

ATTACHMENT A – RESPONSES TO REVIEW COMMENTS

Comment 2 - Environment Canada

The contractor, as part of its contract with Public Works and Government Services Canada, is required to develop plans and procedures that align with mitigation measures identified in the water license application documents, and to develop and deliver related training programs. As required by Schedule 1, Item 1e in the draft water licence, we will provide a summary of the spill response training carried out in the annual reports. Note that we've recommended that annual reports be submitted every 6 months (bi-annual report) rather than annually as suggested in the draft water licence in recognition of the public's request for regular reporting.

The training programs that will be delivered include:

- 1) Worker Orientation Seminar – This seminar is to be delivered to the contractor's employees in English and local dialect(s) as required. Course material will describe the activities at the site, and provide instruction for the applicable health, safety, and environmental regulations, policies and requirements as related to the site work activities.
- 2) Emergency Response Orientation Seminar – This seminar is to be delivered to the Mine Manager and local emergency response authorities. Course material will describe the work being completed, the hazardous materials involved and potential exposure scenarios, and the access restrictions associated with work areas.
- 3) Task Specific Training – Workers performing specific tasks will need to undertake task-specific training related to the safe work procedures, emergency and spill response, personal protection equipment requirements and use, and other training as necessary. One example is that any worker expected to enter a work area contaminated with arsenic or asbestos has completed a related course approved by the Northwest Territories Workers Safety and Compensation Commission.

Comment 4 - YKDFN

The Giant Mine Remediation Project Team (Project Team) very much understands the complexity associated with deconstructing the highly contaminated roaster and has employed an intense procurement process to ensure only the most qualified contractor will undertake the work. In addition, the work specifications provided to potential contractors were conservative. A selection of some of the limitations put on the contractor is provided below but the limitations are more fully described in our application package.

Permits from the City of Yellowknife and the Government of the Northwest Territories are also being sought and the WSCC Mines Inspector will be required to authorize health and safety aspects of the project prior to initiation of work.

A selection of some of the conservative limits placed on the contractor is as follows:

- 1) There is no discharge of waste water to the receiving environment. Waste water generated during roaster deconstruction will be captured, filtered to remove asbestos fibres and treated to remove hydrocarbons and discharged only to the Northwest Tailings Pond. See page 15 of the Roaster Complex Waste Management Plan provided with the licence application.
- 2) All arsenic-contaminated hazardous wastes will be stored in Transportation of Dangerous Goods (TDG) approved containers (see Comment 20 – Alternatives North). The final disposal, including disposal criteria, of the stored materials will be subject to review and approval through the Type A licensing process for the greater Giant Mine Remediation Project.
- 3) Criteria to ensure that materials are sufficiently decontaminated to be deemed non-hazardous, and therefore safe to be placed in the non-hazardous waste stream, are provided on page 11 of the Roaster Complex Waste Management Plan.
- 4) Air quality plans and related criteria are provided under Tab 7 of the application package.

Comment 5 – YKDFN

As there wasn't enough space in the table to include Yellowknives Dene First Nation's complete comment, we provide it here so that it can be easily referenced.

Part Three: Objectives and Criteria

YKDFN are concerned that the Objectives and Criteria presented as part of this plan are lacking. While YKDFN have accepted that the proposed reclamation plan is the best approach at this time, we still want to have a clear understanding if the work being done has met expectations.

The documentation provided to date, particularly in the case of the underground stabilization, fails to provide a clear picture on what will be done as the 'proposed activities' are concatenated to the results carried out under MV2012S0019. Essentially the project is proposing that this board authorize SOMETHING in response to a non emergency situation, and they aren't clear what the work will do beyond broad statements. Lastly, there is no discussion on how the parties or the board will know if the risk has been mitigated.

The Project Team believes that the information provided in the application package and the information that will be provided as part of the post-licence issuance submittals (e.g., plans and ongoing reporting) to the Mackenzie Valley Land and Water Board will together demonstrate that the work will meet the highest standards.

YKDFN appear to be particularly concerned with the objectives and criteria related to underground stabilization. As described in the underground Stabilization Detailed Project Description provided under Tab 3 in the application package, the premise of the work is to fill the voids in the chambers and stopes with material to provide support to the overlying and adjacent ground (crown and sill pillars). Cavity Monitoring Survey (CMS) equipment (e.g., cameras) and other technology will be utilized throughout the backfilling process to ensure the voids are being filled properly (page 12 in the Underground Stabilization Detailed Project Description).

To confirm that the risk has been mitigated, the contractor is required to submit an "As-Built Statement of Risk Mitigation" upon completion of backfilling each target stope. This letter is to be stamped by a Professional Engineer and essentially state that the risks associated with collapse of the crown/sill pillar in the target areas has been mitigated.

