 7 will remain in place until water quality improves and is suitable for discharge. This is expected to take several years. Table 5.6-7 of the CRP identifies the uncertainty of the duration of treatment period needed for surface water runoff, and the plan to address that uncertainty.</p>	
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		<p>seepage or runoff from the former South Pond area will not have a negative impact on the aquatic receiving environment.</p> <p>Recommendation ECCC recommends that the proponent provide a discussion of alternatives that were considered to manage water from the South Pond. ECCC also recommends that the Proponent provide a discussion of the adaptive management measures that would be taken if, after several years, the runoff quality from the South Pond does not improve, and additional rehabilitation activities are required.</p>		
14	<p>Tailings Management and Monitoring Plan (TMMP) Giant Mine Remediation Project - Tailings Management and Monitoring Plan. Ver 1 Section: 2.2 Tailings Containment Area Closure Plan</p>	<p>Comment Proponent states that, "the perimeter dams of the TCAs will require monitoring for physical stability in post-closure. Some dams may need stabilization prior to closure to achieve the minimum factors of safety expected under Canadian Dam Association (CDA) guidance (CDA 2013). While the dams are part of the TCA system overall, the monitoring and maintenance of them is not directly addressed by this TMMP." ECCC is of the view that the perimeter dams are part of the containment features that keeps the tailings from discharging substances that have the potential to have negative impact on the environment. Therefore, the stability of the dam to hold back the tailings should be addressed when the tailings containment is being addressed in the Tailings Management and Monitoring Plan (TMMP).</p>	<p>June 25: The GMRP agrees on the importance of the tailings dams, and is committed to operating and maintaining the dams in accordance with CDA guidelines. As stated in Section 1.3.5 of the TMMP, "The TMMP includes the expected monitoring philosophy of the OMS Manual but does not provide specific monitoring criteria or approaches specific to any of the dams. As the TCAs transition to post-closure, the OMS Manual will be updated by the Main Construction Manager accordingly, with technical input from the Engineer of Record, to reflect any operational changes to the dams." The development and use of an OMS Manual for dams is normal practice for operating and closed</p>	

		Recommendation ECCC recommends that the Proponent address the stability of the dams holding back the tailings in the tailing containment area in the TMMP.	mines in Canada, and in line with CDA guidance. The OMS Manual will be posted to the MCM (Parsons) website for review in the near future.	
Giant Mine Oversight Board: GMOB Giant Mine Oversight Board				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	General File	Comment (doc) GMOB Comments Cover Letter Recommendation		
2	General File	Comment (doc) Slater Environmental Consulting Memo referenced by GMOB Recommendation		
3	ESMMP - General - Completeness of the Plan	Comment Commentary within the draft water licence document describes the intent of the Erosion and Sediment Management and Monitoring Plan to be a high level document with a site wide focus; activity specific details are to be provided within specific component Construction Plans. Proposed Schedule 3, Condition 2 of the water licence provides an outline of information that is to be contained within the ESSMMP, even at a high level, and this is reflected in the concordance table in Appendix A of the Plan. GMOB notes that some of the information that is to be included within the plan such as: maps or diagrams identifying areas susceptible to erosion, has not been provided yet. GMOB understands that this information will be submitted in a future update planned for after completion of	June 25: As per Section 7.2 Required Review and Updates of the Erosion and Sediment Management and Monitoring Plan, the GMRP is requesting that Phase 1 of this plan be approved upon Water Licence issuance; an updated version of the ESMMP will be submitted after issuance if updates are needed based on the outcomes of the MVLWB proceedings. Ninety days prior to the commencement of Phase 2, the GMRP will submit an updated Erosion and Sediment Management and Monitoring Plan for review and approval prior to commencement of remedial activities. The updated plan will include an erosion potential of the site that will present general	

		<p>the water licencing process.</p> <p>Recommendation Given the current lack of completeness of this plan, GMOB recommends the GMRP provide the planned schedule for an updated ESMMP and identify whether review and approval of the ESMMP could wait until submission of the updated plan.</p>	<p>classification of the erosion potential at the site, using polygons to identify areas of erosion potential (See Section 4.1).</p>	
4	<p>ESMMP - General - Including Details of Sediment and Erosion Control within Construction Plans</p>	<p>Comment Slater Environmental Consulting (SEC) has conducted a review of the ESMMP and provided comments and recommendations in a May 25, 2019 memo to the Giant Mine Working Group. In this memo, SEC identifies that Schedule 2, Condition 1 of the proposed water licence (which outlines the contents of the DCP's) does not include a requirement to address erosion and sediment control. SEC recommends that, if the Board supports the approach of including detailed erosion and sediment control information within the DCP's, the Schedule 2, Condition 1 should explicitly include this as a requirement.</p> <p>Recommendation GMOB supports the SEC recommendation to include a requirement for detailed erosion and sediment control within the licence requirements for the DCPs.</p>	<p>June 25: A commitment has been made revise Schedule 2, Condition 1 to specifically state that DCPs must contain details about erosion and sediment management and monitoring.</p>	
5	<p>ESMMP - Table 4-1 - Cover Construction</p>	<p>Comment The SEC memo identifies that Table 4-1 does not include construction of covers as an activity that could require erosion and sediment control, and that this activity should be added to the Table.</p>	<p>June 25: GMRP agrees that an update to Schedule 2, Condition 1 is appropriate to include details about erosion and sediment management</p>	

