



# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request – North Slave Métis Alliance #01

June 17, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #01**

**Date Received**

February 28, 2011

**Linkage to Other IRs**

Alternatives North IR #01

**Date of this Response**

June 17, 2011

**Request**

Section 1.3.2 – This section does not mention Métis land interests. Please explain why not.

**Reference to DAR (relevant DAR Sections)**

S. 1.3 Project Setting

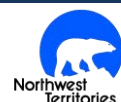
S. 1.3.2 Land Interests

**Reference to the EA Terms of Reference**

S. 3.2.3 Description of Existing Environment

**Response**

Section 1.3.2 of the Developer's Assessment Report is intended to identify parties with established interest in lands on and adjacent to Giant Mine, including the Government of Canada, the Government of the Northwest Territories and the City of Yellowknife. Yellowknives Dene First Nation and Tlicho Government were identified as per historic or modern treaties.





# Giant Mine Environmental Assessment IR Response

Round One: Information Request - North Slave Métis Alliance #02

June 17, 2011

## INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #02**

### **Date Received**

February 28, 2011

### **Linkage to Other IRs**

Alternatives North IR #01, 03

YKDFN IR #24, 25

City of Yellowknife IR #03

### **Date of this Response**

June 17, 2011

### **Request**

#### ***Preamble:***

It appears that the Minister of INAC occupies too many positions of decision making power with respect to this project. A case could easily be made for the appearance of bias, if not actual bias due to his or her role as proponent and Responsible Authority for the acceptance of the Report of Environmental Assessment, as well as inspector and regulator.

#### ***Question:***

Please explain how conflict of interest will be prevented, and how the public will be convinced of the fairness of these proceedings and the authorization and enforcement actions to follow.

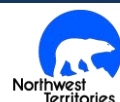
### **Reference to DAR**

S.1.4 the Project Team

### **Reference to the EA Terms of Reference**

S.3.2.2 Developer

S.3.6 Monitoring, Evaluation and Management





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #02

June 17, 2011

### Summary

The Giant Mine Remediation Project Team (Project Team) is tasked with developing and implementing an environmentally-sound and cost-effective remediation plan for Giant Mine that protects the environment and the health and safety of the public.

Indian and Northern Affairs Canada (INAC) has roles beyond that of the project proponent. For example, INAC controls, manages and administers Crown lands in the Mackenzie Valley. It is responsible for administration, inspection, and enforcement associated with renewable resources, non-renewable resources and related environmental legislation.

INAC inspectors are responsible for ensuring compliance with legislation, regulations and the terms and conditions of permits and licences issued by the Mackenzie Valley Land and Water Board (MVLWB) and others.

The *Mackenzie Valley Resource Management Act* (MVRMA) anticipates and allows INAC to have many roles during the EA and regulatory process, including that of proponent. These roles are structured to avoid conflict of interest, bias or apprehension of bias. INAC will document this process and will be neutral in its approach so as to not fetter the Minister's discretion. In addition, the Mackenzie Valley Environmental Impact Review Board (Review Board) and the Mackenzie Valley Land and Water Board (MVLWB) are impartial administrative decision-makers who make their decisions independent of the INAC Minister.

INAC is committed to engaging the public and interested parties to explain INAC's roles and responsibilities, and how INAC will ensure fairness, transparency and accountability.

The legislative regime also includes more than Indian and Northern Affairs Canada. A list of permits and subsequent applications appearing in the Developer's Assessment Report (DAR) Table 6.13.1 demonstrates that the regulatory regime is comprehensive, and that the Giant Mine Remediation Project (Remediation Project) is subject to terms and conditions, scrutiny and inspections under other federal and territorial legislation.

### Response

The Project Team is tasked with developing and implementing an environmentally-sound and cost-effective remediation plan for Giant Mine that protects the environment and the health and safety of the public. With respect to Environmental Assessment (EA), EA0809-001, the Project Team is the project proponent for the Remediation Project.

INAC has other roles in addition to the role of proponent. The MVRMA anticipates and allows INAC to have different roles during the environmental assessment process. For example, in addition to proponent, roles contemplated by the MVRMA include the INAC Minister coordinating post-environmental assessment decision-making. The MVRMA also sets out boundaries to make sure the INAC Minister's actions are transparent. For example, as part of the environmental assessment decision-making process, the INAC Minister is the coordinator of the Regulatory Authorities (RAs) (GNWT and other federal departments





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #02

June 17, 2011

involved in the review) and those RAs must reach consensus on whether a project is approved, denied or requires further review. The decision is then transmitted to the boards and they proceed with the regulatory phase including issuance of the permits/licences/authorizations required to conduct the activity. This is all done in an open and transparent manner.

INAC controls, manages and administers Crown lands in the Mackenzie Valley under the authority of the *Territorial Lands Act* (TLA) and the *Federal Real Property Act*. INAC is also responsible for the administration, inspection, and enforcement requirements associated with renewable resources, non-renewable resources and related environmental legislation, including the MVRMA and the *Northwest Territories Waters Act* (NWTWA), elements of which are relevant to the Remediation Project.

INAC inspectors are responsible for ensuring compliance with legislation, regulations and the terms and conditions of permits and licences issued by the MVLWB and INAC. These responsibilities are exercised by INAC inspectors under the MVRMA, NWTWA, TLA, *Territorial Quarry Regulations*, and the *Northwest Territories and Nunavut Mining Regulations*. Powers designated to the inspector include issuing orders, suspensions, and directions based on the inspector's opinion.

The Project Team has applied to the MVLWB for a Water Licence (MV2007L8-0031). This will be the main regulatory instrument for the Remediation Project. The Project Team will be accountable for the terms and conditions of the Water Licence and any other permits relating to the Remediation Project. In addition to the Water Licence, The Project Team will apply for: i) *Fisheries Act* authorization, ii) Asbestos Licence, and iii) Quarry Permit. A list of other relevant permits and authorizations can be found in the DAR at s.1.7.2. This list is not exhaustive, and is subject to amendment based on information brought forward in this EA process.

Based on the above, it is evident that INAC occupies many roles with respect to the Giant Mine Remediation Project. The relevant legislation has contemplated the potential for INAC to occupy more than one role in the EA and regulatory process. The Review Board and the MVLWB are impartial administrative decision-makers that are independent of the INAC Minister. Neither INAC nor the INAC Minister has direct control over the Boards' decision-making processes.

On an operational level, INAC employees are responsible for consulting with the INAC Minister on the Review Board's recommendations. This role is separated from the proponent role. INAC will document this process fully; and will be neutral in its approach so as not to fetter the INAC Minister's discretion. INAC will exercise its different roles in the Remediation Project in a manner that will meet the general principles of fairness, transparency and accountability.

These roles within INAC are structured to avoid conflict of interest, bias or apprehension of bias. This will be ensured by each branch of INAC fulfilling its legislative roles and acting in a transparent manner. As discussed in Chapter 13 of the DAR, The Project Team is committed to engaging the public and interested parties to explain INAC's roles and responsibilities, and how INAC will ensure fairness, transparency and accountability.





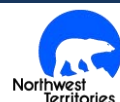
# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #02

June 17, 2011

The legislative regime includes more than Indian and Northern Affairs Canada and the Remediation Project is subject to terms and conditions, scrutiny and inspections under both federal and territorial legislation. This includes authorizations issued by MVLWB; Fisheries and Oceans Canada and Natural Resources Canada; and through Territorial legislation administered by the Chief Inspector of Mines, Workers' Safety and Compensation Commission and departments of Municipal and Community Affairs, Environment and Natural Resources, and Public Works and Services.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request – North Slave Métis Alliance #03

June 17, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #03**

**Date Received**

February 28, 2011

**Linkage to Other IRs**

**Date of this Response**

June 17, 2011

**Request:**

This section neglects to mention the Canadian Constitution as relevant legislation. Please confirm that recognition of the Aboriginal and Treaty Rights of the Métis, as protected by Section 35 is relevant to this project and environmental assessment.

**Reference to DAR (relevant DAR Sections)**

S. 1.7.2 Key Environmental Legislation and Regulations

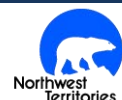
**Reference to the EA Terms of Reference**

ToR 3.2.2.3 Any federal, territorial or municipal policy, directives, guidelines, standards or legislated requirements concerning environmental, sustainable development, community engagement or workplace health and safety standards that may have influenced the development design

**Response**

For the purpose of the Developer's Assessment Report (DAR) this section was intended to describe key federal and territorial legislation required to implement the Giant Mine Remediation Project. It was not intended to encompass constitutional issues.

Canada is required to fulfill its duty to consult, and where appropriate accommodate, in relation to potential and existing Aboriginal and Treaty rights based on section 35 of the *Canadian Constitution* (1982).





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #04

June 17, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #04**

**Date Received**

February 28, 2011

**Linkage to Other IRs**

**Date of this Response**

June 17, 2011

**Request**

Have all of the past studies been licensed in the Northwest Territories according to the Scientists Act, or peer-reviewed? Please provide a table showing date of research, research licence number, researchers name, title of research, a summary of the conclusions, and a link to final peer-reviewed publications.