The Project Team proposes that the stamped letters be submitted to the MVLWB as they are completed as part of the reporting requirements in Schedule 1, Item 1(m).

Comment 13 – Alternatives North

The Project Team has committed to assess the possibility of tying/streaming real-time air quality monitoring data into the GNWT Air Quality Monitoring Network Website. This assessment will be conducted in Spring 2013 once specific monitoring instruments and data acquisition systems are selected. However, setting these reporting mechanisms as requirements is unreasonable.

While we appreciate that Alternatives North is not satisfied with past communications, they have provided no feedback within or outside the Board's process on the SSP Communications Plan which forms part of the application package (Tab 6). The SSP Communications Plan has been in their possession with a request for comments since November 28, 2012.

The SSP Communications Plan includes providing monthly summaries of the outcome of air quality monitoring to a wide target audience that includes Alternatives North. In addition, we have recommended that formal reports be submitted to the MVLWB every 6 months rather than every 12 months as identified in the draft WL circulated by MVLWB staff in recognition of the fact that reporting is important. An additional Engagement Plan is duplicative and unnecessary.

Comment 16 – Alternatives North

Leachability investigations are not required because very little water is expected to "bleed" from the tailings paste as it cures. As described in Section 2.1, Item 5 of the Underground Stabilization Waste Management Plan, any "bleed" water that is generated will be captured in the underground water management system and brought to surface for treatment in the existing effluent treatment plant.

As described in Section 2.3.2, Item c in the Underground Stabilization Detailed Project Description, the backfill process will utilize an exhaust air management system to seal exhaust air released from surface openings during backfilling operations. The intent of the exhaust air system is to capture and treat exhaust air through a filtering system in order to achieve ambient air criteria at both the worker spaces as well as at the property boundaries.

As set out in the air quality monitoring plan provided under Tab 7 in the application package, air quality monitoring will be completed during backfilling operations for both arsenic and particulate matter. There are two sets of criteria that need to be met which include occupational health and safety and ambient (environmental) air quality. The monitoring will be completed continuously during construction

activities to ensure Occupational Health and Safety requirements of the NWT are being achieved (Draft Occupational Health and Safety Regulation - Safety Advisory Committee, Northwest Territories, 2012). Real time monitoring will be used as a construction management tool to implement further mitigation as appropriate to help protect worker health. In addition time-weighted 8 hr averages of arsenic will be monitored in worker zones. The ambient air monitoring program will include monitoring for both arsenic and particulate matter in a fashion similar to the methods to be utilized for the Roaster Deconstruction program.

Comment 18 – Alternatives North

Sections 2.4.2 and 3.0 (Table 1) in the Detailed Roaster Project Description acknowledge the potential risks to people travelling the highway. The Site Stabilization Plan (SSP) Communications Plan also acknowledges that a wide target audience, including all citizens of Yellowknife, Dettah and N'Dilo, must be provided with information regularly given the proximity of the mine site to boating areas, the highway and other recreational areas.

No lengthy road closures during normal operations are expected for roaster deconstruction or underground stabilization. If heavy equipment needs to cross Highway 4, flag persons will direct public traffic as required.

As part of emergency response planning for roaster deconstruction, the contractor will be hosting a meeting in April or May with emergency response agencies and the GNWT-DOT to develop a coordinated emergency response protocol. In the event of an emergency, Parties identified on the Emergency Response - External Notification Chart, which includes Alternatives North, YKDFN, the Tlicho Government, North Slave Métis Alliance, and others (see Tab 6 in the application package) will be notified.

Dust control and air quality monitoring measures to protect workers and others in proximity to the work site are outlined in the air quality plans provided in the application package.

Comment 20 – Alternatives North

As summarized in Section 2.4.2, item d and g in the Roaster Detailed Project Description and expanded upon in the Roaster Waste Management Plan, deconstruction debris will be containerized and stored for different time periods as follows:

- Non-hazardous waste will be stacked and stored at the Temporary Waste Storage Area until such time that final disposal is approved through the Type A licensing process for the greater Giant Mine Remediation Project.
- Non-arsenic containing hazardous waste will be packaged in Transportation of Dangerous Goods (TDG) approved containers and transported off-site in accordance with the Transportation of

Dangerous Good Regulations. These wastes will be shipped off-site to licensed facilities during the term of the roaster and underground water licence.

- Arsenic containing hazardous waste will be stored in TDG approved containers at the Temporary Waste Storage Area in accordance with the Guideline for the General Management of Hazardous Waste in the NWT until such time that their final disposal is approved through the Type A licensing process for the greater Giant Mine Remediation Project.