		<p>Recommendation GMOB supports the SEC recommendation to include construction of covers as an activity that could require management of erosion and sediment.</p>	<p>and monitoring within the Design and Construction Plan.</p>	
6	<p>TMMP - Overall - Comparison to Quantitative Criteria</p>	<p>Comment The TMMP describes monitoring that will be required for the closed TCA's, including monitoring frequency, the expected monitoring duration and a reduction in monitoring frequency as conditions are expected to improve with time. Decisions regarding reducing the monitoring frequency or the need for maintenance will be based upon comparison to criteria. These criteria should be quantitative, and documented to assist interested parties in evaluating the performance of the closed TCA's. Table 2 provides some criteria for the TCA's, but these could be improved upon. As an example, Section 3.4.2 describes a scenario where too much deformation in the cover could lead to excessive strain on the liner material. The tolerance for strain is described as being dependant upon the selected material and design geometry, but the section implies that there would be a measurable allowable deformation limit after which additional actions would be triggered. Similar criteria could be developed for water quality trends, thermal trends, etc. and summarized on the Board's public registry.</p> <p>Recommendation GMOB recommends that quantitative criteria should be developed for assessing the performance of the closed</p>	<p>June 25: The GMRP agrees that additional numeric criteria could be developed as design is advanced. Numeric criteria already exist to define acceptable discharge water quality. As the design for the TCA cover advances, it will be possible to identify allowable cover strain limits, which can be used to evaluate differential settlement measures. Thermal trends are not considered appropriate for numeric criteria. The TMMP indicates that thermistors will be installed as at select locations to provide information on freeze-thaw cycles in the TCAs, and additional context for understanding observations and performance and this will be reported to the MVLWB. However, there are no relevant criteria to be applied to the data obtained from thermal trends</p>	

		TCA's, and these criteria should be available on the Board's public registry.		
7	TMMP - Section 1.3.5 - Operation Maintenance and Surveillance Manual	<p>Comment Section 1.3.5 identifies that an Operation Maintenance and Surveillance Manual will be developed for monitoring of the tailings dams. Current versions of this manual should be available on the public record.</p> <p>Recommendation GMOB recommends that a current version of the OMS should be maintained on the public registry for this water licence.</p>	<p>June 25: The Operation Maintenance and Surveillance Manual will be posted on the Main Construction Manager (Parsons) website via the following link: www.giantminerp.ca. The version of the OMS Manual that will soon be posted will be considered the most up to date version. No version of the OMS Manual will be posted on the public registry.</p>	
8	TMMP - Section 3.3 - SNP Stations	<p>Comment The TCA monitoring plan identifies two types of water sampling points - operational sampling locations and Surveillance Network Program (SNP) stations. The SNP stations are located in sumps adjacent to the closed TCA's while the operational sampling locations are located in the spillways leading to the water management areas and in the water management areas themselves. Information on water quality running off the TCA's and collecting in the water management ponds will be important to confirming the efficacy of TCA closure and will be relevant for interested parties as the water licence is administered. Consideration should be given to setting the spillway and water management area sampling locations as SNP points.</p> <p>Recommendation GMOB recommends that</p>	<p>June 25: The GMRP agrees that spillways and water management area monitoring sampling locations where water will eventually be redirected to Baker Creek be established as SNP locations. These are already identified in the SNP. This will be considered in the design of the spillway.</p>	

		the spillway and water management area monitoring sampling locations should be established as SNP stations.		
9	TMMP - Table 7 - Visual Inspection Frequency	<p>Comment The GMRP proposed to discontinue visual monitoring of the spillways after 10 years. However, GMOB understands that the visual monitoring program takes place prior to freshet to ensure that the spillways are clear of debris and will convey water as designed. It is not clear why the potential for debris to block the spill way will change with time, and why this type of monitoring will not be required for much longer.</p> <p>Recommendation GMOB recommends that additional rationale should be provided for discontinuing visual monitoring of the spillway after 10 years.</p>	<p>June 25: Given the design of the spillway and the cover, it is not obvious what mechanisms exist that could result in blockages of the spillway that will prevent it from functioning as designed. However, the design team considers it prudent to include a period of ongoing monitoring and evaluation. If any unanticipated mechanisms for blockage of the spillway occur, it is expected that evidence of such mechanisms will be detected within the relatively extended period (10 years) of monitoring. If monitoring should provide evidence of issues or potential issues that should require ongoing monitoring, the period of spillway-specific monitoring will be extended. Finally, all dams will be subject to ongoing inspections as part of the dam monitoring outlined in the OMS Manual. As such, discontinuing the spillway-specific monitoring outlined in the TMMP does not mean that there will be no instances to observe conditions at the spillway as part of site operations.</p>	

10	TMMP - Section 3.3.6 - Sumps	<p>Comment With the exception of sump 43-29 it appears that surface water will not flow towards the sumps that will be established around the TCA's. The GMRP expects that operation and monitoring of the sumps will only be required for a period of 5 years after cover placement. GMOB is not entirely certain what water is being collected and monitored by the sumps, and whether there is likely to be any change to water quality after 5 years. If the sumps are collecting surface run-off, then it is feasible that water quality will be good, and extended monitoring will not be required. However, if the sumps collect infiltration or seepage water, then it is possible that water monitoring will be required for a longer time period.</p> <p>Recommendation GMOB recommends the GMRP clarify what water is intended to be monitored by the sumps located adjacent to the closed TCA's.</p>	<p>June 25: Sumps are part of the existing operational monitoring. During current operations, water quality is monitored at each of the four sumps identified as SNP 43-29 through SNP 43-32. Table 1-1 of the Proposed Surveillance Network Program provides details of what is currently monitored at each of these locations (seepage from the nearby TCAs and dams). However, with the implementation of closure works (TCA recontouring, changes in water management, cover placement), it is expected that they will become progressively less likely to collect water and can be decommissioned. A 5 year monitoring period has been provisioned for continuity with operational monitoring and confirmation of this expectation. Surface water runoff from the TCAs will be monitored at spillway discharges from the TCAs as documented in Section 3.3.2 of the TMMP, and water quality in the temporary downstream water storage areas for runoff will be monitored as described in Section 3.3.3. These areas are expected to collect surface water runoff from the TCAs until water quality monitoring results confirm that they can be</p>	
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			decommissioned. The current location of Sump 43-29 downstream of the South Pond area will serve for monitoring water quality at runoff from the former South Pond area after remediation. As outlined in Section 3.3.4, this location will continue to be monitored until surface runoff is acceptable for discharge and Dam 7 can be decommissioned. While the continuation of water quality monitoring at this point will be evaluated at year 5 after reclamation (see Section 3.3.4), the currently planned duration of monitoring is 10 years (see Table 11).	
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MVLWB: Shannon Allerston