**Reference to DAR (relevant DAR Sections)**

s. 2.5 Supporting Studies and Technical Documents  
Table 2.5.1 Summary of Supporting Documents to the DAR

**Summary**

Yes, the past studies in the Supporting Documents have been peer-reviewed or licensed as appropriate.

**Response**

***Peer reviewed Supporting Documents***

As described in Section 1.5.3 of the Developer's Assessment Report (DAR), the Giant Mine Remediation Project (Remediation Project) was subjected to a rigorous review by an Independent Peer Review Panel (IPRP) consisting of nine recognized experts whose qualifications and experience collectively covered the fields relevant to project. This review included the majority of the supporting documents to the DAR which described the various studies characterizing site and environmental conditions. The membership of the IPRP included specialists that were nominated by communities and the local public. Reports under the Metal Mining Effluent Regulations (MMER) were peer reviewed by a Technical Advisory Panel (TAP) administered by Environment Canada. University studies undergo peer review for completion and publication of thesis material. In addition to the above, a variety of procurement





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #04

June 17, 2011

procedures and contractual requirements have been established to ensure the quality of any research and investigations that are performed. These include requirements that ensure organizations performing site investigations possess the required experience and professional credentials, and that appropriate internal peer reviews are conducted.

### Licensing

As agreed to with the Aurora Research Institute (ARI), activities carried out at Giant Mine under the Northern Contaminated Sites Program of Indian and Northern Affairs Canada (INAC) do not qualify as research under the *Northwest Territories Scientists Act*. As such, studies of Giant Mine do not require a Scientific Research License from the Aurora Research Institute.

There were two exceptions to this: (1) independent research conducted by universities and (2) select biological monitoring conducted by consultants. A university student's work does qualify as research under the *Northwest Territories Scientists Act*. Larger-scale biological monitoring studies under the Metal Mining Regulations or other ecological investigations were licensed for the sake of completeness. Smaller scale studies completed as part of remediation planning were not licensed as noted above. Table 1 Summary of Scientific Research Licenses in relation to biological monitoring at Giant Mine summarizes the relevant programs that have been conducted at Giant Mine and the applicable Aurora Institute Scientific Research License numbers. A two-hundred word summary was provided to the ARI at the end of each year and was distributed to communities and researchers through the annual ARI Compendia of Research; a link to the summary of results is provided in Table 1. Copies of the final reports and theses were made available to the public through the Giant Mine Public Registry. Table 2 summarizes licensing information from additional monitoring at Giant Mine. This information is provided for transparency and ease of reference.

**Table 1: Summary of Scientific Research Licenses in relation to biological monitoring at Giant Mine**

<b>Date of Research:</b>	<b>Title of Research:</b>	<b>Investigator:</b>	<b>Research License #:</b>	<b>Link to Summary of Results</b>
--------------------------	---------------------------	----------------------	----------------------------	-----------------------------------

### Remediation Plan Supporting Document A6

1998	Baker Creek Fisheries Habitat and Restoration Study	THOMAS, Craig; Dillon Consulting Limited	<u>13004</u>	<a href="http://data.nwtresearch.com/entry.aspx?licence=3dc1f988-4a51-4e4f-b6fc-ab3eebe94877">http://data.nwtresearch.com/entry.aspx?licence=3dc1f988-4a51-4e4f-b6fc-ab3eebe94877</a>
------	---	--	--------------	---

### Remediation Plan Supporting Document A5

2003	Baker Creek Environmental Monitoring Program	MOORE, Peter; Dillon Consulting Limited	<u>13444</u>	<a href="http://data.nwtresearch.com/entry.aspx?licence=948769da-46a7-48c4-9e2c-c2f86ff45f13">http://data.nwtresearch.com/entry.aspx?licence=948769da-46a7-48c4-9e2c-c2f86ff45f13</a>
------	--	---	--------------	---







# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #04

June 17, 2011

### Remediation Plan Supporting Document A3

2003	<i>Ecological Investigation at the Giant Mine</i>	D'ENTREMONT, Marc Jacques Whitford Environment Ltd.	<u><a href="http://data.nwtresearch.com/entry.aspx?licence=e33d0b7c-0ffe-49a1-a760-6331f4d9fb5f">13529</a></u>  <u><a href="http://data.nwtresearch.com/entry.aspx?licence=e33d0b7c-0ffe-49a1-a760-6331f4d9fb5f">http://data.nwtresearch.com/entry.aspx?licence=e33d0b7c-0ffe-49a1-a760-6331f4d9fb5f</a></u>
------	---	---	--

### Remediation Plan Supporting Document A8

2003	<i>Arsenic Speciation in Fish for Back Bay, Yellowknife, and Consequences for Human Health</i>	DE ROSEMOND, Simone University of Saskatchewan	<u><a href="http://data.nwtresearch.com/entry.aspx?licence=68472f6c-942f-4e62-b52d-d024a31e9627">13543</a></u>  <u><a href="http://data.nwtresearch.com/entry.aspx?licence=68472f6c-942f-4e62-b52d-d024a31e9627">http://data.nwtresearch.com/entry.aspx?licence=68472f6c-942f-4e62-b52d-d024a31e9627</a></u>
------	--	--	--

### Remediation Plan Supporting Document F2

2004	<u><a href="#">Investigation of the Extent of Historic Tailings in Back Bay/Yellowknife Bay</a></u>	CAUGHILL, Dave Golder Associates Ltd.	13697  <u><a href="http://data.nwtresearch.com/entry.aspx?licence=c7ab2a4e-27fe-4072-becc-5f220fc734ba">http://data.nwtresearch.com/entry.aspx?licence=c7ab2a4e-27fe-4072-becc-5f220fc734ba</a></u>
------	---	---------------------------------------	---

### Remediation Plan Supporting Document F3

2005	<u><a href="#">The Potential for Geochemical and Microbial Remobilization of Arsenic from Sediments in Yellowknife Bay, Great Slave Lake</a></u>	<u><a href="#">ANDRADE, Claudio</a></u> Queen's University	13525  <u><a href="http://data.nwtresearch.com/entry.aspx?licence=c7ab2a4e-27fe-4072-becc-5f220fc734ba">http://data.nwtresearch.com/entry.aspx?licence=c7ab2a4e-27fe-4072-becc-5f220fc734ba</a></u>
------	--	--	---





# Giant Mine Environmental Assessment IR Response

Round One: Information Request - North Slave Métis Alliance #04

June 17, 2011

**Table 2: Summary of Additional Scientific Research Licenses in relation to biological monitoring or university studies at Giant Mine**

<b>Date of Research:</b>	<b>Title of Research:</b>	<b>Investigator:</b>	<b>ARI Research License #:</b>	<b>Link to Summary of Results</b>
2001	<i>Alteration Study of the Giant Mine, Yellowknife. Investigator</i>	<i>Laura Hubbard of Simon Fraser University</i>	<a href="#"><u>13212</u></a>	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=b38a102-1e3e-4051-9ae7-a540571fa8b6"><u>http://data.nwtr.esearch.com/entry.aspx?licence=b38a102-1e3e-4051-9ae7-a540571fa8b6</u></a>
2001	<i>Structural Geology and Timing of Gold Mineralization in the Giant and Con Gold Deposits, Yellowknife, Canada. Investigator</i>	<i>James Siddorn of the University of Toronto</i>	<a href="#"><u>13208</u></a>	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=4ff9ab25-52c5-4d52-9580-c30212f27f03"><u>http://data.nwtr.esearch.com/entry.aspx?licence=4ff9ab25-52c5-4d52-9580-c30212f27f03</u></a>
2003	<i>Environmental Effects Monitoring for Miramar Con and Giant Mines</i>	<i>Dave Caughill of Golder Associates Ltd.</i>	13518	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=89685229-2963-47e9-bc21-70d3fba2320b"><u>http://data.nwtr.esearch.com/entry.aspx?licence=89685229-2963-47e9-bc21-70d3fba2320b</u></a>
2004	<i>Environmental Effects Monitoring for Miramar Con Mine Ltd. and Miramar Giant Mine Ltd.</i>	<i>Richard Schryer of Golder Associates Ltd.</i>	13625	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=c49f87fd-89ab-4ab5-b3a1-d23433312cef"><u>http://data.nwtr.esearch.com/entry.aspx?licence=c49f87fd-89ab-4ab5-b3a1-d23433312cef</u></a>
2005	<i>Speciation and Mobility of Antimony in Soil, Sediment, and Water in the Region of the Giant Mine Roaster</i>	<i>Skya Fawcett of Queen's University</i>	<a href="#"><u>13823</u></a>	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=55c7a419-e05c-4a38-a489-8059b52b82cc"><u>http://data.nwtr.esearch.com/entry.aspx?licence=55c7a419-e05c-4a38-a489-8059b52b82cc</u></a>
2005	<i>Sediment Investigation of Baker Creek, Giant Mine.</i>	<i>Laura Barnette of Jacques Whitford/DIAND</i>	<a href="#"><u>13905</u></a>	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=7f0e3057-4af0-4af7-97fa-7728095fa24d"><u>http://data.nwtr.esearch.com/entry.aspx?licence=7f0e3057-4af0-4af7-97fa-7728095fa24d</u></a>