Under TDG and NWT regulations and guidelines, containers must to be sound, sealable, and not damaged or leaking; and all containers must be designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of dangerous goods that could endanger public safety.

Containers come in many different styles and sizes; however, they must be designed and manufactured in accordance with recognized UN standards (such as, but not limited to CAN/CSSB-43.146-2002, CSA B621-00). Additional details on containers will be provided in the submittal to satisfy the item in the draft water licence requiring information on size reduction, stacking, packaging, and storage procedures for wastes (currently Schedule 2, item 1f).

[Comment 21 – Alternatives North](#)

As described in Section 2.3.6 in the Detailed Project Description and Section 2.1 in the Waste Management Plan for Roaster Complex Deconstruction, the only sewage wastes that are being proposed to be disposed of off-site are the sanitary sewage that would be collected in onsite portable toilets. Workers will be wearing PPE to protect them from exposure from arsenic, and toilets will not be located in the contaminated work area of the Roaster. Therefore, the arsenic levels in the sewage should be similar to the levels in the sewage collected from Yellowknife residences. All greywater collected from any washing/shower facilities will be collected, filtered and disposed of in the Northwest Tailings Pond.

On November 20, 2012, a letter was sent to the City of Yellowknife providing notice that sewage from the portable toilets will need to be disposed of off-site. This notification also indicated that it is the responsibility of the contractor following contract award to confirm the disposal facility, but that the contractor was likely to approach the City given its close proximity to the Giant Mine.

Since contract award is expected by the end of March, the contractor will likely confirm the sewage disposal location in April.

[Comment 22 – Alternatives North](#)

Before addressing the recommendation, two points need to be made:

1. The tendering processes are ongoing and to prevent these processes from being compromised, specification documents cannot be released at this time.

2. Alternatives North is incorrect in stating that the contractors filed the applications for Tundra and Colomac. The water licence applications were prepared and submitted by INAC-CARD.

Application materials, as supported by our responses in this submission, provide a sufficient basis to safely assess the project for the purposes of licensing. The detailed plans to be submitted following licence issuance will also be subject to Board approval. Where specific concerns or questions have been raised about these plans the Project Team has provided detailed responses.

[Comment 24 – Alternatives North](#)

The Roaster Complex Deconstruction Waste Management Plan describes how wastes will be categorized and segregated but is repeated here for reference purposes. Figure 1 below displays the same information, just in a decision tree format.

All material inside the Roaster Complex is considered impacted by arsenic dust, friable and dispersible material until it has been properly decontaminated. Testing for decontamination completion will follow the same procedures and criteria for high risk (level 3) asbestos abatement as set out in the GNWT's General Guidelines for Asbestos Removal and Disposal, but with inclusion of testing for arsenic in addition to asbestos. Criteria for decontamination completion are based on aggressive air quality testing and require that final air monitoring results indicate asbestos fibre levels of less than 0.01 fibres per cubic centimeter and arsenic levels of less than 0.001 mg/m³ for all samples taken before the containment system can be dismantled. These criteria are stated on page 11 of the Roaster Complex Waste Management Plan. In addition, visual inspection of the surfaces of the material will be conducted by the contractor and quality assurance consultant to confirm surface decontamination prior to the air monitoring for decontamination completion and dismantling of the containment system. Once decontamination of all dusts, friable and dispersible materials is completed, the material will be further evaluated against hazardous or non-hazardous criteria under the Transportation of Dangerous Goods Act, Canadian Environmental Protection Act, and GNWT Guideline for the General Management of Hazardous Waste.

