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August 10, 2012

Mr. Richard Edjericon
Chairperson
Mackenzie Valley Environmental Impact Review Board
Box 938
5102-50th Avenue
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Re: Giant Mine Remediation Project (EA0809-001) – Progress Report on Giant Mine Remediation Project Environmental Management System

The purpose of this letter is to provide the Mackenzie Valley Environmental Review Board with an Environmental Management System progress report and work plan.

Environmental Management System

The Giant Mine Remediation Project (the Project) has been designed to minimize the potential for environmental impacts associated with site risks. The Developer's Assessment Report (DAR) commits the Project to use an Environmental Management System (EMS) to establish the blueprint for how environmental protection and regulatory responsibilities will be managed, monitored and evaluated throughout the stages of remediation. The scope of this EMS includes environmental, health and safety and community aspects and will adhere to the recognized EMS standard ISO 14001.

The central elements of an EMS include:

- *Policy*: An EMS is based on an environmental policy, which is a clear articulation requirements, commitments and standards to which the organization will adhere.
- *Planning*: Planning includes determining significant aspects or issues, identifying legal and other requirements, and defining objectives, targets/closure criteria and programs (described as EMPs)
- *Implementation and Operation*: Once the EMS planning is complete, the mechanisms necessary for implementing the Environmental Management Plans will be put in place including:
 - Supporting training programs
 - Developing operational control measures
 - Communicating internally and externally on progress
 - Developing and supporting appropriate environmental emergency preparedness and response plans



- *Checking*: This phase requires monitoring and measurement of performance against the objectives and targets/closure criteria established in the planning phase; and
- *Management Review*: will review the success of the EMS implementation, assess opportunities for improvement and flag the need for any modifications to the EMS.

An audit protocol, including third-party auditing, and a review process will be an integrated part of the EMS.

Environmental Management Group and the Environmental Management Working Group with the Parties

In order to carry out the implementation of the EMS, we have convened the Environmental Management Group (EMG) which consists of members from AANDC, PWGSC, GNWT and expert support. The EMG will be the primary body responsible for EMS planning, development, implementation, monitoring and engagement with Interested Parties.

EMG will engage with the Interested Parties through the Environmental Management Working Group with the Parties (Working Group). The Working Group includes representatives from the Aboriginal Affairs and Northern Development Canada (AANDC), the Government of the Northwest Territories, Alternatives North, Yellowknives Dene First Nation, the City of Yellowknife, Environment Canada and The Department of Fisheries and Oceans.

The specific functions of the Working Group are to:

- Provide a forum to present and discuss information on the overall environmental management system for the site;
- Discuss and encourage input on remediation objectives and subsequent remediation activities, closure criteria and proposed monitoring;
- Provide input into the development of Environmental Management Plans;
- Allow the Project Team to present on ongoing research and engineering studies via Reclamation Research Plans, for areas where uncertainties in design exist; and
- Gain input and advice on further engagement considerations; and
- Provide advice and input into identification of specific thresholds or triggers and adaptive management responses that would follow.

**For more information please refer to the attached Terms of Reference for the EMS Working Group.*

The Working Group has met on three occasions to discuss:

- March 5, 2012- Purpose of the Working Group, Terms of Reference and Policy
- April 25, 2012- EMS architecture, Matrices, EMPs, Life of Project monitoring; and
- June 20, 2012- Definitions, Buildings Demolition Environmental Matrix; example Building Demolition EMP, discussion of Work Plan.

**The Meeting Minutes for each of these meetings are attached.*

** A Definitions Document is attached. Please note definitions may be added as work continues with the Working Group.*



The following materials have been developed and reviewed by the Working Group:

- Environmental Management System Working Group of the Parties Terms of Reference
- Definitions – document that outlines common usage of words throughout all project documentation
- Buildings Demolition Environmental Management Matrix
- Draft Buildings Demolition Environmental Management Plan
- Environment, Health, Safety and Community Policy

Environmental Management Matrix Development for Various Mine Components

Core to the implementation of an EMS is the establishment of objectives and targets.

The Project Team has committed to follow an objectives based/mine component approach, as outlined in the Board and AANDC *Guidelines for Development of Closure and Reclamation Plans for Advanced Mineral Exploration and Mine Sites in The Northwest Territories*.

The Project has been defined into 7 mine components:

- 1) Tailings
- 2) Freeze/Underground
- 3) Open Pits
- 4) Baker Creek
- 5) Water Treatment Plant
- 6) Contaminated Soils
- 7) Buildings and Infrastructure

Each mine component has a draft matrix developed, addressing the following elements: objectives; the remedial activity; measureable performance or closure criteria; monitoring system; action level to trigger response; and an outline for research and design work to fill uncertainties and gaps. These Matrices serve as working documents to collect known information on environmental management proposed for each mine component.