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Dust Management and Monitoring Plan - General	<p>Comment In the Plan there is mention of having vehicle wash stations located at various spots.</p> <p>Recommendation Please provide information relating to the total number of vehicle wash stations, locations of wash stations, amount of water to be used, final disposal of waste water, and any other information relating to the establishment of the vehicle wash stations.</p>	<p>June 25: There is currently one vehicle wash station set up adjacent to B-shaft. It was used (currently inactive) during site stabilization activities and has a lined floor, is bermed, and is approximately 15m x 30m. Additional locations may be identified during the course of project implementation planning to ensure dust and contamination tracking is minimized. These will be identified to the Mackenzie Valley Land and Water Board through the</p>	

			Waste Management and Monitoring Plan, including details on water use and waste disposal.	
2	Dust Management and Monitoring Plan	<p>Comment Community Air Quality monitoring station locations are identified in Table 5.3-2 in the DMMP.</p> <p>Recommendation Please discuss if additional community monitoring stations have been considered, and comment on if the GMRP Team believes there could be a need to have additional locations?</p>	<p>June 25: There are no considerations for any additional community air monitoring stations at this time. The locations of the three existing community air monitoring stations (Ndilo, Yellowknife marina area at the site boundary, and Niven Lake) were determined based on a number of factors which have remained unchanged, including: a review of existing historical ambient air quality data in the area; the location of project activities and sensitive receptors such as residential dwellings, health care facilities and education facilities; the variability of local wind patterns; the location of topographic features that affect the dispersion of emissions and engagement with stakeholders and affected parties. Specifically, the Ndilo station location was chosen in coordination with the Yellowknives Dene First Nation. Data from the GNWT-run NAPS station located in downtown Yellowknife is also reviewed in conjunction with the three GMRP community stations as a means of data comparison.</p>	

3	Dust Management and Monitoring Plan	<p>Comment In Appendix E of the DMMP Chemical Dust Suppressants are discussed. It would be beneficial to include a list of chemicals that will be used as dust suppressants in the Spill Contingency Plan, including mitigation measures associated with the use of the chemicals.</p> <p>Recommendation Please discuss including this information in the Spill Contingency Plan.</p>	<p>June 25: The Dust Management and Monitoring Plan describes the use of water and 'approved chemicals' as dust suppressants. The next version of the Spill Contingency Plan will include a list of chemicals for use on site, including applicable mitigations. Currently-approved chemicals in use on site will be included, and the list will be updated if/as new dust suppressants are considered and approved for use.</p>	
4	Wildlife and Wildlife Habitat Management and Monitoring Plan - General	<p>Comment In relation to the relocation of Baker Creek and the Yellowknife Bay in-water work.</p> <p>Recommendation Has a Fisheries Authorization been received from the Department of Fisheries and Oceans and if not what is the current status.</p>	<p>June 25: No, the GMRP has not yet applied for Fisheries Act Authorization. The GMRP will be leading engagement activities specific to potential impacts to fish and fish habitat in Baker Creek and Yellowknife Bay in 2019/2020. The GMRP currently plans to apply for the Authorization in 2021. This schedule is dependent on the detailed design schedule and may be subject to change.</p>	
North Slave Metis Alliance: Jess Hurtubise				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
5	General File	<p>Comment (doc) NSMA comments refer to the analysis done by Slater Environmental (2019) - "Review of Post-EA Information Package Giant Mine Remediation Project";</p> <p>Recommendation</p>		

1	Longterm Monitoring - Erosion and Sediment MMP - Foreshore Tailings Area	<p>Comment Other priorities for NSMA for the Water Licence is clear longterm planning and robust mitigation processes for the Remediation Project. This involves continued and extensive monitoring. The Erosion and Sediment MMP proposes visual inspection of the engineered cover on the Foreshore Tailings Area in order to evaluate the performance of the closure measure. The dynamic environment of the lake shore presents significant uncertainty about performance of the cover (Slater Environmental, 2019).</p> <p>Recommendation Another priority for NSMA for the Water Licence is clear longterm plans for the Remediation Project. Similar to the Shoreline Lands Cleanup above, NSMA believes a more rigorous and quantitative approach for monitoring performance is likely warranted. At the very least, the Erosion and Sediment MMP should include quantitative monitoring to confirm the integrity of the cover with respect to both area and thickness, and monitoring of exposed and near-shore sediments to confirm that the area is not being re-contaminated by migration of sediment from other locations.</p>	<p>June 25: While the design has not been finalized, it is expected that scour of a coarse rockfill cover would be best detected through inspection, not water monitoring. The cover is not made of fine material that might be detected as total suspended solids in water quality monitoring.</p>	
2	Longterm Monitoring - Tailings MMP - Response Plan	<p>Comment Other priorities for NSMA for the Water Licence is clear longterm planning and robust mitigation processes for the Remediation Project. This involves continued and extensive monitoring. The CRP proposes removal of tailings and dams from the South</p>	<p>June 25: A formal adaptive management plan has not been prepared, as the design approach for the South Pond remediation was developed to address the uncertainty mentioned in this comment. Removal</p>	