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #04

June 17, 2011

2006	<i>Speciation and Mobility of Antimony in Sediment, Pore Water and Surface Water in the Region of the Giant Mine, Yellowknife.</i>	Skya Fawcett of Queen's University	<a href="#"><u>14010</u></a>	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=19907ca5-05af-4145-ae8e-75a8982aed3d"><u>http://data.nwtr.esearch.com/entry.aspx?licence=19907ca5-05af-4145-ae8e-75a8982aed3d</u></a>
2006	<i>Cycle 2 Environmental Effects Monitoring for Giant Mine</i>	Sharon Vogel of Golder Associates Ltd.	14008	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=96d2a07c-6dae-427f-a44c-88832e045105"><u>http://data.nwtr.esearch.com/entry.aspx?licence=96d2a07c-6dae-427f-a44c-88832e045105</u></a>
2006	<i>Dendrochemical Investigation of Arsenic Exposure from Giant Mine on Spruce and Jack Pine Forests, Yellowknife, NWT.</i>	Sonia St.Onge of Carleton University	<a href="#"><u>13985</u></a>	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=264e2318-acbb-4cd9-9e9e-3a9efff35b98"><u>http://data.nwtr.esearch.com/entry.aspx?licence=264e2318-acbb-4cd9-9e9e-3a9efff35b98</u></a>
2007	<i>Mobility and Speciation of Antimony and Arsenic in the Aqueous Environment around the Giant Mine, Yellowknife, NWT</i>	Skya Fawcett of Queen's University	<a href="#"><u>14115</u></a>	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=d1b0c112-989e-41b1-b3d9-7ba76be467f8"><u>http://data.nwtr.esearch.com/entry.aspx?licence=d1b0c112-989e-41b1-b3d9-7ba76be467f8</u></a>
2007	<i>Baker Creek Fish Monitoring Plan</i>	Bill Mitchell of Indian and Northern Affairs Canada	<a href="#"><u>14158</u></a>	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=4e194d78-1d8c-48f2-8f98-7e4504319812"><u>http://data.nwtr.esearch.com/entry.aspx?licence=4e194d78-1d8c-48f2-8f98-7e4504319812</u></a>
2007	<i>Speciation of Arsenic in Yellowknife, NT Soils</i>	Lori Wrye of Queen's University	<a href="#"><u>14135</u></a>	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=d44c9688-d39a-4c97-a322-de5a11499125"><u>http://data.nwtr.esearch.com/entry.aspx?licence=d44c9688-d39a-4c97-a322-de5a11499125</u></a>



# Giant Mine Environmental Assessment IR Response

Round One: Information Request - North Slave Métis Alliance #04

June 17, 2011

2010	<i>The Presence and Persistence of Arsenic Trioxide in Soils Around Giant Mine, NWT</i>	<a href="#"><u>Mackenzie Bromstad of Queen's University</u></a>	14696	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=5c4b77b4-1f2d-4d3c-99ce-7d4f316094cd"><u>http://data.nwtr.esearch.com/entry.aspx?licence=5c4b77b4-1f2d-4d3c-99ce-7d4f316094cd</u></a>
2010	<i>The Effectiveness of Community Consultation Information: A Case Study of the Giant Mine Remediation Plan.</i>	Cindy Jardine of University of Alberta	<a href="#"><u>14808</u></a>	<a href="http://data.nwtr.esearch.com/entry.aspx?licence=f63ed012-4884-40d5-adaa-363bfbf3b72b"><u>http://data.nwtr.esearch.com/entry.aspx?licence=f63ed012-4884-40d5-adaa-363bfbf3b72b</u></a>
2010	<i>Giant Mine Phase 3 EEM</i>	Hilary Machtans of Golder Associates Ltd.	14775	Pending





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - NSMA #05

May 31, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #05**

**Date Received:**

February 28, 2011

**Linkage to Other IRs:**

**Date of this Response:**

May 31, 2011

**Request:**

The North Slave Métis Alliance (NSMA) identified a couple of Valued Ecosystem Components (VEC's) that are not included. The frequency and magnitude of Métis concern about the site should be measured and evaluated for significance. Also, the loss of economic opportunities for NSMA members associated with the permanent withdrawal of the site from mineral (or other) development should be evaluated.

**Reference to DAR (relevant DAR Sections):**

Section 3.6 Identifying Valued Components

**Reference to the EA Terms of Reference:**

3.4 Human Environment

**Response:**

The parties to the Environmental Assessment, EA0809-001, had an opportunity to explore Valued Ecosystem Components (VECs), during the Scoping Phase. The Giant Mine Remediation Project Team then followed the Terms of Reference requirements and addressed VECs in the manner presented in the Developer's Assessment Report (DAR) section, referenced in Section 3.6 Identifying Valued Components. If there are certain VECs that the North Slave Métis Alliance (NSMA) feel have been excluded, then the NSMA can consider bringing this specific information to the attention of the Mackenzie Valley Environmental Impact Review Board.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - NSMA #06

May 31, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #06**

**Date Received**

February 28, 2011

**Linkage to Other IRs**

**Date of this Response:**

May 31, 2011

**Request:**

The section on site history does not mention the historic involvement of the Métis in prospecting and discovering gold at Yellowknife and up the Yellowknife River. The only traditional knowledge report mentioned was prepared by the Yellowknives Dene (YKDFN). Does INAC believe that the heritage and traditions of the Yellowknives and the Métis are indistinguishable from each other or that the YKDFN heritage and traditional knowledge are more relevant and important than the Métis? Please explain why Charles Camsell and his crucial role in the development of the mining industry in the Yellowknife area, and indeed the entire Northwest Territories, is not even mentioned. Also, please describe the efforts made to access Métis traditional knowledge and land use information.

**Reference to DAR (relevant DAR Sections):**

Section 4 Site History

**Reference to the EA Terms of Reference:**

3.2.3 Description of the Existing Environment

**Response:**

The chapter is not, and was not intended to be, an exhaustive and inclusive portrait of mining in the area and in the territory. It establishes the historic circumstances that contributed to the existing site conditions at Giant Mine in an effort to explain the environmental legacy and purpose of the Giant Mine Remediation Plan.





# Giant Mine Environmental Assessment IR Response

Round One: Information Request: NSMA #07

May 31 2011

## INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #07**

**Date Received:**

February 28, 2011

**Linkage to Other IRs**

Review Board IR #5, 7

**Date of this Response:**

May 31 2011

**Request**

The DAR says that treatment methods that were even in early stages of development were assessed, and that more attractive treatment options may present themselves in the future. Several alternative methods of dealing with the arsenic trioxide issue are discussed, but there appears not to have been any serious evaluation of biotreatment in situ. Please explain why this alternative is not mentioned. Also, please explain whether the biotreatment of Giant mine waste could be done in the same manner as is to be done at the Nor Acme Mine in Manitoba (just announced), and which has been already successfully done at the Youanmi Mine in Western Australia and the Beaconsfield Mine in Tasmania.

If the shell of the frozen chambers is frozen first, then the contents frozen second, what is to prevent the dust from expanding as it freezes and breaking the shell?

If the borehole method of wetting the dust before freezing is used, is there a risk that the hydraulic pressure can crack, burst, or wear holes in the frozen shell?

**Reference to DAR (relevant DAR Sections):**

S. 6.2.1 Key Concerns

**Reference to the EA Terms of Reference:**

S.3.3 Arsenic Containment





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request: NSMA #07

May 31 2011

### Summary

In situ biological treatment methods were considered in the assessment of alternatives and found to be infeasible. The examples from Youanmi and northern Manitoba are not an *in situ* process, and their purpose is to recover gold from arsenopyrite. To our knowledge the process has not been tested on arsenic trioxide.

The term 'shell' in the description of the frozen block method is used to refer to the frozen bedrock zone around the arsenic chamber. This frozen zone will be over 10 m thick and consist of frozen bedrock. If a borehole method of wetting the dust using a high pressure nozzle is used, there is no risk of damage to the surrounding bedrock. The final methodology of wetting of the chambers will take into account the expansion effects of water during freezing.

### Response

#### *In-Situ Biotreatment*

The selection of a method to manage the arsenic trioxide dust storage areas has been a long and careful process, involving dozens of scientific and engineering studies, as well as extensive consultation with local residents. The assessment methodology is discussed in Section 6.2.2 of the Developer's Assessment Report (DAR) and in further detail in Section 5 of the "Arsenic Trioxide Management Alternatives – Final Report" (SRK, 2002).

In-situ biological treatment was considered in the initial assessment and is included in Table 5.1 - Methods Considered for Management of Giant Mine Arsenic Trioxide Dust in the 2002 report. The method was determined to be feasible only for relatively low concentrations of arsenic, such as occur in some contaminated soils. It is not at all applicable for arsenic trioxide dust or for the volumes present at the Giant Mine.

The Youanmi Mine in Western Australia used a biooxidation process in a stirred-tank operated at 50 to 52 °C to process 120 tonnes of ore per day.<sup>1</sup> The term successful in that case referred to the economical recovery of gold, and not the removal of arsenic.