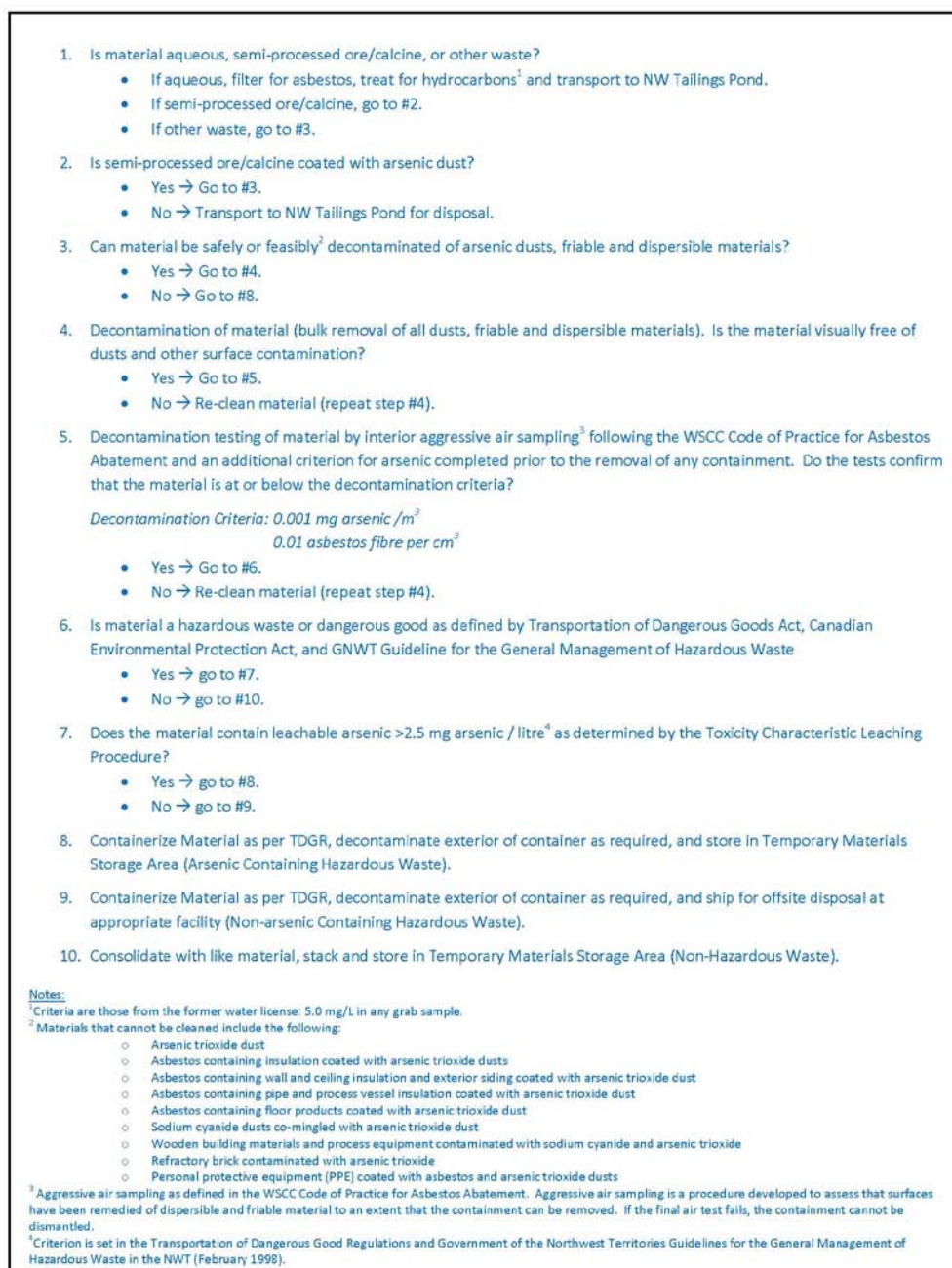
If the above referenced criteria are exceeded, then the materials will be treated as hazardous waste and stored on-site if it is arsenic hazardous waste or shipped off-site if it is non-arsenic hazardous waste (e.g., PCBs). If decontamination can remove asbestos and arsenic to below the above levels and the waste is not considered hazardous under the Transportation of Dangerous Goods Act, Canadian Environmental Protection Act, and GNWT Guideline for the General Management of Hazardous Waste, then the materials will be considered non-hazardous waste. Non-arsenic containing hazardous materials will be disposed off-site at approved facilities during the term of the roaster and underground stabilization WL. Final disposal of the arsenic containing hazardous and non-hazardous wastes will be assessed and approved through the Type A licensing process for the greater Giant Mine Remediation Project; any subsequent plan approvals required in the Type A licence; and any additional regulatory approvals required through the City and GNWT.

Under the SSP water licence, the Project Team is only requesting approval to store non-hazardous and arsenic contaminated materials on site, not to dispose of them on site.

The Project Team supports the inclusion of the condition put forward by the MVLWB in the draft water licence that requires the submission of details on size reduction, stacking, packaging, and storage procedures for non-hazardous waste. We also support the inclusion of arsenic contaminated hazardous waste into the condition.

Figure 1 – Decision Tree for Waste Classification and Storage

All materials, whether solid or liquid, within and making up the roaster complex are considered arsenic containing prior to the start of decontamination. The decision tree is then used to classify and segregate waste.



Comment 25 – Alternatives North

The Roaster complex deconstruction and underground stabilization environmental management plans were prepared for inclusion in the tendering packages to provide specific direction to bidders as they prepare their proposals. The Project Team provided the environmental management plans to the Board and Parties in lieu of the detailed specification documents that could not be released publicly, as confidentiality is an important part of the tendering process.