		<p>Pond area. Once materials are relocated, the Tailings MMP proposes active management of runoff water from the area, including collection and treatment as required. The Plan anticipates that water quality will eventually meet runoff water discharge criteria (Water MMP) allowing direct discharge to the receiving environment. But the Plan also acknowledges uncertainty and proposes that "if after several years the runoff quality is not seen to be improving, additional rehabilitation activities may be undertaken" (Tailings MMP, Section 2.2). The long-term runoff characteristics for the reclaimed South Pond area is an area of significant uncertainty (Slater Environmental, 2019).</p> <p>Recommendation Another priority for NSMA for the Water Licence is clear longterm plans for the Remediation Project. NSMA recommends there should be a specific response plan developed that defines the indicators, monitoring, thresholds and responses that will be used to make decisions about the need for additional reclamation activities in this area. This could be part of a comprehensive adaptive management plan.</p>	<p>of the tailings from the South Pond area is expected to improve runoff water quality. As the time needed to attain this improvement is uncertain, runoff from the area will be collected, monitored, and treated until it meets defined discharge criteria. The TMMP outlines a defined program of monitoring and indicates the uncertainty in the duration for which active management and treatment of runoff from the South Pond area may be needed. The indicators and threshold for discontinuing active management and treatment are specifically outlined in the CRP as closure criterion T1-3. Section 5.6.8.1 of the CRP further addresses how the limited uncertainty with the South Pond relocation has been incorporated into the design approach. While initial investigations indicate that the fine-grained soils that underly the TCA meet or exceed the GNWT industrial land use criterion, further characterization will be conducted once the tailings have been removed, and remaining material either covered or relocated.</p>	
3	Longterm Monitoring - Tailings MMP -	<p>Comment Section 2.3.1 of the Tailings MMP states that: "Experience at analogous site in the Northwest Territories suggests that</p>	<p>June 25: The GMRP agrees that re-vegetation is not a long-term goal. For this reason, monitoring of</p>	

<p>Monitoring geomembranes</p>	<p>volunteer vegetation will grow over the cover to some extent. Such vegetation will neither benefit nor put at risk the cover performance." The proposed tailings cover consists of a geomembrane overlain by 0.3 m of fine-grained soil or sand and then 0.7 m of rockfill. The main purposes of the geomembrane are to keep surface water clean and limit infiltration of surface water into the tailings materials. The main purposes of the surface layer of coarse rock are to protect the geomembrane, discourage human and animal use of the area, and create a visual message for future generations about the contaminant-related risks that are present. As experienced at the other referenced site, vegetation is likely to establish on the cover over time, especially over the duration of this project and the life span of the proposed cover. NSMA is unsure that the effects of vegetation growing on the cover will be neutral for cover performance. Over the very long term, it is possible that large vegetation could physically damage the geomembrane and reduce the effectiveness of infiltration control and separation of clean surface water. With respect to the human/animal use and long-term messaging purposes of the cover, the vegetation would almost certainly have adverse effects on performance. The presence of vegetation on the cover would reduce the deterrent nature of the cover for both humans and animals, and it would also diminish the</p>	<p>vegetation is included in the TMMP, and the vegetation may be removed. For this reason, monitoring of vegetation is included in the TMMP, and the vegetation may be removed if it develops to a point where the community regards it as an issue for messaging. GMRP would like to correct the impression that one of the main purposes of the geomembrane is to limit infiltration into tailings materials. The main purpose of the geomembrane is to keep surface water clean. Due to the nature of the geomembrane, it is an inevitable side effect that it will also dramatically reduce infiltration to the tailings, but this is not its purpose. In addition, scientific literature suggests that common concerns about root penetration of geomembranes, such as that expressed by SEC, are misplaced. Dobson (1995) identified that tree roots are highly sensitive to environmental conditions and that geomembranes are an effective barrier to their downward penetration. This is supported by practical studies such as Newman et al (2004), where a 30-year old PVC geomembrane used as a liner in a pond overgrown with "dense, persistent stands of cattails, trees, and</p>	
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		<p>effectiveness of the surface for long-term messaging (Slater Environmental, 2019). Recommendation To address the long-term need to maintain effective performance of these cover purposes, NSMA recommends the GMRP further consider the effects of vegetation on the geomembrane and that the Tailings MMP should potentially include maintenance of the surface, including vegetation removal.</p>	<p>other vegetation" was exhumed and found to be free of holes. This PVC liner was only 0.51 mm thick, compare to the 5.6 mm thick geomembrane planned for the TCA cover (the planned BGM is also much more resistant than PVC). References: Dobson M.C., Moffat A.J. (1995) A re-evaluation of objections to tree planting on containment landfills. Waste Management & Research Volume 13, Issue 5, Pages 579-600. Reference: Newman E. J., Stark T. D., Rohe F.P., Diebel P. (2004) Thirty-year durability of a 20-mil PVC geomembrane. Journal of Vinyl and Additive Technology. Volume 10, Issue 4.</p>	
4	<p>Longterm Monitoring - Tailings MMP - Monitoring covers & spillways</p>	<p>Comment Other priorities for NSMA for the Water Licence is clear longterm planning and robust mitigation processes for the Remediation Project. This involves continued and extensive monitoring. The Tailings MMP (Table 5) proposes that monitoring covers after the first 20 years can be reduced to visual monitoring once every 5 years. The proposed monitoring method and frequency does not seem consistent with the tailings covers being one of the key long-term risk management closure components. Similarly, Table 7 proposes discontinuation of monitoring for spillways for the TCAs after</p>	<p>June 25: Visual Monitoring every 5 years is the industry standard for tailings cap monitoring, and as such is recommended for the monitoring schedule. If monitoring should provide evidence of issues or potential issues that should require ongoing monitoring, the period of spillway-specific monitoring will be extended. All dams will be subject to ongoing inspections as part of the dam monitoring outlined in the OMS Manual. As such, discontinuing the spillway-specific monitoring outlined</p>	

		<p>10 years. The spillways are a key feature for managing risks associated with the permanent tailings dams at the site and their importance could easily be forgotten if monitoring is discontinued. Spillways are intended to provide overtopping protection for tailings dams in the event of severe flood events. Large flood events would only be expected on a time scale of decades to centuries. On this time frame, spillways could deteriorate (e.g., from weathering or animal activities) and may be non-functional when their full capacity is needed - potentially many decades into the future. Features associated with the integrity of tailings dams need to be subject to robust monitoring and maintenance programs for as long as the dams need to remain functional. The removal of ponds from these facilities reduces the dam-related risks, but it does not eliminate them entirely because the dams will continue to provide containment for the tailings materials themselves which are not physically stable on their own (Slater Environmental, 2019).</p> <p>Recommendation NSMA recommends implementing more frequent and consistent monitoring of the covers and spillways after the first 10yrs of remediation, as the main component of a response procedure and mitigation of risk.</p>	<p>in the TMMP does not mean that there will be no instances to observe conditions at the spillway as part of site operations. Please refer to Giant Mine Oversight Board: GMOB #9.</p>	
Slater Environmental Consulting: Bill Slater				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response

