

Giant Mine Remediation Project
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October 12, 2012

Mr. Richard Edjericon
Chairperson
Mackenzie Valley Environmental Impact Review Board
Box 938, 5102-50th Avenue
YELLOWKNIFE NT X1A 2N7

Dear Mr. Edjericon:

Re: Giant Mine Remediation Project (EA0809-001) Closing Comments

INTRODUCTION

The Giant Mine Remediation Project Team (Project Team) is pleased to submit these closing comments, beginning by expressing our appreciation to the Mackenzie Valley Environmental Impact Review Board (Review Board) and staff for their attention and hard work throughout the week of the public hearings, and throughout the entire Giant Mine Environmental Assessment (EA) process to date.

We have heard groups and individuals voice their concerns about the risks the Giant Mine site poses to the environment and to human health and safety. We share their concerns regarding the current state of the site, as evidenced by our strong commitment to implement the Giant Mine Remediation Plan (Remediation Plan). The mine site is contaminated and the infrastructure is old and deteriorating. It is currently being carefully monitored and maintained but, without active remediation, the Giant Mine site will eventually have a significant adverse impact on the environment and on the residents of Yellowknife, N'Dilo and Dettah. The Project Team believes that it is important to begin making improvements soon to Giant Mine that will reduce immediate risks and effectively manage any remaining risks over the long term.

Groups and individuals have also expressed concerns about aspects of the proposed Remediation Plan, and in particular about not having enough detail on how the remediation will



be implemented. The proposed Remediation Plan addresses the risks posed by the site, both in the immediate future and for the very long term. It has been developed over a number of years by a team of internationally recognized engineers and scientists, refined through processes of community engagement, and reviewed by independent third party experts. Our analysis has concluded that the plan poses no significant risks of adverse environmental effects. On the contrary it will result in significant improvements in environmental quality and a very significant reduction in risks. We believe its implementation should proceed as expeditiously as possible.

We recognize that the long history of the Giant Mine site means that it is a source of broad public concern. However, it is important to distinguish between current conditions and the effects of the remediation project under review. Currently, there is a high level of anxiety about risks associated with the site in general and the arsenic trioxide dust in particular. The Remediation Plan is focused on mitigating those risks. In so doing, over time this will contribute to a gradual reduction in the level of public concern. The Project Team concludes that the Remediation Plan is not the source of the long standing concerns about Giant Mine, but rather an opportunity to address them.

Nonetheless we do respect the deep roots of the current concerns, and we are committed to continuing and even increasing our engagement efforts so that concerned individuals, groups and the public can feel confident, as we do, that the proposed Remediation Plan presents the best available approach for dealing with the Giant Mine site. Similar to the Freeze Optimization Study (FOS), other studies are being planned and implemented to assist with the design of these project components. While these studies are necessary to inform subsequent detailed designs, they will not affect the concepts or conclusions presented in the Developer's Assessment Report (DAR). More specifically, these additional studies are not required to determine if the Giant Mine Remediation Project (the Remediation Project) is likely to result in significant residual adverse effects. Similarly, there are options within the overall remediation approach for dealing with variations in the final design that can be selected at a future date with meaningful involvement of the public

THE ENVIRONMENTAL ASSESSMENT PROCESS

Throughout the EA process, the Project Team has gained insights from the Parties to the EA and the public. Since the submission of the DAR we have responded to 177 Information Requests (IRs). The Technical Session in October 2011 provided an effective forum for detailed questioning of the Remediation Plan and a number of technical issues were clarified or resolved. It also allowed for the subsequent IRs and responses to be focussed on key areas of technical inquiry, as evident in the reduced number submitted in Round II (127 IRs in Round I,



43 in Round II and 3 later IRs from the Review Board). The Pre-Technical Report Workshop with the Parties to the EA in June 2012 allowed for even more detailed dialogue on the key technical matters. Similarly, a number of meetings with Parties to the EA on the Environmental Management System (EMS) and project oversight served to focus on the remaining technical and policy matters, as did public forums in Dettah, Yellowknife and N'Dilo in May 2012.

While detailed design will continue throughout the regulatory phase, we are confident that through the aforementioned IRs, Technical Sessions, additional workshops, and public hearings, the Review Board now has the information it needs to successfully complete this EA review.

The Project Team recognizes that there were many important issues raised during the public hearings, and throughout the course of the EA, which cannot be dealt with by the Project Team or through our Remediation Project. During his opening remarks at the public hearings, the Chair outlined the scope of this environmental assessment, notably this EA is not about assessing the historic impacts of the Giant Mine but rather assessing the impacts of the proposed Remediation Project. In 2008, the Review Board accepted that the Developer had done a thorough job at looking at alternatives, and that alternatives to the proposed frozen block method are outside the scope of the current EA. As also described by the Chair, apology and compensation for historical legacy, remediation of sediments outside of the geographic scope of the project, and decisions on remediation of the site to industrial or residential standards are outside the scope of this EA.