The same method has recently been proposed for application at the Snow Lake mine in northern Manitoba.<sup>2</sup> We could find no reference to a similar application at the Nor-Acme site. The company proposing to apply the process to the Snow Lake arsenopyrite stockpile makes reference to Beaconsfield Mine on its web pages but no clear description of that project was found.

---

<sup>1</sup> Source: Biotechnology for Clean Industrial Products and Processes: Towards Industrial Sustainability. ([http://www.bio-economy.net/reports/files/oecd\\_biotech\\_for\\_clean\\_industrial\\_products.pdf](http://www.bio-economy.net/reports/files/oecd_biotech_for_clean_industrial_products.pdf))

<sup>2</sup> Source: BacTech Submits Proposal to Clean up Snow Lake Arsenopyrite Stockpile. (<http://www.bactechgreen.com/s/NewsReleases.asp?ReportID=442464>)





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request: NSMA #07

May 31 2011

The biotreatment process applied at Youanmi and proposed at Snow Lake is a gold recovery process. It starts with arsenopyrite rich gold ore and uses microbes to liberate the gold. It is not an arsenic treatment system, but rather an alternative to the roasting process that was used for gold recovery at Giant Mine, or the pressure oxidation process used more recently at Con Mine. To our knowledge it has not been tested on arsenic trioxide dust.

### ***Frozen Shell Strength***

The term 'shell' in the description of the frozen block method is used to refer to the frozen bedrock zone around the arsenic chamber. This frozen zone will be over 10 m thick and consist of frozen bedrock.

If the borehole mining machine were used to wet the dust, there would be no risk of significant damage to the surrounding bedrock. Because the dust is a much weaker material than the bedrock, the pressures used will be much lower than what would be required to damage the bedrock.

Wetting of the dust is described in Section 6.2.6 of the DAR and is further discussed in the response to Review Board IR #2. The final methodology for wetting the chambers will take into account the expansion of water during freezing.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request: - North Slave Métis Alliance #08

May 31, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #08**

**Date Received:**

February 28, 2011

**Linkage to Other IRs:**

City of Yellowknife IR #04

Review Board IR #12

Alternatives North IR #14

**Date of this Response:**

May 31, 2011

**Request**

The relationship between the diffuser and the drinking water intake for the City of Yellowknife is not clear. Is there a proposal to relocate the current drinking water intake or repair it? Either way, should this not be considered a related (very likely) project to be considered in the cumulative effects assessment? Much more information is needed on this topic.

**Reference to DAR (relevant DAR Sections):**

S.6.8.3 Underground Water Management

**Reference to the EA Terms of Reference:**

S.3.7 Cumulative Effects

**Summary:**

Although the replacement of the drinking water intake is not included in the scope of the Giant Mine Remediation Project, any adverse effects during the construction of the intake would likely be similar to those for the construction of the outfall / diffuser. If necessary, the two construction projects could be scheduled such that any potential cumulative effects are avoided. Once the outfall / diffuser and intake have been constructed, there are no circumstances under which cumulative effects would occur.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request: - North Slave Métis Alliance #08

May 31, 2011

### Response:

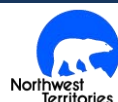
The replacement of the drinking water intake is not included in the scope of the Project. However, the City of Yellowknife is evaluating options to replace the current drinking water intake. It is the Project Team understanding that the existing location (i.e., Yellowknife River) and Great Slave Lake are both being evaluated as potential sources.

As described in Table 8.4.5 of the DAR, the construction of the outfall/diffuser in Great Slave Lake could result in disturbances of sediments. A variety of mitigative measures will be implemented which will result in residual effects that are not significant (refer to Table 12.3.1). In the event a new drinking water intake is constructed by the City of Yellowknife, it is reasonable to assume that potential effects and mitigation measures would be similar to those identified for the outfall/diffuser. By extension any residual effects would not be significant.

**Cumulative Effects During Construction** - Although improbable, it is theoretically possible that the residual adverse effects from the construction of the outfall/diffuser and drinking water intake would have spatial overlap. If such effects were to occur at the same time, there is also a possibility that cumulative effects would occur. To avoid the possibility of this occurring, INAC commits to working with City of Yellowknife regarding the construction of the outfall/diffuser to avoid any periods in which the City of Yellowknife would also be constructing a new drinking water intake. This would allow any short-lived residual effects from the individual projects to dissipate prior to commencing the second project, thereby avoiding any cumulative effects during construction.

**Cumulative Effects During Operation** - As indicated in Table 12.3.1, the outfall/diffuser will have minor and localized residual effects on surface water (i.e., non-significant effects). Any new drinking water intakes constructed by the City of Yellowknife will not result in a discharge to the environment. As a consequence, there is no potential for cumulative effects (i.e. there would not be any additive effects from operation of the outfall and intake on arsenic levels in Yellowknife Bay nor on aquatic biota) during operation.

Besides the question of cumulative effects, there is potential for direct interaction between the outfall discharge and the water supply intake. The location selected for the outfall diffuser could affect the location selected for the intake if the City decides to withdraw water directly from Yellowknife Bay. INAC will consult with the City of Yellowknife to ensure that the two structures are suitably located to minimize the chance of the outfall discharge affecting the quality of the City water supply.





# Giant Mine Environmental Assessment IR Response

Round One: Information Request - North Slave Métis Alliance IR #09

May 31

## INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA IR #09**

**Date Received:**

February 28, 2011

**Linkage to Other IRs**

City of Yellowknife IR#4

**Date of this Response:**

May 31, 2011

**Request**

Water treatment and sludge disposal are not discussed in sufficient detail. Please explain how people will be kept away from tailings and sludge, and whether biotreatment is an option for the treatment method.

**Reference to DAR (relevant DAR Sections):**

- S. 6.6 Tailings and Sludge
- S. 6.8.5 Water Treatment and Sludge Disposal

**Reference to the EA Terms of Reference**

- S. 3.2.4.9
- S. 3.2.4.11

**Summary**

The preliminary design of the water treatment process is currently underway. Precipitation of arsenic with iron is the Best Available Proven Technology treatment process for this application and it is widely used in the industry. Biotreatment is not considered the preferred treatment option for this application.

The tailings ponds and sludge pond will be covered to eliminate tailings dust and isolate the tailings and sludge from the environment.



# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance IR #09

May 31

### Response

As described in Section 6.8.5 of the Developer's Assessment Report (DAR) and further clarified in the response to the City of Yellowknife IR#4.1, the new water treatment plant will consist of precipitation of arsenic with iron and separation and dewatering of the sludge by thickening and filtration. The response to the City of Yellowknife IR#4.2 describes the wide array of technologies that can be applied to treating effluents. It also underscores that processes subject to chemical or biological upset and failure (such as biotreatment) are not considered to be the Best Available Proven Technology for this application. Background information on the selection of the preferred treatment option is presented in the Remediation Plan Supporting Document L1 (provided in Appendix B of the DAR). The Project Team is in the preliminary design phase of the Remediation Project, which will include refinements to some of the technical details associated with the preferred treatment option. The existing water treatment plant will be kept in service until the new water treatment plant is successfully commissioned.

Section 6.6 of the DAR provides the measures proposed to keep people away from the existing tailings and sludge deposits. The tailings ponds and sludge pond will be covered to eliminate tailings dust and isolate the tailings and sludge from the environment. Long-term monitoring and maintenance is required to ensure no erosion exposes the tailings. Restricting human access to the covered areas will be considered if excessive recreational vehicle damage is observed upon routine inspection as outlined in Table 14.2.1 of the DAR and Remediation Plan Supporting Document K1, Table 16.

In Section 6.8.5 of the DAR, the plans for future sludge disposal are provided. In the short-term, the sludge from the water treatment plant may be disposed of underground. An engineered landfill would be constructed to dispose of the sludge in the long-term. It would consist of a series of cells and each cell would be covered when filled. Public access to the active cell of the landfill would be restricted by fencing.

### References

SENES Consultants Limited, 2005. *Water Treatment Update, Giant Mine Remediation Plan*. Prepared for SRK Consulting. August. (Giant Mine Remediation Plan Supporting Document L1).





# Giant Mine Environmental Assessment IR Response

Round One: Information Request - North Slave Métis Alliance #10

May 31, 2011

## INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #10**

**Date Received:**

February 28, 2011

**Linkage to Other IRs**

Review Board IR #12, 24  
Environment Canada IR #16, 17  
City of Yellowknife IR #4  
Alternatives North IR #14  
North Slave Métis Alliance IR #8

**Date of this Response:**

May 31, 2011

**Request**

How close is the diffuser to the Yellowknife water intake pipe (the whole pipe not just the intake)? What condition is the pipe in? What are the implications of diffuser malfunction occurring together with intake pipe malfunction? What impact does climate warming, increased spring and summer precipitation, thawing permafrost in Yellowknife Bay and Yellowknife River, and changing water levels have? Please provide a detailed risk analysis.