1	1. Dust Management and Monitoring Plan	<p>Comment Comments about the Dust Management and Monitoring Plan (MMP) are provided in Section 8.0 of the Slater Environmental Report. The comments addressed questions raised by members of the Giant Mine Working Group, but did not lead to any specific recommendations.</p> <p>Recommendation No recommendation provided.</p>	<p>June 25: The GMRP notes that no response is required for this recommendation.</p>	
2	2. Erosion and Sediment Management and Monitoring Plan	<p>Comment The Erosion and Sediment MMP states that it provides a framework for selecting appropriate mitigations and developing monitoring requirements as part of Design and Construction Plans (DCPs) for each closure activity (Section 4). The requirement for submitting DCPs is contained in Part E, Clause 8 of the Proposed Type A Water Licence, with details about the content of the Plans provided in Schedule 2, Condition 1. The Schedule in the Proposed Licence does not specifically state that DCPs must contain details about erosion and sediment management and monitoring.</p> <p>Recommendation If the MVLWB accepts the GMRP's proposed approach to addressing erosion and sediment control, the water licence should clearly specify the requirement for each DCP to include details about erosion and sediment management and monitoring, and for those details to be consistent with an approved Erosion and Sediment MMP.</p>	<p>June 25: The GMRP agrees that an update to Schedule 2, Condition 1 is appropriate to include details about erosion and sediment management and monitoring within the Design and Construction Plan.</p>	

3	3. Erosion and Sediment Management and Monitoring Plan	<p>Comment Table 4-1 of the Erosion and Sediment MMP lists activities that require management of erosion and sediment.</p> <p>Recommendation Construction of covers should be added to this list because in some cases the activity may entail placement of erosion susceptible materials.</p>	<p>June 25: The GMRP will update Table 4-1 in the Erosion and Sediment MMP to include cover construction as an activity that may require erosion and sediment control measures in Phase 2.</p>	
4	4. Erosion and Sediment Management and Monitoring Plan	<p>Comment Table 4-5 of the Erosion and Sediment MMP defines the level of effort for erosion and sediment control based on the risk associated with individual activities. Section 4.2.4 describes potential mitigation measures for erosion and sediment control. Section 4.2.4.1 describes Procedural Best Management Practices, which correlates directly with a category in the table. However, other practices do not have a direct correlation, so it is not clear which activities apply for each risk category.</p> <p>Recommendation The Plan would benefit from some additional clarity about which of the mitigation measures fall in each of the categories defined in Table 4-5.</p>	<p>June 25: Table 4-10 through Table 4-13 provide options for BMPs that have proven to be effective when properly implemented for Level B (Basic Temporary Erosion and Sediment Control BMPs) and Level C (Additional Structures for Erosion and Sediment Controls BMPs). However, when selecting BMPs, consideration must be given to site specific conditions which will be included as part of the Design and Construction Plan. As such, customized methods and techniques may be required to meet the specific requirements of the site condition. Therefore, table 4-5 does not directly correlate with Level B and C and decisions on the appropriate BMPs would be a combination of site erosion potential, the consequences of erosion and sediment control, and the judgment of the designer.</p>	
5	5. Erosion and Sediment	<p>Comment Table 4-11 provides information about vegetated erosion control best</p>	<p>June 25: Active stabilization using vegetation is planned for possible</p>	

	Management and Monitoring Plan	<p>management practices; including identification of the types of locations where certain re-vegetation actions may be effective. However, it is not clear where these approaches would be applied because the CRP proposes minimal use of re-vegetation as part of the GMRP and does not provide information about how decisions will be made about where more active re-vegetation would be implemented.</p> <p>Recommendation The Erosion and Sediment MMP should be revised to provide a framework for decision-making about re-vegetation requirements at the site.</p>	<p>locations like steep slopes near the Townsite to prevent erosion of new material into Yellowknife Bay, or remediation of fine grained borrow sources. Active stabilization is planned at borrow locations where there are remaining exposed fine-grained sediments to prevent erosion of material, with vegetation being the preferred method. Vegetation success will be measured in terms of erosion control success (e.g. by measuring TSS in runoff). Erosion monitoring details will be developed specific to each closure activity. Section 4.2 in the ESMMP, Site Assessment Prior to Implementation of Work, will act as a framework for decision-making for erosion control BMPs, and examples provided in table 4-11 of vegetated methods will only be used for areas where active stabilization using vegetation is planned as per the CRP.</p>	
6	6. Erosion and Sediment Management and Monitoring Plan	<p>Comment The Erosion and Sediment MMP proposes visual inspection of the engineered cover on the Foreshore Tailings Area in order to evaluate the performance of the closure measure. The dynamic environment of the lake shore presents significant uncertainty about performance of the cover.</p> <p>Recommendation A more rigorous and quantitative approach for monitoring</p>	<p>June 25: While the design has not been finalized, it is expected that scour of a coarse rockfill cover would be best detected through inspection, not water monitoring. The cover is not made of fine material that might be detected as total suspended solids in water quality monitoring.</p>	