The draft content of matrices are being reviewed and further expanded and refined with the Working Group. Matrix content developed through discussions with the Working Group, from the DAR and from ongoing design and research will form the basis for the development of detailed Environmental Management Plans.

Environmental Management Plans (EMPs)

EMPs will address implementation and monitoring aspects of the Project. Drawing from the matrices they will identify the methods of controlling, managing and monitoring environmental risks. For each mine component, EMPs will define the purpose, scope, roles and responsibilities, objectives and targets/closure criteria and monitoring/reporting approach.

As the Project progresses, additional plans or amended plans will be developed as required. As it stands now, EMPs will be developed for the following:



Table 1. Environmental Management Plans to be developed for the Giant Mine Remediation Project.

1. Buildings Matrix and EMP
2. Open Pits Matrix and EMP
3. Baker Creek Matrix and EMP
4. Tailings Matrix and EMP
5. Freeze and Underground Matrix and EMP
6. Contaminated Surficial Matrix and EMP
7. Water Treatment Plan Matrix and EMP
8. Roaster EMP
9. Underground Stabilization Matrix & EMP
10. Care and Maintenance EMP
11. Water Management Matrix & EMP
12. Life Project Monitoring Program
13. Yellowknife Bay EMP
14. Non-hazard Waste Management
15. Contaminated Surficial Materials
16. Borrow Sources
17. Dams
18. Fuel Storage
19. HAZMAT
20. Halocarbon management

EMPs will be implemented by PWGSC on behalf of AANDC and will form part of the specifications in contracts for construction and remediation activities on site. Implementation will be monitored by dedicated AANDC and PWGSC EMS Managers, regular site inspections, and annual audits.

Incorporating New Information

The Project is currently between Preliminary Design and Detailed Design, therefore we recognize areas, including the development of measureable performance/closure criteria for some components is not complete. The Project is committed to provide updates and research plans on work required to identify these uncertainties and gaps. As design progresses and research is conducted information that becomes available will be incorporated into the draft matrices, or directly into EMPs as appropriate.

Work Plan

The project will continue to work with the parties to allow for input to the creation of the Environmental Management Plans and an overall EMS for the Giant Mine Remediation Project. The following work plan items will be undertaken:



- Gap Analysis of current Care and Maintenance Contract – Fall 2012
 - Identify environment, health and safety elements associated with care and maintenance through direct observation, document review and interviews.
 - Compare existing standards, procedures and tools with the ISO13001/OHSAS 18001 and NCSP EHS Management System to identify gaps and areas for improvement
 - Inventory all existing environmental monitoring requirements and activities
 - Recommend actions to close gaps and develop an action plan to implement a functional ISO14001 EMS.
- Draft EMS Manual compliant with ISO 14001 – Spring 2013
 - The EMS manual will align with the ISO 14001 Standard and adjusted, as necessary, to include additional health and safety requirements in the NCSP EHS Management System and SOPs as well as additional relevant sections related to monitoring. The findings of the Gap Analysis will be incorporated into the EMS Manual.
- Interim Care and Maintenance Contract/EMP
 - An EMP for the interim Care and Maintenance contract specification is currently in development. This EMP is being developed to address environmental management priorities for the site for the next one to two years. It is anticipated that this EMP will form part of the contract specifications for the tendering of the interim Care and Maintenance contract.
- Matrices/Environmental Management Plans
 - Finalize all matrices to current design stage- Winter 1012
 - Continued development of the Matrix-associated EMPs with the Parties (Table 1)
 - Continued development of non-matrix associated EMPs
 - It is anticipated that first drafts of all EMPs will be substantially complete by the spring of 2013
- Environmental, Health, Safety and Community Policy
 - The draft is under revision.
- Life of Project Monitoring Program
 - While some risks can be eliminated, others will remain on site indefinitely and will require long-term management. The intent is to eventually consolidate all monitoring into a single program, within the EMS. The Life of Project Monitoring Program will include operating water treatment and freezing plants, other site (reduced footprint) infrastructure, site security, project administration and management and long term monitoring of other remediation aspects. Such a program will evaluate both the physical performance of remediation infrastructure and environmental quality.
 - The 2012/2013 stage of this program is to collect baseline data on:
 - Ice cover thickness data (during winter)
 - Water Quality
 - Limnologic profiles
 - Sediments



- Plankton
 - Benthic invertebrates
 - Currents, waves and water levels
 - On-shore winds
 - Bathymetry in Yellowknife Bay.
- This information will inform the baseline information for the Life of Project, but the secondary objective of this work will be to provide information important to the design and placement of the diffuser and associated pipeline and support the ongoing regulatory processes.

The EMG and Project Team are committed to continuing the process with the Working Group to collaboratively develop EMPs and look forward to making substantial progress over the coming months.

Sincerely,

Erika Nyyssonen

Chair of the Environmental Management Working Group with the Parties

Department of Environment and Natural Resources

Government of the Northwest Territories-Giant Mine Remediation Project Team