**Reference to DAR (relevant DAR Sections):**

DAR s. 6.8.6 Outfall and Diffuser

**Reference to the EA Terms of Reference**

ToR 3.2.4.9

**Summary**

A drawing showing the location of the City of Yellowknife water supply pipeline in relation to the preliminary location of the Giant Mine effluent diffuser is included. Only the City of Yellowknife can comment on the condition of the drinking water supply pipeline as replacement of the City's water supply pipeline and intake is not within the scope of the Giant Mine Remediation Project. The implications of a simultaneous malfunction of the two systems are discussed in some detail in the





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #10

May 31, 2011

response to Review Board IR #12. Finally, the climatic events identified in the question would all result in increased water levels, which should only improve the diffuser performance.

### **Response**

Note that for ease of reading the Information Request question was sub-divided and numbered into four questions and the responses are provided below.

#### Question 1

A drawing is attached to this response showing the location of the City of Yellowknife water supply pipeline in relation to the preliminary location of the Giant Mine effluent diffuser. This drawing shows a different diffuser location than Figure 6.8.4 in the Developer's Assessment Report (DAR); the current location is based on the design work that has been conducted since the DAR was finalized. That being said, it is still a preliminary drawing and final selection of the diffuser location is subject to further analyses and consultation. It should also be noted that the size of the mixing zone shown on the drawing is not necessarily to scale; design work is still proceeding to determine its size. The Project Team will engage the City and other concerned parties with respect to proposed diffuser locations to ensure that the selection of a diffuser location does not adversely affect the municipal water intake.

#### Question 2

The City of Yellowknife is evaluating the option of replacing its water supply pipeline. The Project Team is aware that the City held a public meeting in early May and stated that the anticipated replacement timeline was for the year 2020. Further details on the actual condition of the pipeline or the timeline should be directed to the City, as replacement of the City's water supply pipeline and intake is not within the scope of the Giant Mine Remediation Project.

#### Question 3

Simultaneous malfunction of the two different systems is an extremely low probability event and the chance that one system would negatively affect the other during such an event is even lower. The City's Pumphouse #2 (the primary water supply intake) is upstream of the diffuser and Pumphouse #1 (the backup intake) is over 4000m downstream of the diffuser. More importantly, the City's water supply pipeline is pressurized so that even if a crack were to develop, water would only escape the pipeline, not enter it. However, a scenario for the simultaneous malfunction of the two systems has been included in the Failure Modes Effects Analysis carried out in response to Review Board IR #12. The Parties are respectfully referred to that response for additional information.

#### Question 4

The final question presents several scenarios that would all serve to increase water levels. As the diffuser will be positioned in reference to the lake bed (so as to minimize sediment disturbance) and in a location where the current water depth is sufficient for the designed mixing zone, any increase in water level should only have positive effects on the diffuser performance.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #11

May 31, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #11**

**Date Received**

February 28, 2011

**Linkage to Other IRs**

Review Board IR #13

**Date of this Response:**

May 31, 2011

**Request**

Is the label the same scale as the map? It appears that there are a number of very small circles on the map, compared to the smallest circle on the legend. What magnitude is the largest and smallest earthquake shown on the map? Also, is there an earthquake marked in the vicinity of Yellowknife that is obscured by the text and red star? What magnitude? What would this map look like if it went back farther than 1980 (only 30 years).

**Reference to DAR:**

S.7.2.2.7, Figure 7.2.2

**Reference to the EA Terms of Reference**

S.3.2.3 (8), Description of the Existing Environment

**Summary**

Further explanation related to Figure 7.2.2 of the Developer's Assessment Report is provided. An updated figure showing additional earthquakes is provided.

**Response**

The label on Figure 7.2.2 is the same scale as the map.

The largest earthquake shown on Figure 7.2.2 is the 4.5 magnitude earthquake that occurred on November 28, 2001 at longitude 113.66 and latitude 64.96.







# Giant Mine Environmental Assessment

## IR Response

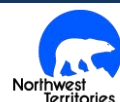
Round One: Information Request - North Slave Métis Alliance #11

May 31, 2011

Only earthquakes with an order of magnitude 2.0 or greater are shown on Figure 7.2.2.

There are no earthquakes obscured by the text and red star in the vicinity of Yellowknife on Figure 7.2.2.

NRCAN has recently made available a longer term data set as shown on the figure below. The data available shown on the figure dates back to 1966. On April 6, 1967 there was a 2.6 magnitude event 55 km SW of Yellowknife and on May 8, 1976 there was a 3.5 magnitude event 110 km SW of Yellowknife.



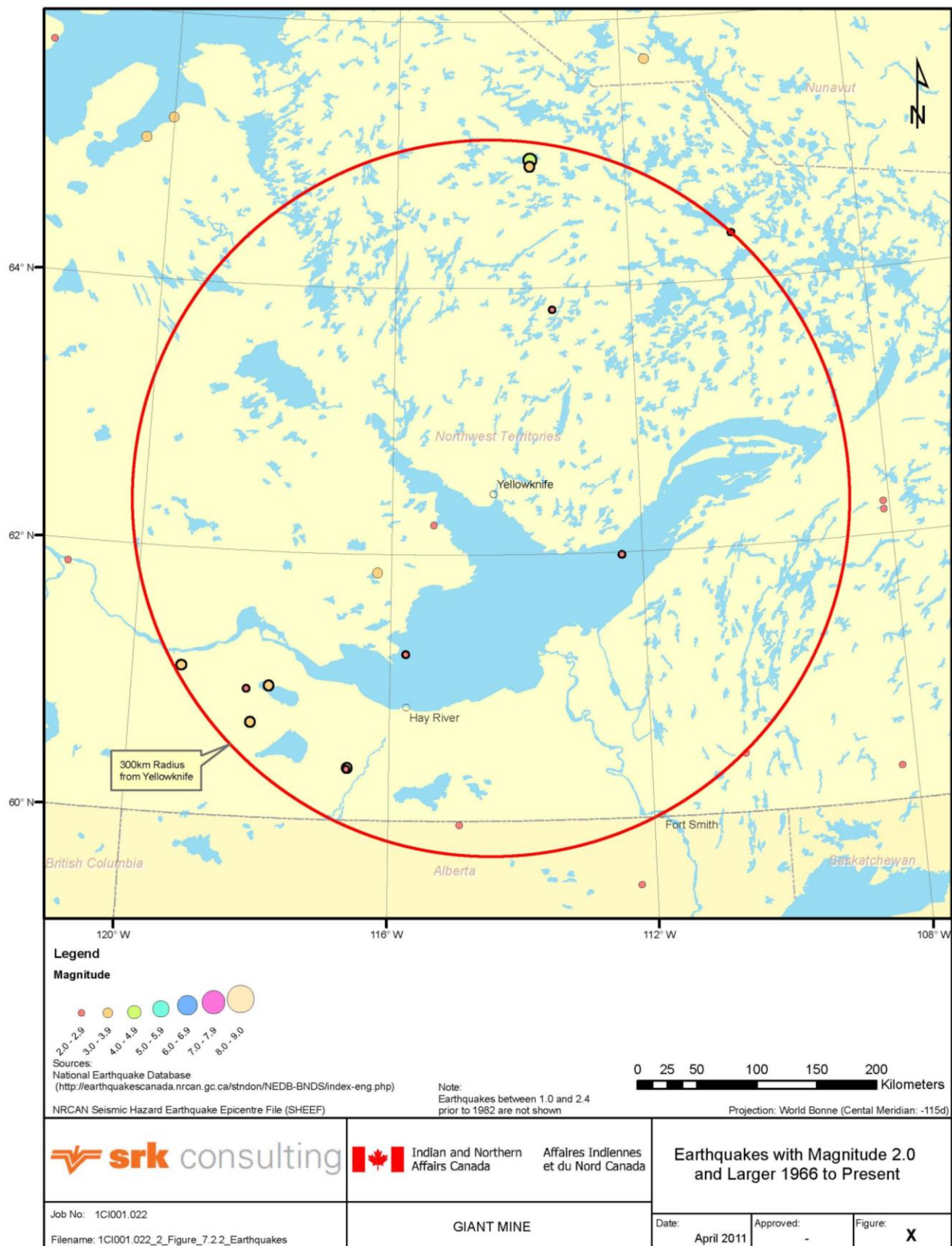


# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #11

May 31, 2011





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - NSMA #12

May 31, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #12**

**Date Received:**

February 28, 2011

**Linkage to Other IRs:**

**Date of this Response:**

May 31, 2011

**Request:**

Does the flooding of Con Mine affect water levels in Giant? If so, how?

**Reference to DAR (relevant DAR Sections):**

S. 7.2.3

**Reference to the EA Terms of Reference**

S. 3.2.3.1

**Summary:**

There will be no effect on the water levels in the underground drainage basin of the Giant Mine because of the flooding of the Con Mine workings.

**Response:**

Although many people in the Yellowknife area assume that Con and Giant Mines are connected, there are no underground workings or tunnels that connect the two mines. They are in fact separated by over three kilometers of solid bedrock.