		<p>performance is likely warranted. At the very least, it should include quantitative monitoring to confirm the integrity of the cover with respect to both area and thickness, and monitoring of exposed and near-shore sediments to confirm that the area is not being re-contaminated by migration of sediment from other locations.</p>		
7	7. Tailings MMP	<p>Comment The CRP proposes removal of tailings and dams from the South Pond area. Once materials are relocated, the Tailings MMP proposes active management of runoff water from the area, including collection and treatment as required. The Plan anticipates that water quality will eventually meet runoff water discharge criteria (Water MMP) allowing direct discharge to the receiving environment. But the Plan also acknowledges uncertainty and proposes that "if after several years the runoff quality is not seen to be improving, additional rehabilitation activities may be undertaken" (Tailings MMP, Section 2.2). The long-term runoff characteristics for the reclaimed South Pond area is an area of significant uncertainty.</p> <p>Recommendation There should be a specific response plan developed that defines the indicators, monitoring, thresholds and responses that will be used to make decisions about the need for additional reclamation activities in this area. This could be part of a comprehensive adaptive management plan.</p>	<p>June 25: A formal adaptive management plan has not been prepared, as the design approach for the South Pond remediation was developed to address the uncertainty mentioned in this comment. Removal of the tailings from the South Pond area is expected to improve runoff water quality. As the time needed to attain this improvement is uncertain, runoff from the area will be collected, monitored, and treated until it meets defined discharge criteria. The TMMP outlines a defined program of monitoring and indicates the uncertainty in the duration for which active management and treatment of runoff from the South Pond area may be needed. The indicators and threshold for discontinuing active management and treatment are specifically outlined in the CRP as closure criterion T1-3. Section 5.6.8.1 of the CRP further addresses how the</p>	

			<p>limited uncertainty with the South Pond relocation has been incorporated into the design approach. While initial investigations indicate that the fine-grained soils that underly the TCA meet or exceed the GNWT industrial land use criterion, further characterization will be conducted once the tailings have been removed, and remaining material either covered or relocated.</p>	
8	8. Tailings MMP	<p>Comment Section 2.3.1 of the Tailings MMP states that: "Experience at analogous site in the Northwest Territories suggests that volunteer vegetation will grow over the cover to some extent. Such vegetation will neither benefit nor put at risk the cover performance." The proposed tailings cover consists of a geomembrane overlain by 0.3 m of fine-grained soil or sand and then 0.7 m of rockfill . The main purposes of the geomembrane are to keep surface water clean and limit infiltration of surface water into the tailings materials. The main purposes of the surface layer of coarse rock are to protect the geomembrane, discourage human and animal use of the area, and create a visual message for future generations about the contaminant-related risks that are present. As experienced at the other referenced site, vegetation is likely to establish on the cover over time, especially over the duration of this project and the life span of the proposed cover.</p>	<p>June 25: The GMRP agrees that re-vegetation is not a long-term goal. For this reason, monitoring of vegetation is included in the TMMP, and the vegetation may be removed. GMRP would like to correct the impression that one of the main purposes of the geomembrane is to limit infiltration into tailings materials. The main purpose of the geomembrane is to keep surface water clean. Due to the nature of the geomembrane, it is an inevitable side effect that it will also dramatically reduce infiltration to the tailings, but this is not its purpose. In addition, scientific literature suggests that common concerns about root penetration of geomembranes, such as that expressed by SEC, are misplaced. Dobson (1995) identified that tree roots are highly sensitive to</p>	

		<p>However, Slater Environmental Consulting (SEC) does not agree that the effects of vegetation growing on the cover will be neutral for cover performance. Over the very long term, it is possible that large vegetation could physically damage the geomembrane and reduce the effectiveness of infiltration control and separation of clean surface water. With respect to the human/animal use and long-term messaging purposes of the cover, the vegetation would almost certainly have adverse effects on performance. The presence of vegetation on the cover would reduce the deterrent nature of the cover for both humans and animals, and it would also diminish the effectiveness of the surface for long-term messaging.</p> <p>Recommendation To address the long-term need to maintain effective performance of these cover purposes, the Tailings MMP should include maintenance of the surface including vegetation removal.</p>	<p>environmental conditions and that geomembranes are an effective barrier to their downward penetration. This is supported by practical studies such as Newman et al (2004), where a 30-year old PVC geomembrane used as a liner in a pond overgrown with "dense, persistent stands of cattails, trees, and other vegetation" was exhumed and found to be free of holes. This PVC liner was only 0.51 mm thick, compare to the 5.6 mm thick geomembrane planned for the TCA cover (the planned BGM is also much more resistant than PVC). Reference: Dobson M.C., Moffat A.J. (1995) A re-evaluation of objections to tree planting on containment landfills. Waste Management & Research Volume 13, Issue 5, Pages 579-600. Reference: Newman E. J., Stark T. D., Rohe F.P., Diebel P. (2004) Thirty-year durability of a 20-mil PVC geomembrane. Journal of Vinyl and Additive Technology. Volume 10, Issue 4.</p>	
9	9. Tailings MMP	<p>Comment Section 2.6 of the Tailings MMP describes generic requirements for adaptive management, and Section 3 provides general descriptions of monitoring for TCAs. Neither section provides specific details, which</p>	<p>June 25: Detailed Design of the Tailings Containment Areas is still to be completed. Once the detailed design has been completed the TMMP will be updated to reflect the</p>	

		<p>appear to be deferred to later versions of the plan. However, the Proposed Type A Licence does not include a specific requirement for submission of an updated Tailings MMP. The only relevant condition (Part G, Clause 6) refers to compliance with an approved Tailings MMP, but does not specify a requirement for submission of an updated version beyond what has been provided with the Post-EA Information Package.</p> <p>Recommendation The intentions for defining details of monitoring and adaptive management for tailings areas should be clarified.</p>	<p>design. This update will include details of the monitoring and adaptive management required.</p>	
10	10. Tailings MMP	<p>Comment The Tailings MMP (Table 5) proposes that monitoring covers after the first 20 years can be reduced to visual monitoring once every 5 years. The proposed monitoring method and frequency does not seem consistent with the tailings covers being one of the key long-term risk management closure components. Similarly, Table 7 proposes discontinuation of monitoring for spillways for the TCAs after 10 years. The spillways are a key feature for managing risks associated with the permanent tailings dams at the site and their importance could easily be forgotten if monitoring is discontinued. Spillways are intended to provide overtopping protection for tailings dams in the event of severe flood events. Large flood events would only be expected on a time scale of decades to centuries. On this time frame, spillways could</p>	<p>June 25: GMRP agrees that dam integrity must be subject to robust monitoring and maintenance programs for as long as the dams are functioning as dams under CDA definitions. This will include inspection of spillways. Compliance with all applicable CDA guidance underlies the approach to dam management for GMRP. Clear reference to compliance with the Dam Safety Guidelines including the Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams can be added to the TMMP. Per CDA guidance, the dams will be operated and maintained in accordance with the site-specific OMS manual. Details of the</p>	