ENVIRONMENTAL EFFECTS AND COMMITMENT

The Giant Mine Remediation Plan has been guided by a strong technical team of internationally recognized experts, some of whom have been involved in this project for over a decade. Their experience at mine site remediation and closure internationally, combined with local knowledge and history, has ensured that the Remediation Project meets both international standards and local needs for the protection of the environment. We are confident that the approach we propose is feasible, effective and robust.

While there will continue to be risks to the environment from the site following implementation of the Remediation Plan and there will continue to be releases of arsenic and other metals from the site, these will be effectively contained and managed over the long term. Remediation Plan activities will create no significant residual effects, and in situations where adverse effects may occur, we have identified mitigation measures that can effectively minimize those effects. In fact, elements of the environment, such as water quality, are already improving as a consequence of the mine having ceased production and implementation of care and



maintenance activities. Implementing the Remediation Plan will continue to reduce and, in most cases, eliminate negative environmental impacts.

This project is a remediation project. Aboriginal Affairs and Northern Development Canada (AANDC), the Government of the Northwest Territories (GNWT), and the Project Team are fully committed to remediating this site. In terms of where we are now, the public hearings marked an important milestone in our efforts to implement a comprehensive Remediation Plan that is robust, safe, and will endure well into the future. The federal government has made the remediation of the site a top priority as seen by the nearly \$160 million investment to date to develop this Remediation Plan, to engage the parties, to discuss oversight and monitoring, to continue research and to implement the care and maintenance and risk mitigation necessary to protect human health and safety and the environment.

TECHNICAL MATTERS

The Giant Mine Remediation Project is unique in the technical and engineering challenges it poses given the unprecedented quantity of arsenic trioxide and the current condition of the containment infrastructure. Project specific solutions were required to meet these unique challenges. Conceptual engineering designs were completed for all of the technical and engineering challenges. The best available and most current information on those designs were provided to the Board and Parties to the EA in this assessment process.

We believe that openness to design improvements and plan refinements are a healthy part of any large project. Engineering design and optimisation remain ongoing. Recent results, such as from the FOS, are verifying the conclusions of previous assessments and how robust the Remediation Plan is for securing the arsenic trioxide stored in the underground chambers and stopes. Other results are helping show how the tailings areas and Baker Creek can be effectively remediated for future use. We also expect that continuing community engagement will identify other possible refinements of the plan details. All proposed improvements or refinements will be further examined through public engagement, peer review, and the respective authorization and licensing processes.

Underground Freeze

The frozen block method was carefully considered from a range of possibilities. The process to choose the best option from the original 56 was thorough and technically sound. It benefited from considerable community input and independent peer review. The approach has been further examined through modeling and tested at full scale through the recent FOS program.



The new results are providing an even stronger picture of how robust the method is for securing the arsenic trioxide stored in the underground chambers and stopes. The FOS monitoring and the resulting design refinement will continue throughout subsequent stages of the engineering design.

During the hearings, there was wide support for the ground freezing approach as the best option available at this time. Some speakers questioned whether a better option might be available sometime in the future. The Project Team maintains that the options review behind the current method was thorough, and that better options are very unlikely to arise in the near term. However, we agree that the long term nature of the hazard means that periodic re-assessments of new technology are warranted and we have committed to this.

Water Quality

Many participants in the EA process have expressed a concern about existing environmental quality and in particular about water quality. Remediation will result in a significant reduction of arsenic going into Baker Creek and Yellowknife Bay compared to existing levels. The end-use drives the remediation objectives – protection of all beneficial water uses – recreation, drinking water and aquatic life. Monitoring carried out over the years has shown that the arsenic level in Yellowknife Bay has improved continuously over the past several decades and has been consistently below levels considered protective of all beneficial water uses. Although numerous studies have already been completed to determine the impacts of the site on the environment, the Project Team is committed to working with the communities and other interested parties to design and implement additional monitoring and studies to better understand environmental risks.

The Project Team understands and is sympathetic to the concerns expressed by the Yellowknives Dene First Nation (YKDFN) and members of the Review Board on fish habitat and the consumption of fish. We'd like to note that the concentration of arsenic in the water overall has been improving over the past decades, and that the proposed Remediation Plan will help reduce arsenic input into Baker Creek and into Great Slave Lake.