As a result, the groundwater systems in the two mine areas are quite separate. Flooding of the Con Mine will cause a rise in groundwater levels in the immediate area, but will have no effect on the Giant Mine groundwater system.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request: North Slave Métis Alliance IR #13

May 31, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #13**

**Date Received:**

February 28, 2011

**Linkage to Other IRs:**

**Date of this Response:**

May 31, 2011

**Request:**

Please provide more detailed information on historic climate trends, and especially changes in temperature and precipitation. Can this data be graphed, with the x axis being zero mm, so that the variability of the data, as well as the proportional change can be understood?

**Reference to DAR (relevant DAR Sections):**

S.7.3.2.4 Historic Climate Trends

**Reference to the EA Terms of Reference**

S. 3.2.3 (11) Description of Existing Environment

**Response:**

Climate data from Yellowknife Airport weather station (Environment Canada) was used to present the historical climate trends for the site. Monthly data was used to calculate the annual mean, maximum and minimum temperature and the annual total rainfall and total precipitation for the years 1943 to 2010 and displayed in the following section.

The annual mean of daily mean temperature, daily maximum and minimum temperature at Yellowknife Airport is shown in Figure 1. There is an increasing trend in all three parameters over the 68 years of record.

The average climatic conditions of a particular location are usually presented by Climate Normals, produced by Environment Canada and updated at the completion of each decade. The Climate Normals temperature for the 30-year period (1971-2000) for Yellowknife Airport station<sup>1</sup> were subtracted from the annual average of daily mean temperature and presented as annual mean temperature anomaly in





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request: North Slave Métis Alliance IR #13

May 31, 2011

In Figure 2, a positive anomaly presents the value above the Climate Normals, while a negative anomaly means the value below the Climate Normals.

Figure 3 shows the annual total rain and total precipitation data at Yellowknife Airport. Both parameters show an increasing trend over the 68 year period.

The annual total precipitation anomaly from the Climate Normals 1971-2000 is calculated by subtracting the Climate Normals from the annual total precipitation for each year during the period 1943 to 2010 and is shown in Figure 4.

The most recent available Environment Canada Climate Normals are for the period 1971 to 2000. In order to see the climatic changes in the last decade, SENES used daily data for Yellowknife Airport from Environment Canada to calculate the Climate Normals for the period 1981 to 2010<sup>2</sup>.

Figure 5 shows a comparison of monthly mean temperature averaged over the different Climate Normals periods. During winter months (December to March) the mean temperature is warmer for the period 1981 to 2010, while the summer months show no change.

The monthly total precipitation averaged over the different Climate Normals periods is shown in Figure 6. There is no consistent change between the two periods.

<sup>1</sup> [http://climate.weatheroffice.gc.ca/climate\\_normals/results\\_e.html?StnID=1706&autofwd=1](http://climate.weatheroffice.gc.ca/climate_normals/results_e.html?StnID=1706&autofwd=1)

<sup>2</sup> Note that this data has only undergone preliminary quality checking

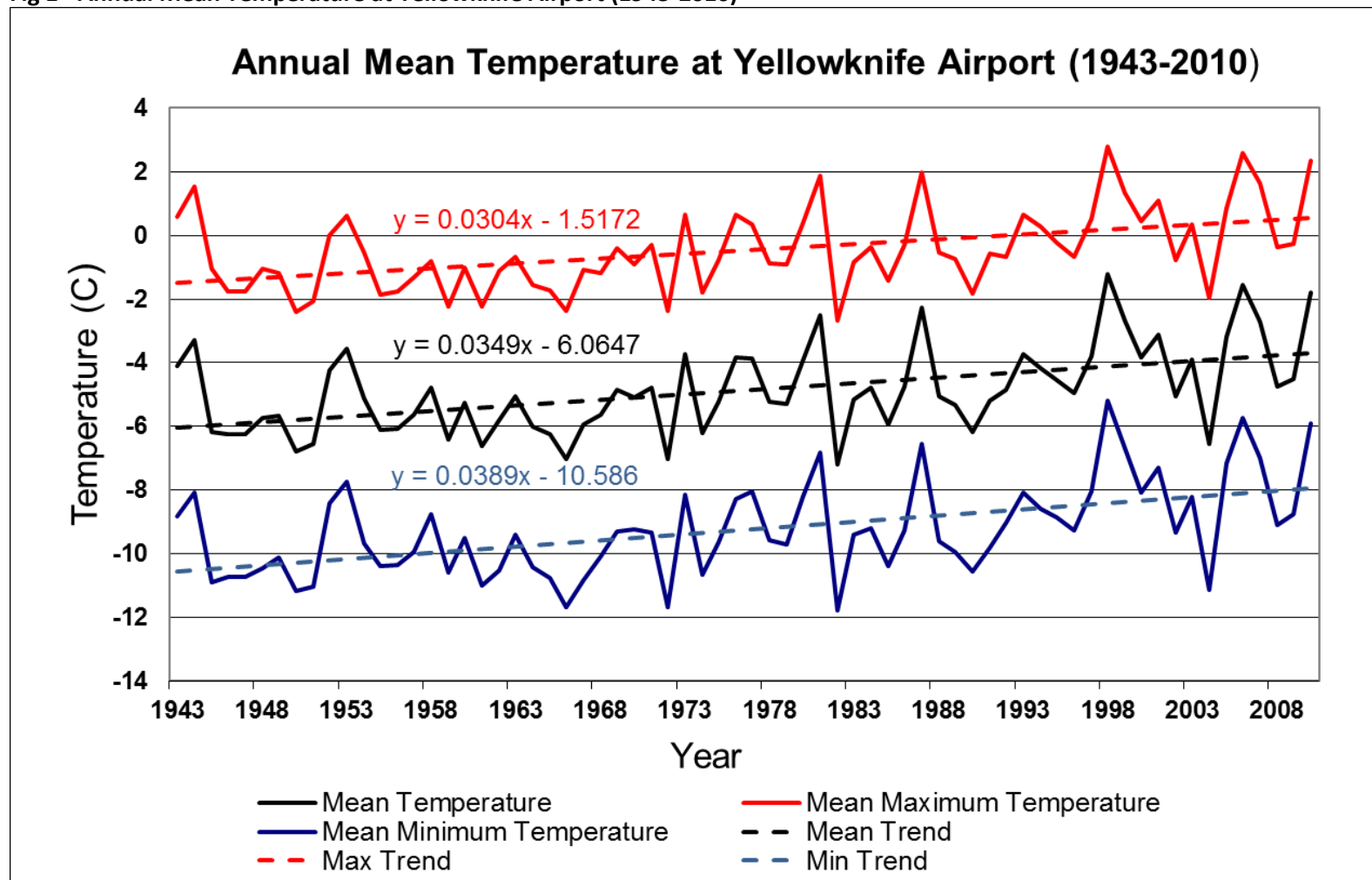


# Giant Mine Environmental Assessment IR Response Template

Round One: Information Request: NSMA IR # 13

29 April 2011

Fig 1 - Annual Mean Temperature at Yellowknife Airport (1943-2010)