		<p>deteriorate (e.g., from weathering or animal activities) and may be non-functional when their full capacity is needed - potentially many decades into the future.</p> <p>Recommendation Features associated with the integrity of tailings dams need to be subject to robust monitoring and maintenance programs for as long as the dams need to remain functional. The removal of ponds from these facilities reduces the dam-related risks, but it does not eliminate them entirely because the dams will continue to provide containment for the tailings materials themselves which are not physically stable on their own. In addition, Section 3.3.5 about monitoring and maintenance for tailings dams should identify requirements for complying with the Dam Safety Guidelines including the Technical Bulletin: Application of Dam Safety Guidelines to Mining Dams. It would also be useful for the section to describe the expected roles and responsibilities of an Engineer-of-Record for the tailings dams.</p>	<p>monitoring and maintenance are provided in the OMS (including details on the role of the Engineer-of-Record), with the TMMP providing a broad overview of the overall approach. These details are not included in the TMMP as the OMS is by design a living document, one that will be updated regularly. The current OMS will soon be posted to the Main Construction Manager (Parsons) website, https://giantminerp.ca/, with updates to be posted as they are generated.</p>	
11	11. Tailings MMP	<p>Comment The concern about management of tailings dams extends to Dam 1 that currently contains tailings and water treatment residuals. Section 5.6.6.2 of the CRP states: "Issues relating to Dam 1 are considered to be limited to within the Active Remediation and Adaptive Management Phase while the current ETP is in operation and while open access to the portal in B3 Pit is maintained. In post-closure, B3 Pit will be filled or</p>	<p>June 25: The GMRP agrees that Dam 1 needs to be subject to appropriate monitoring and maintenance requirements, together with all other dams on the site. Remediation works are likely to significantly improve conditions at Dam 1, and will likely change its classification under CDA guidelines to a lower risk category. However,</p>	

		<p>recontoured and water will be removed from the Polishing and Settling Ponds and the areas covered."The CRP envisions that Dam 1 will be a long-term retaining structure for the tailings and water treatment residuals. These materials will not stay in place without the dam.</p> <p>Recommendation Dam 1 also needs to be subject to appropriate monitoring and maintenance requirements.</p>	<p>there is no indication that it would cease to be a dam, or require the corresponding monitoring. Information on Dam 1 is included in the OMS Manual.</p>	
12	12. Tailings MMP	<p>Comment The Tailings MMP makes several references to details that will be provided in the Operations, Maintenance and Surveillance Manual for the tailings dams, and subsequent updates of the Manual. It indicates that the OMS Manual will be forthcoming in 2019. However, the Proposed Type A Licence does not include any conditions that would require submission or updating of the OMS Manual, or implementation of the Manual. The Post-EA Information Package does not include an existing OMS Manual for the tailings dams, though one may exist because the proponents have operated the site for many years</p> <p>Recommendation The water licence should include conditions requiring submission of an Operations, Maintenance and Surveillance (OMS) Manual, and subsequent updates as the project progresses. Of an OMS Manual is currently in place for the site, it would be beneficial to provide that as part of the application.</p>	<p>June 25: The GMRP confirms that an OMS manual exists for the dams at the site, and that it will be made available. The manual is already a requirement of the CDA and as such it is suggested an additional water license condition is not required. OMS manuals are regularly updated. The current OMS will soon be posted to the Main Construction Manager (Parsons) website, https://giantminerp.ca/, with updates to be posted as they are generated.</p>	

13	13. Wildlife MMP	<p>Comment The Wildlife and Wildlife Habitat MMP does not include any proposed monitoring of contaminant concentrations in the tissue of wildlife species. The Plan notes that the HHERA Report recommended continued monitoring of tissue concentrations in small mammals to confirm conditions, but it does not describe plans to carry out the monitoring.</p> <p>Recommendation The Wildlife and Wildlife Habitat MMP should be revised to incorporate monitoring that addresses the recommendations from the HHERA.</p>	<p>June 25: The GMRP is evaluating potential programs for small mammal and insect monitoring/sampling. As details are developed, these will be communicated through appropriate avenues, such as Working Group, and included in appropriate documentation.</p>	
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Yellowknives Dene First Nation: Machel Thomas

ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Dust Management and Monitoring Plan	<p>Comment The YKDFN is concerned about the timing and effectiveness of the tailings cap. Some of the tailings are currently exposed to the atmosphere. With north and northwest winds in the spring, there is the potential for contaminated dust to be carried to nearby communities, where it may be inhaled by residents.</p> <p>Recommendation Short-term dust suppressants, physical coverings and a reduction or suspension of activities during high wind events will be employed before the Tailings Containment Area is covered as noted in Section 4 of the Dust Management and Monitoring Plan. A response plan with additional mitigation measures is provided in section 5 that includes additional contingency</p>	<p>June 25: The GMRP agrees that best management practices (BMPs) for control of dust generation from the TCAs should continue and periodically be reviewed until the engineered covers are in place. Monitoring (visual and air quality) and inspections as outlined in the Tailings Management and Monitoring Plan will allow for appropriate proactive and adaptive management should monitoring indicate action is required, including re-evaluation of BMPs. The proponent also agrees that the rockfill should be sufficiently coarse that there is no ongoing generation of</p>	