We respectfully request that the Roaster Environmental Management Plan (EMP) not be included as a plan requirement in the water license as it was not drafted to serve that function. The EMP is an umbrella document that overlaps with the more detailed, topic specific management plans included in the application package and/or to be submitted as required by the water licence (e.g., waste management plans, MSDS sheets, water containment and transportation designs, spill contingency plans, dust control and air quality monitoring plans). These topic-specific plans are designed to address the same issues as the EMP but do so in a format more operational and useable. We respectfully suggest that requiring plans that duplicate information or cover similar matters in different words would create administrative and compliance complications as well as potential confusion that could create environmental risks at the site. Therefore, we would prefer to provide to the Board integrated but individual, topic specific plans rather than the EMPs.

Comment 27 – Alternatives North

Alternatives North raises concerns about criteria related to ponding water, visible dust and the reporting and necropsy of dead animals. Criteria are presented in the draft application documents, will be expanded upon in the plans required under the licence, or addressed through other regulatory avenues as follows:

- a) Ponding water – Other than potable water for drinking and showering, all water used will be sourced from the Polishing Pond. This recycled water will be used for dust control and decontamination and the contractor is required to design a water containment system that captures all water. Recycled water containment design and transportation, and spill prevention measures will be provided to satisfy the water licence requirement proposed by Environment Canada and supported by the Project Team. This proposed requirement is set out in Schedule 2, item 1(i) and requires that design of the recycled water collection and transport system, and related spill prevention measures be provided to the Board for approval.
- b) Visible dust – Criteria, action levels and response actions for visible dust are provided in Table 1 in the Ambient Air Quality Monitoring Plan for Roaster Complex Deconstruction provided under Tab 7 in the application package. Visible dust is dust that is visible by the naked eye and monitoring for the releases of visible dust will be part of the duties of the independent QA/QC monitor and the contractor as set out in Section 2.4.2, Item i in the Roaster Detailed Project Description. Observations of visible dust will trigger the need to wet down the work area or other measures.

- c) Reporting and necropsy of dead animals – In accordance with direction from GNWT wildlife officers, dead animals found in the work areas are to be provided to the wildlife officers who will arrange for necropsies to be completed. The SSP Communications Plan includes provisions for monthly reporting to Parties of the outcome of environmental inspections. Occurrences of dead animals would be part of the monthly reporting. It should be noted that a dead animal does not necessarily equate to an impact caused by roaster deconstruction, and there may be no way to either prove or disprove a causal link as the Giant site is already heavily contaminated.

Other criteria are identified in the water license application documents (see response to Comment 4 – YKDFN for examples).

As stated in our response to Comment 25, we respectfully suggest that requiring approval of the environmental management plan, which is an umbrella document, as well as the more detailed, topic specific plans (e.g., waste management, ambient air quality monitoring, spill contingency planning, water containment designs) would create administrative and compliance complications and potentially environmental or safety risks due to their overlapping content. These plans Therefore, we would prefer to provide individual, topic specific plans that are more detailed in nature rather than the umbrella EMP document.

Comment 28 – Alternatives North

Public Works and Government Services Canada, as the contracting authority, is the owner of all data related to sampling, monitoring and environmental management collected by the selected deconstruction contractor throughout the term of the contract. PWGSC will retain these records and share them with AANDC as the site custodian.

Records will be retained for a minimum of 5 years prior to their archival but the Environmental Management Systems Working Group is developing record management procedures that will ensure records can be retrieved for use by future generations.

Comment 29 – Alternatives North

The comment covers two different topics which are addressed separately below:

Leachability tests – Leachability investigations are not required because very little water is expected to "bleed" from the tailings paste as it cures (analogous to curing cement). As described in Section 2.1, Item 5 of the Underground Stabilization Waste Management Plan, any "bleed" water that is generated will be captured in the underground water management system and brought to surface for treatment in the existing effluent treatment plant.

Paste mix design and performance criteria – Backfill material has been categorized into 2 groups and the performance criteria for both is material strength: Bulk Fill (250 kPa strength) and Structural Fill (600 kPa). Two levels of verification will ensure that the appropriate strengths have been met. The

contractor will be required to conduct quality control measures throughout the project to verify and document that these strengths have been met. An independent engineer will verify the contractor's results through an independent QA/QC program. This is a standard process in any construction project requiring specific strengths.

To confirm that the stability risk associated with each stope and chamber has been mitigated, the contractor is required to submit an "As-Built Statement of Risk Mitigation" upon completion of backfilling each target stope. This letter is to be stamped by a Professional Engineer and essentially state that the risks associated with collapse of the crown/sill pillar in the target areas has been mitigated.

The Project Team proposes that the stamped letters be submitted to the MVLWB as they are completed as part of the reporting requirements in Schedule 1, Item 1(m).