Additional monitoring is being undertaken to provide more data on arsenic levels and overall health of aquatic habitat. Data collected in the current program will also be provided to Health Canada, Fisheries and Oceans Canada and other regulatory authorities who can then use this information to meet their respective mandates.

The Project Team would like to be clear that realignment or diversion of Baker Creek off the Giant Mine site is not part of this project. As described in the DAR, however, there will be some



minor onsite routing changes and redesign of Baker Creek as part of the remediation project. As the Project Team stated during the hearings, we will work over the next year with various stakeholders to develop any final routing plan for Baker Creek and address other matters that might affect fish or fish habitat.

The Project Team heard the concern expressed by Parties to the EA and the public with respect to location of the treated water diffuser. As indicated in the DAR (Section 8.4), we maintain that any impacts associated with the diffuser can be effectively mitigated. For example, the Project Team will implement measures such as pre-cooling treated effluent and monitoring to mitigate risks associated with potential ice thinning. We also renew our commitment to involve the YKDFN and other parties, including the City of Yellowknife (the City), the North Slave Métis Alliance (NSMA) and federal departments, in selecting a location for the diffuser that takes into account traditional knowledge and harvesting practices.

With respect to the suggestion by the City that the project include the Bay, the Marina and the drinking water intake in the scope of the project, the Review Board set the scope of the EA in 2008, and the Project Team maintains that these matters are not part of the scope of the EA.

Surface

As shown in the DAR and in a number of the Project Team presentations at the hearings, a relatively small part of the Giant Mine site (that most affected by past mining activity) will be managed by Canada over the very long term. The majority of the site will be available for other public use and a broad objective of the surface clean-up is to make most of the site, including the tailings areas, available for other uses.

Demolition of the above ground infrastructure at the site will eliminate hazardous releases to the environment and the Remediation Plan shows how demolition materials will be carefully and safely managed. Best practices will be employed, and public input will be sought, to minimize any risks during the surface remediation. A competitive bidding process will be utilized to involve experienced and qualified experts who can undertake such work in an effective and safe manner.

Contaminated soils will be excavated and replaced or, where they are so deep that excavation would create a hazard, covered by a thick layer of clean soil. The GNWT industrial standard will be used to guide the soil remediation work. As has been noted previously, through IRs and at the public hearing, while the site will be remediated using the industrial standard as a guide, remediation activities will achieve residential standards in large parts of the site.



In terms of air quality, there will be an overall improvement in the long term. During remediation, steps will be taken to mitigate the effects on air quality and on the human health and safety of workers and the public. A detailed analysis of the potential effects of remediation activities on air quality demonstrated that guidelines considered protective of human health will not be exceeded at off-site locations. Likewise, exposure levels to members of the public on the Ingraham Trail were assessed to fall below levels considered to be protective of human health. Air quality monitoring will form part of the overall Environmental Management System for the site.

The Project Team believes it is important to deal with matters of public health and safety on a priority basis and then address longer term items such as land use planning. As the Remediation Plan is implemented, risks will be mitigated. The site will then present an opportunity for many positive uses by the communities. The Project Team believes that future uses of the site should be the subject of an open and transparent planning process. It will be important that the YKDFN, the City, the NSMA, the GNWT and other interested parties work together to decide on the best uses for the site and the Project Team would be pleased to be involved in that process.

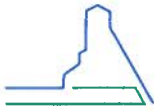
Environmental Monitoring and Adaptive Management

Any commitments made as part of this EA process or outside of it will be incorporated into the project's EMS. As stated in the DAR and presented during the hearings, the Project Team is committed to developing and implementing a comprehensive environmental management system and to seeking meaningful input on the design of the EMS including Environmental Management Plans for specific mine components through the EMS Working Group of the parties.

The EMS will establish a rigorous and transparent system to:

- Manage environmental requirements and commitments;
- Establish clear measurable thresholds, objectives and targets;
- Establish and implement a comprehensive monitoring regime;
- Review, interpret and report on monitoring results against established thresholds, objectives and targets; and
- Develop and implement appropriate responses when results differ from the plan and to mitigate any concerns that may be identified.

As was reported at the hearings, we have been working with the parties on the development of an EMS for the project. This EMS is a key to effective and adaptive environmental management. It will provide a tool for making good decisions, and allow stakeholder input into the elements



of the monitoring plans as well as the responses. The efforts of a Project Environmental Management Group (EMG) will continue to be important to our adaptive management approach. The community will continue to be involved extensively and meaningfully in environmental monitoring and adaptive management.

The Project Team has focused on the design of physical systems and the design will control risk effectively over the very long term, and with a minimal need of ongoing input. Constructive feedback and examples from the Parties to the EA led to clarifying the Project Team's vision of the site status over the long term; understanding areas of public concern; and incorporating many suggestions into its long term plans.