		<p>measures. The Board should require the co-proponents to implement all the best management practices should continue in Phase 2 as outlined in Section 6 including contingency measures such as wind fences and ceasing operations during high winds. YKDFN would like to see that best management practices are periodically reviewed for the continual protection of the public. The Tailings Containment Area (TCA) will be covered with an engineered cover consisting of a synthetic liner covered by sand and crushed rock. The use of larger rocks should be considered. The thickness of the rock layer should be sufficient to prevent exposure to the underlying sand. Small particles such as sand have a larger potential to be entrained by wind and carried to nearby communities. Although the material will not be contaminated with arsenic and other substances, there is a potential for air quality and health effects from particulate matter due to erosion of capping material.</p>	<p>dust from the TCAs after the cap has been placed. As outlined in Appendix 5.6A Conceptual Tailings Cover Design, in the Closure and Reclamation Plan, the rockfill will generally consist of larger material 300 mm in diameter and less (typically cobbles and gravel-sized material).</p>	
2	Dust Management and Monitoring Plan	<p>Comment The YKDFN is concerned about the timing and effectiveness of the shoreline cap. With north and northwest winds in the spring, there is the potential for dust to be carried to nearby communities, where it may be inhaled by residents.</p> <p>Recommendation It is expected that contaminated sediment along the shoreline will generally remain sufficiently wet to minimize the potential for any re-entrainment</p>	<p>June 25: During remediation, air quality monitoring stations will monitor air quality. Work in this area will not be done in spring given the ice is not fully off the bay. Once remediated, the shoreline cap will tie in to the shoreline so that the sediment is covered. The diameter of the material used for the shoreline</p>	

		of dust. In the case that shoreline areas dry up and dust re-entrainment occurs, the air quality monitoring plan is expected to be protective of human health in the nearby communities.	cap will ensure no sediment dust is exposed.	
3	Dust Management and Monitoring Plan	<p>Comment The YKDFN would like to know if the air quality monitoring plan is adequate to protect human health during remediation activities. As per the GMRP - Air Quality Monitoring Plan 2019, air quality monitoring will be conducted at nine fenceline locations and three community locations. Contaminants to be measured include total suspended particulates (TSP), particulate matter with a diameter of 10 microns or less (PM10), and particulate matter with a diameter of 2.5 microns or less (PM2.5), arsenic (As), antimony (Sb), asbestos, iron (Fe), lead (Pb), nickel (Ni), and nitrogen dioxide (NO2). It is noted in Table 3.4-1 of the Closure and Reclamation Plan that petroleum hydrocarbons (PHC) contamination of soils has been observed and remediation is required to meet applicable standards. PHC contaminated soil will be excavated and disposed of in TCAs. Handling of PHC contaminated soil has the potential to result in emissions of volatile organic compounds (VOCs) as well as particle-bound compounds. It is recommended that an air quality and health risk assessment be conducted to determine the need for additional monitoring related to PHC contamination. Section 3.3.3.2 of the Human Health and Ecological Risk</p>	<p>June 25: The development of the Risk-Based Action Level for PM10 (inhalable particulate matter) at the fenceline took into consideration a number of factors including toxicological references for on-site workers and trespassers using the Health Canada Inhalation Unit Risk Factor (as per Appendix C of the AQMP), as well as users to adjacent areas such as the City of Yellowknife boat launch area. In addition to the fenceline and community monitoring, activity-specific monitoring is conducted during activities which have the potential to generate large amounts of dust. The MCM, under guidance by the Workers Safety and Compensation Commission, also conducts personnel air monitoring as required, as well as comprehensive medical monitoring (urinalysis), for on-site workers.</p>	

		<p>Assessment indicates that there may be access to the Giant Mine for recreational activities (e.g. walking, running, cycling) during remediation.</p> <p>Recommendation It is not clear whether the fenceline and community air quality monitoring considers people accessing areas inside the Giant Mine. The YKDFN would like to see the Air Quality Monitoring Plan be updated to reflect potential exposure to users inside the Giant Mine.</p>		
4	Dust Management and Monitoring Plan	<p>Comment The YKDFN would like to know if the air quality monitoring plan is adequate to protect wildlife and aquatic life. They would like the air quality monitoring program to prevent further arsenic contamination of soil and surface water such that affected wildlife and aquatic life can begin recovery. The air quality monitoring plan addresses arsenic concentrations in ambient air. As per the GMRP - Air Quality Monitoring Plan 2019, the air quality criteria for arsenic are based on the Ontario Ambient Air Quality Criteria and Health Canada Toxicological Reference Values. These criteria were established to protect human health, rather than wildlife or aquatic life. The primary pathway in which air quality affects wildlife and aquatic life is via deposition of dust. This pathway is not considered in the air quality monitoring plan. Monitoring dust deposition does not tend to perform well for the intention of tracking metal impacts to soil and water.</p>	<p>June 25: The comparison of the data from the results of the air quality monitoring plan to Ontario Ambient Air Quality Criteria and Health Canada Toxicological Reference Values is protective both of human health and wildlife receptors. This is due to the fact that the toxicity data is generally based on animals and safety factors are added to these values to ensure the protection of human health. In terms of aquatic life, numerous water quality monitoring programs are occurring and will continue post-remediation to confirm arsenic and other constituent concentrations are within an acceptable range to support aquatic life. The following water quality programs have been developed to monitor arsenic and other constituents in and around the Site:</p>	

		<p>Recommendation The Board require the co-proponents to develop a plan to ensure that soil and water be sampled post-remediation to confirm that arsenic concentrations are at levels that can support wildlife and aquatic life.</p>	<p>MDMER/EEM, SNP, Baker Creek Aquatic Effects Monitoring Program (AEMP) with Water Licence issuance and the Yellowknife Bay AEMP (with commissioning of new Water Treatment Plant). It is noted that confirmatory sampling will be also conducted for soil during soil remediation; this monitoring will capture dust deposition. Further details are outlined in section 5.12 of the Closure and Reclamation plan, specifically Tables 5.12-1 and 5.12-2. Further details on post-remediation monitoring will be engaged on as part of the Post-Closure Monitoring and Maintenance Plan development.</p>	
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