Comment 30 – Alternatives North

During backfilling operations, there is the potential that exhaust air containing arsenic trioxide dust could be forced out of the chamber and be released into the atmosphere (see page 20 in the Underground Stabilization Detailed Project Description). In order to control the risk of such a release, the backfill process will utilize an exhaust air management system to seal exhaust air and to maintain the arsenic filled stopes and chambers under negative air pressure. The intent of the exhaust air system is to capture and treat exhaust air through a filtering system in order to achieve ambient air criteria at both the worker spaces as well as at the property boundaries. Due to these mitigations, we anticipate no effects as the risks will be controlled.

During backfilling operations, air quality monitoring will be completed for both arsenic and particulate matter. There are two sets of criteria that need to be met which include occupational health and safety and ambient (environmental) air quality. The monitoring will be completed continuously during construction activities to ensure occupational health and safety requirements of the NWT are being achieved (Draft Occupational Health and Safety Regulation - Safety Advisory Committee, Northwest Territories, 2012). Real time monitoring will be used as a construction management tool to implement further mitigation as appropriate to help protect worker health. In addition time-weighted 8 hr averages of arsenic will be monitored in worker zones. If criteria as set out in the air quality monitoring plans (Tab 7 in the application package) are reached, the identified actions will be taken, including stopping work. The ambient air monitoring program will include monitoring for both arsenic and particulate matter in a fashion similar to the methods to be utilized for the Roaster Deconstruction program. The air quality monitoring plan for the underground stabilization program is provided under Tab 7.

Comment 35 – Alternatives North

Engagement efforts on the water licence application included the circulation of two draft application packages for comment, site tour, technical workshop and public forums. Alternatives North participated

in all of these engagement opportunities and the Project Team provided written responses to each of their submissions. Documentation of these efforts is provided under Tab 8 in the application package.

The SSP Communications Plan, which outlines how Parties will be kept informed and engaged with, was developed in response to comments heard during the review of the first draft of the application package in October 2012 and at the November public forums. All Parties had an opportunity to provide input on the draft version of the plan during the review of the second draft application package and through the Board's process once the application was submitted. Alternatives North has provided no feedback within or outside the Board's process on the SSP Communication Plan.

Requiring an additional Engagement Plan is duplicative and unnecessary as the SSP Communications Plan includes providing monthly summaries of the outcome of air quality monitoring to a wide target audience including Alternatives North. In addition, we have recommended that formal reports be submitted to the MVLWB every 6 months rather than every 12 months as identified in the draft WL circulated by MVLWB staff in recognition of the fact that reporting is important.

Comment 36 – Alternatives North

As described in Sections 2.4.2, Items b and f in the Roaster Complex Deconstruction Detailed Project Description, dust generation will be controlled through two means. The first means is through the establishment of negative air pressure within the immediate work area which will act as a seal to prevent the spread of dust. This seal will be continuously inspected to ensure that it remain intact. The second means of dust control is the use of water from the Polishing Pond to wet surfaces to prevent dust particles from becoming airborne.

Draft air quality monitoring plans were provided to parties during the review of the draft water licence application packages and to the Board under Tab 7 in the final water licence application package. These air quality plans set out the requirements for monitoring of air quality, action levels, and appropriate responses in the event that action levels are reached. Failure to meet standards will precipitate the shut-down of work and the correction of procedures or change in methodologies to bring the work back into compliance. In addition to monitoring conducted by the contractor, an independent QA/QC monitor will be on site for the duration of the roaster decontamination and demolition work as described in Section 2.4.2, Item (i) in the Roaster Complex Deconstruction Detailed Project Description.

GNWT-Environment and Natural Resources is working with Public Works and Government Services Canada to evaluate the air quality portions of the proposals received during the tendering process for the roaster deconstruction contract. Through this work, the air quality monitoring program requirements are being refined to ensure that the GNWT's requests are satisfied.

Comment 37- Alternatives North

Please refer to our response to Comment 36 as Comments 36 and 37 have similar recommendations.

Snow sampling: Public Works and Government Services Canada recognizes that snow sampling can be used as a method of assessing deposition levels in the environment. The method has its limitations,

however, is generally useful to track a plume's spatial extent and to assess trends in deposition over time. The needs of the current project are related to near-field, short-term monitoring averages in order to facilitate action levels to prevent the discharge of PM to the environment. As such, snow sampling will not be useful for this purpose.

Comment 38 – Alternatives North

PM₁₀ will be monitored during the roaster deconstruction work for the effects of particulate for health and nuisance effects as established for the physical nature of the parameter (i.e. not chemical nature). While TSP and the PM₁₀ fractions are parameters considered to be the most representative of dust that can be generated by earthworks, the PM₁₀ fraction is considered more protective of human health than TSP and therefore PM₁₀ has been selected as the most appropriate dust parameter to monitor in real-time.