For example, as a result of feedback from the Review Board and Parties, improvements are being pursued in five areas: Records Management, Land Use Constraints, Communicating with Future Generations, Scenario Analysis, and Transition Planning. As shown in the hearings, the selection and engineering of physical systems has considered the very long term, and will continue to do so. AANDC and the GNWT have committed to developing a "Comprehensive Perpetual Care Plan" to define requirements and commitments related to the management and oversight of the physical systems. This will be done with the involvement of the YKDFN and other stakeholders, making full use of the details of the Remediation Plan as it is implemented.

Public Engagement

The plan has undergone extensive expert and public review over the past 12 years. The engagement was particularly strong in 2001-2003 with the selection of the frozen block method, and since 2009 with the preparation of the DAR and throughout this EA. Advice and suggestions will continue to be incorporated into the project.

The Project Team has heard and recognizes that engagement is a priority for the community and it will be fundamental throughout the life of the Remediation Project. We commit to continuing our public engagement and working with the YKDFN, the City, the NSMA, and the people of N'Dilo, Dettah and Yellowknife to address that priority.

Project Oversight

Project oversight has been a consistent theme throughout this EA process and indeed during the public hearings. We have heard and feel we understand the perspectives presented by the parties and the public on this issue. We have been working collaboratively with the parties to develop an approach and feel we have a good basis for proceeding.



With respect to project oversight, it is important to understand the context of the Remediation Project as being subject to a high level of scrutiny from various levels within government, such as the Federal Treasury Board, the Office of the Auditor General and the Commission of Environment and Sustainable Development. It is also subject to the scrutiny of regulatory bodies that ensure compliance with applicable legislation and regulations in the territory, including the Mackenzie Valley Land and Water Board. These oversight mechanisms were presented at the public hearings.

The Project Team believes the existing oversight mechanisms are effective and robust. Nonetheless, based on input from parties and the public, the Project Team has concluded that establishment of an Environmental Monitoring Advisory Committee would be an effective mechanism to foster ongoing community engagement, public and independent input into the remediation process, and generate and maintain public confidence in the Project. Working with the parties we have reviewed the options for additional oversight, and we are committed to establishing and resourcing a multi-stakeholder Environmental Monitoring Advisory Committee, formalized through a documented Terms of Reference.

We have researched and reviewed the options available for establishing an oversight body and presented this research into best practices at the Alternatives North/YKDFN sponsored Workshop on Independent Oversight. Based on this research, we believe the approach the Project Team is proposing will serve the community well and help build trust over the coming years.

Our existing commitments related to accountability and oversight of the Giant Mine Remediation Project include:

- The EMS Working Group of the Parties;
- The Giant Mine Advisory Committee (GMAC);
- An Independent Engineer who will report to the Management Board who will have the role of independently assuring that the project is delivering on its objectives; and
- An Environmental Monitoring Advisory Committee.

Further, as part of the EMS, we are committed to the following:

- Third Party Audit of Environmental Management System;
- Quarterly public reporting;
- Annual Public Reports to summarize operational and environmental data; and
- State of the Environment Reports - prepared every three years during the initial 15-year remediation period and every five years thereafter.



IN CONCLUSION

The Project Team would like to acknowledge the dedication, commitment and professionalism shown by individuals within the YKDFN, Alternatives North, the NSMA, the City of Yellowknife and federal departments throughout this entire process. In particular, we would like to thank the elders from the YKDFN (Mr. Alfred Baillargeon and Mr. Eddie Sikyea) and the NSMA (Mr. Ed Jones) who spoke passionately about the legacy Giant Mine has had on their people.

The Project Team is confident that the Remediation Plan as we have described it in the DAR, and expanded upon during this EA, will make the mine site significantly better for residents and for the environment. The plan has undergone extensive expert and public review over the past 12 years and throughout this EA. We have heard advice and incorporated various suggestions into the project plan. We are confident that we have shown that the Giant Mine Remediation Project itself fully addresses the risks to human health, public safety and the environment posed at the mine site.

Dealing with risks at the site will provide not only long term environmental stability and safety for local people, but the associated project expenditures and the future land use opportunities created through the remediation will also have positive benefits for the communities for years to come.

We look forward to receiving the Review Board's final report and reiterate our commitment to working on the key issues that were raised throughout the EA process. We also look forward to working closely with the YKDFN, the City, the NSMA, other stakeholders, and the communities of N'Dilo, Dettah and Yellowknife as the project moves forward, and to implementing the Remediation Plan and securing the site for the very long term.

Respectfully,

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