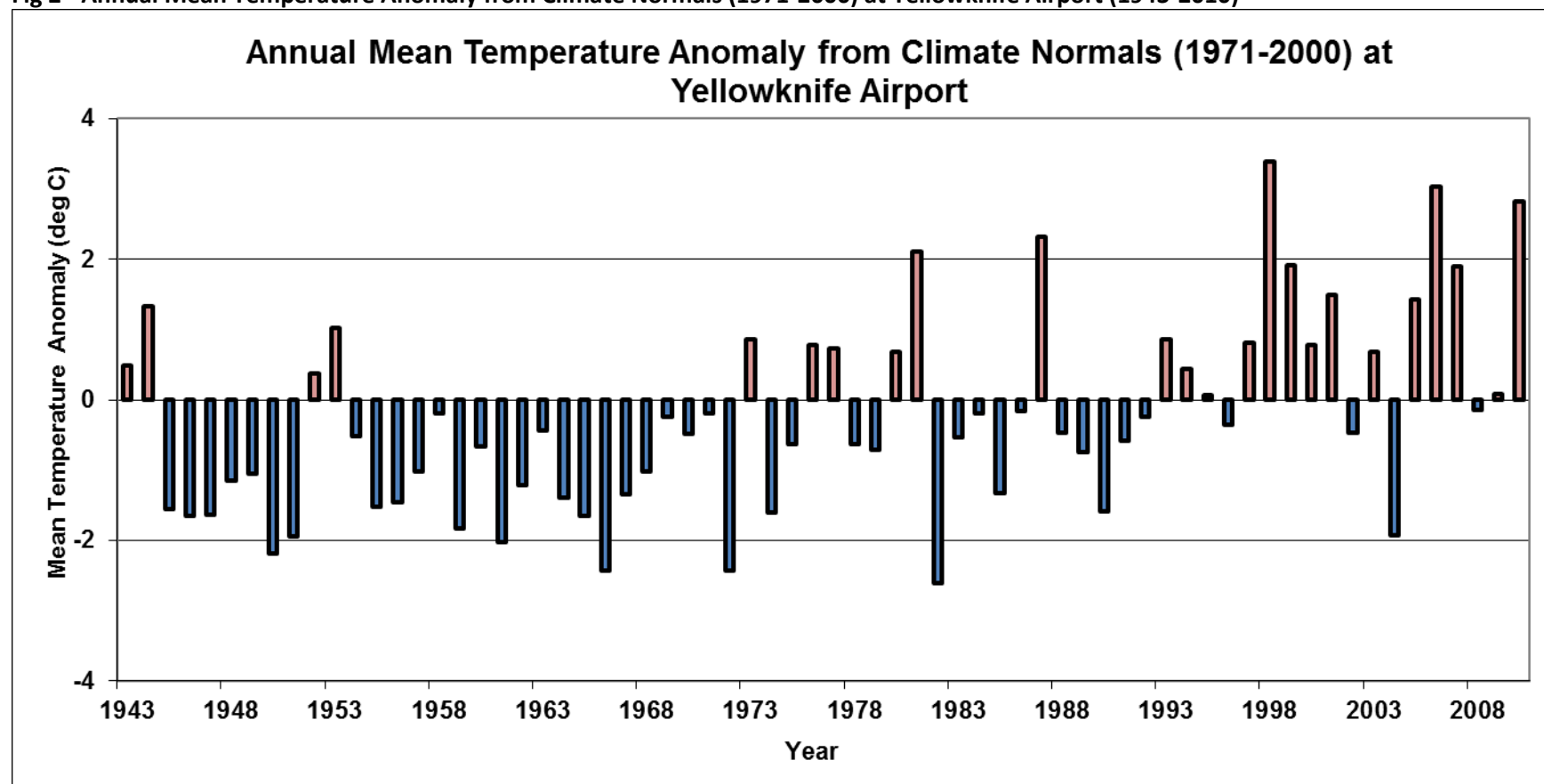


# Giant Mine Environmental Assessment IR Response Template

Round One: Information Request: NSMA IR # 13

29 April 2011

Fig 2 - Annual Mean Temperature Anomaly from Climate Normals (1971-2000) at Yellowknife Airport (1943-2010)



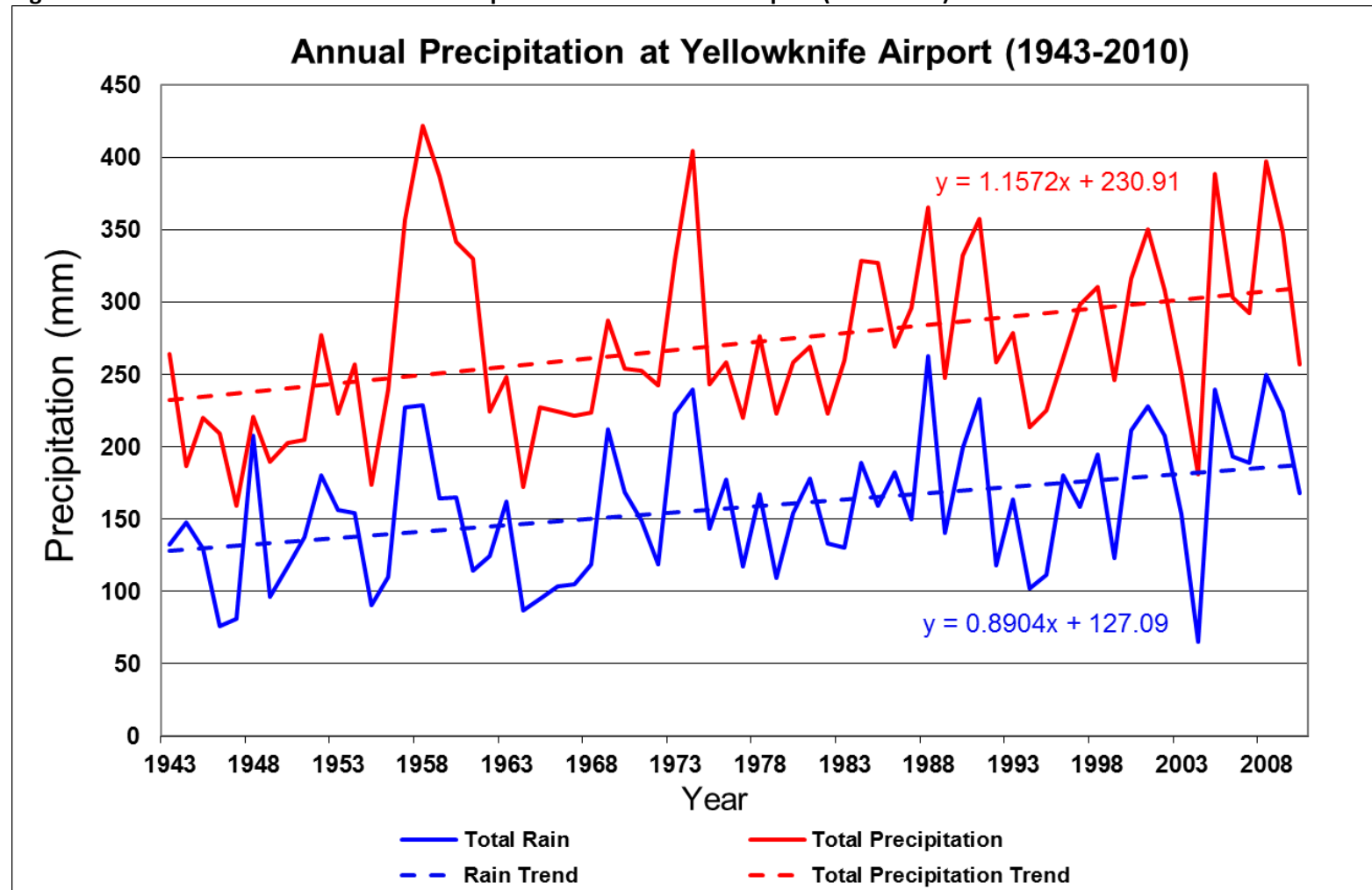


# Giant Mine Environmental Assessment IR Response Template

Round One: Information Request: NSMA IR # 13

29 April 2011

Fig 3 - Annual Rainfall and Annual Total Precipitation at Yellowknife Airport (1943-2010)





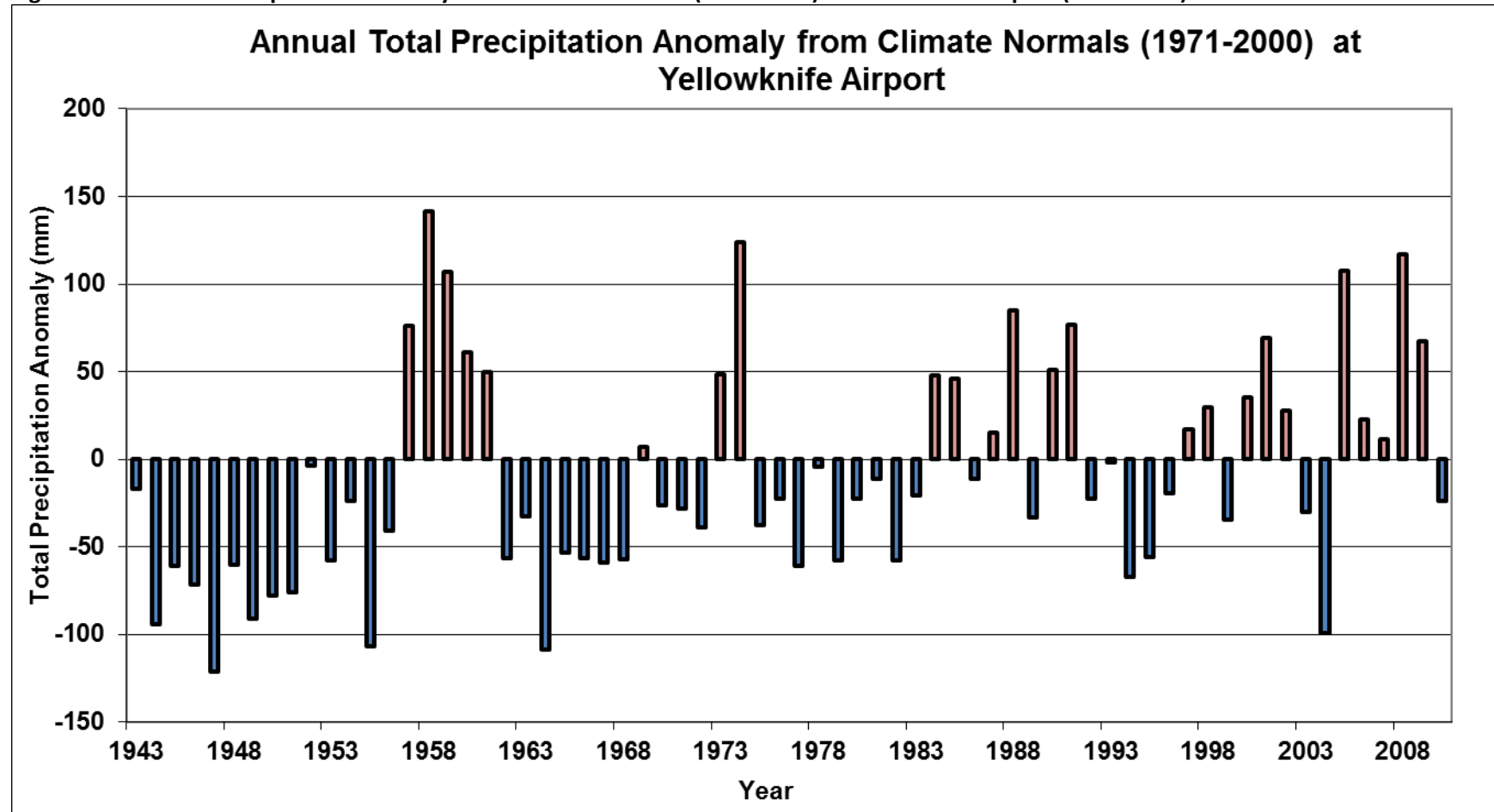


# Giant Mine Environmental Assessment IR Response Template

Round One: Information Request: NSMA IR # 13

29 April 2011

Fig 4 - Annual Total Precipitation Anomaly from Climate Normals (1971-2000) at Yellowknife Airport (1943-2010)