Since the precise relationship between As content in PM is yet to be determined (no statistically valid correlation was found between As and PM on site from past monitoring activities), a baseline program will be designed with the objective of being able to use PM₁₀ as a surrogate parameter that can be readily measured and reported in a real-time format. If relationships cannot be established by this fashion, other techniques will be employed such as using source material concentrations and soil fractions to establish real time action levels and to apply dust controls. This initiative will be commenced in April such that finalized correlation information and real-time action levels can be incorporated into the Roaster Deconstruction Monitoring Plan prior to commencement of site works, and provided to the Parties for their information.

The Project Team agrees that arsenic speciation and/or arsenic bioavailability is an important consideration in assessing the potential risks from arsenic exposures. Considerable work has been done by researchers and government agencies over the last decade on arsenic bioavailability. *In vitro* methods that measure bioaccessibility as a surrogate for bioavailability have been developed and validated against animal methods. In addition, speciation and bioaccessibility testing has been done on environmental media at the Giant Mine. For instance, Bromstad (2011) measured ingestion and inhalation bioaccessibility of Giant Mine roaster-derived arsenic in soils and found 34% bioaccessibility for ingestion exposures and 18% bioaccessibility for inhalation exposures. The Project Team also notes that government-derived air criteria are based on toxicological criteria for different species of arsenic. For instance, the toxicological criteria for ingestion exposures are based on studies with soluble arsenic salts. However, the toxicological criteria for inhalation exposures are based on studies of workers in smelters, where the species of arsenic to which they were exposed were more complex species, and not soluble arsenic salts. Data on species and bioavailability will be considered when developing Action Levels for the real-time surrogate arsenic monitoring, as described above, for the Roaster Deconstruction air monitoring.

Comment 39 – Alternatives North

Action levels established in Table 1 are for the effects of particulate for health and nuisance effects as established for the physical nature of the parameter (i.e. not chemical nature). The pending Site Wide Air Quality Monitoring Program will further develop action levels to consider the community health effects of any contaminants of concern as they are associated with the varying particulate fractions - for example TSP will have an emphasis on deposition considerations and PM₁₀ and/or PM_{2.5} will have respiratory and health considerations, again as they also relate to contaminants of concern such as arsenic. The Site Wide Air Quality Monitoring Program will be developed by Spring 2013.

For worker safety and further to the above, every day during the hazardous material removal (abatement) activities, monitoring for arsenic, asbestos and hydrogen cyanide will be conducted inside in worker breathing space and immediately outside the entrance to the enclosed areas and an additional sample will be obtained for every 450m² of enclosure area. Work will stop if measurements outside of the Abatement Work area exceed 0.05 f/cc asbestos, 0.005 mg/m³ arsenic, or if hydrogen cyanide is detected. In such cases corrective procedures will be implemented. The target values used for worker safety are established on industrial hygiene standards established and consistently used across North America through the National Institute of Occupational Health and Safety and American Conference of Governmental Industrial Hygienists (ACGIH).

In addition to the contractor's requirements above, QA samples for the Roaster project will also be obtained.

With respect to ambient criteria, the Project Team agrees that some regions Reference Exposure Limits to arsenic are lower than the Ontario Ministry of the Environment air quality criterion. However, Action Levels for the Giant Mine monitoring plans shouldn't be established by simply choosing the lowest values derived by any governmental or nongovernmental body. Acceptable levels in air are defined by different bodies for different purposes using different methodologies. In addition, some listed values were recently revised and others were derived many years ago. For instance, Alberta Environment lists values for arsenic that were derived by the Texas Council on Environmental Quality (TCEQ) in 2003, but TCEQ recently revised their values in 2012, so Alberta Environmental is citing and relying on outdated air criteria. Accordingly, the Project Team will critically evaluate and rationalize the selection of criteria, their timelines, and the toxicological effects upon which they are based as part of the Action Levels for real-time surrogate arsenic monitoring (as mentioned above) in the Roaster Deconstruction work and Site Wide Air Monitoring Program.

Extensive work has been done to characterize the risks associated with abating and deconstructing the roaster complex as well as conducting the underground stabilization works. In consideration of identified risk, specific objectives have been set to safeguard workers and the health of non-workers, including air quality standards for worker health. These requirements are reflected in the air quality plans submitted to the Board under Tab 7 in the application package. Work is being conducted in accordance with the stringent requirements of the NWT WSCC Code of Practice on Asbestos Abatement and the NWT Draft Occupational Health and Safety Regulations.

The Roaster Complex deconstruction is considered a one of many varying types of activities that comprises the remediation of the former Giant Mine site. The Roaster Complex deconstruction tender designed an air monitoring program specific to the initial hazard assessment associated with this activity, and further work is being done to augment that, including the initiative to develop real-time surrogate arsenic monitoring and associated Action Levels, as described above. This work will be commenced in April such that finalized surrogate levels and real-time action levels can be incorporated into the Roaster Deconstruction Monitoring Plan prior to commencement of site works, and provided to the Parties for their information.

Furthermore, the pending Site Wide Air Quality Monitoring Program is being designed to consider the varying site activities throughout the life of project. The overall objective of the Site Wide AQMP will be to have action levels for any fugitive dust from the site as they relate to potential environmental and community health effects. The implementation of the AQMP is to coincide with the activities related to the Roaster Deconstruction. The Site Wide AQMP will be finalized by Spring 2013 for implementation in Summer 2013.

Comment 40 – Alternatives North

As discussed in submittals to the Board (Tab 7 in the application package – air quality plans), exact daily monitoring locations at this perimeter will be subject to modification, depending on the exact location of work that day and wind direction. In addition there are specific monitoring requirements for collection of total suspended particulate and arsenic (and other metals as required) every three days. These are specific requirements and it is only the methodology details (such as the particular pieces of equipment being used) that are being left up to the contractor. Plans submitted by the contractor are subject to review and acceptance by the Project Team.

As it is not possible to monitor in real-time for arsenic as part of the roaster work, a baseline program will be designed with the objective of being able to use PM₁₀ as a surrogate parameter that can be readily measured and reported in a real-time format, with associated Action Levels. This work will be commenced in April such that finalized surrogate information and real-time action levels can be incorporated into the Roaster Deconstruction Monitoring Plan prior to commencement of site works, and provided to the Parties for their information

The pending Site Wide Air Quality Monitoring Program will develop action levels to consider the community health effects of contaminants of concern as they are associated with the varying particulate fractions – e.g. PM_{2.5}, PM₁₀, TSP. The action levels will aim to provide an early alert to ensure that ambient air criteria are not exceeded and also serve as a management tool for dust controls. The overall objective of the AQMP will be to have action levels for any fugitive dust from the site as they relate to potential community health effects. The strength of the AQMP will be in its scoping and screening of regulations, the scoping of varying site activities, the screening of contaminants of concern, and the development of consistent standards and protocols for all monitoring associated with the Giant Mine Remediation Project. The program will be reviewed on a regular basis to ensure ongoing

appropriateness. The Site Wide AQMP will be finalized by Spring 2013 for implementation in Summer 2013.

[Comment 44 – Alternatives North](#)

The referenced document is the product of the Project Team's internal risk assessment exercises for the roaster and underground. Parties were provided with the technical information on which the risk assessments were based during the environmental assessment process (July 2011) and during the engagement process for the water licence application (October-December 2012). Parties submitted comments and questions related to the material, including requests for clearer statements about the emergency status of the roaster and underground. The Parties' comments, along with our responses are set out in the engagement documents provided under Tab 8 in the application package. Going forward the SSP Communications Plan identifies how and when information is to be shared between the Parties and the Project Team.

The recommendation appears to go beyond the scope of the water licence application to the greater Giant Mine Remediation Project because the risk assessments that led to the development of the Site Stabilization Plan are completed. We respectfully suggest that conditions related to the greater GMRP are more appropriate for the Type A licensing process.

The Project Team maintains that there is a need to conduct internal risk assessments and other evaluations. However, we also recognize the need to seek input from the Parties as part of a sound engagement process. Parties will have opportunities to provide input on the greater GMRP during the development of the consolidated project description that will be prepared following completion of the environmental assessment.

[Comment 45 – Alternatives North](#)

The packaging and storage of non-hazardous and hazardous waste will be done in a manner that complies with applicable legislation and guidelines as identified in the Waste Management Plan.

The criterion for arsenic referenced by Alternatives North is criterion set in the Government of the Northwest Territories Guideline for the General Management of Hazardous Waste in the NWT (February 1998) document for the management, containerization and storage of hazardous wastes. This is the same criterion that is used under the Transportation of Dangerous Goods Regulations. The Guideline for the General Management of Hazardous Waste in the NWT document forms part of the Legislative Framework described in the Waste Management Plan, Section 1.3. All criteria for classification of waste as hazardous are consistent with existing legislation and guidelines.

Specific details on packaging, size reduction, stacking, and storage procedures will be provided to the MVLWB following licence issuance to fulfill any license condition that will require this submission.

Final disposal of waste will be subject to approval under the Type A licensing process for the greater Giant Mine Remediation Plan as at this time, we are only applying to store waste.