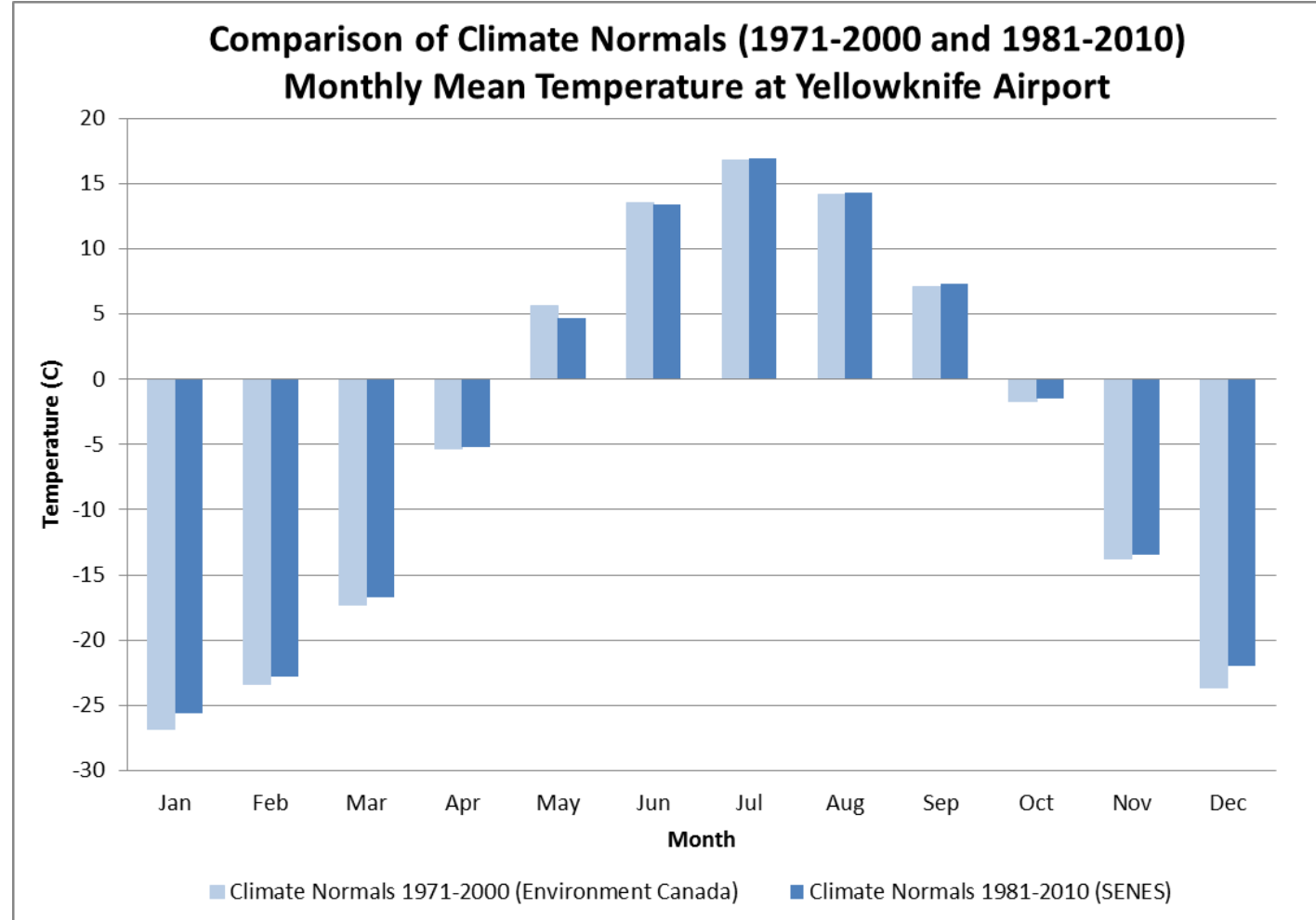


## Giant Mine Environmental Assessment IR Response Template

Round One: Information Request: NSMA IR # 13

29 April 2011

Fig 5 – Comparison of Climate Normals (1971-2000 and 1981-2010) Monthly Mean Temperature at Yellowknife Airport



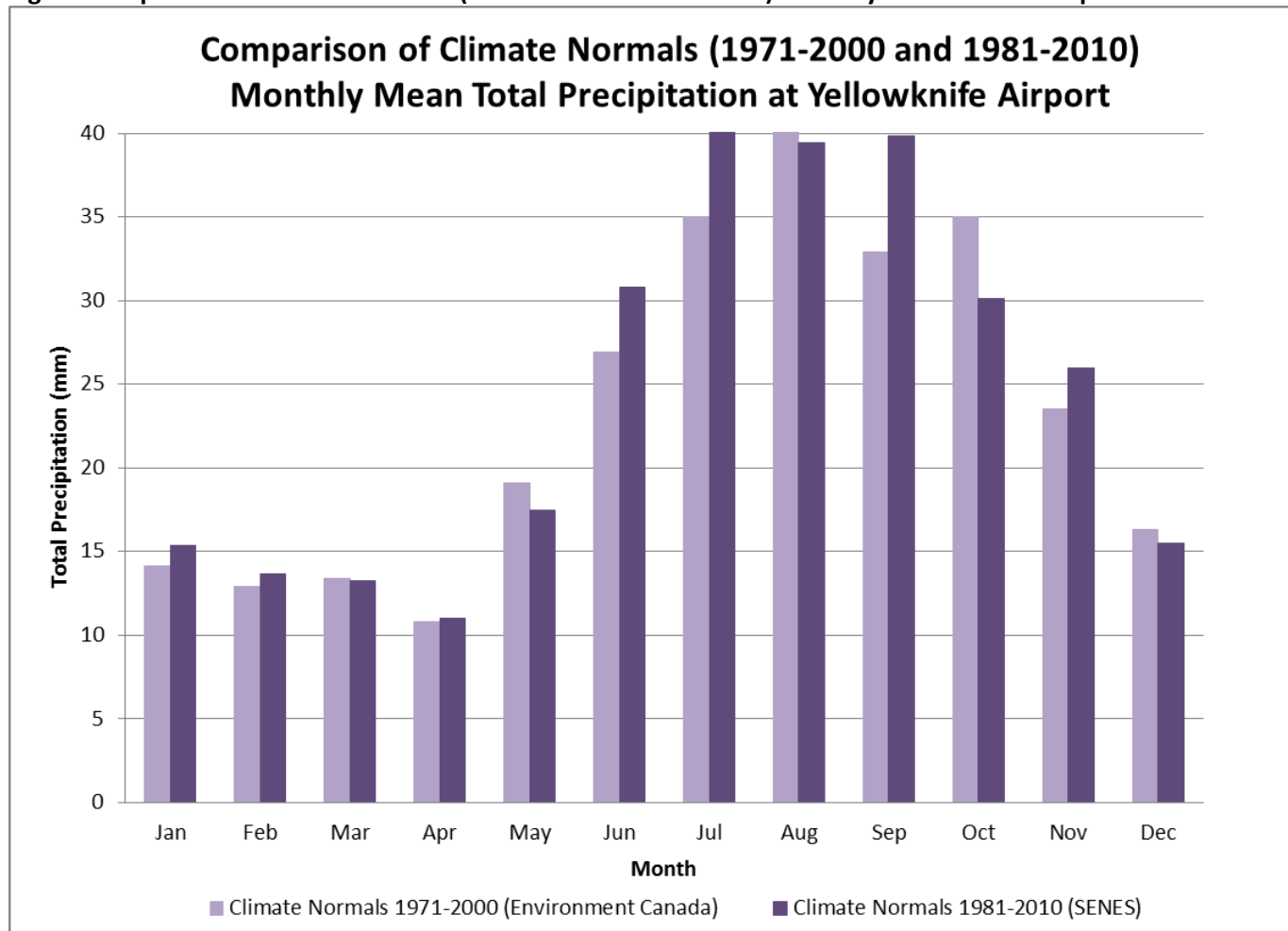


# Giant Mine Environmental Assessment IR Response Template

Round One: Information Request: NSMA IR # 13

29 April 2011

**Fig 6 – Comparison of Climate Normals (1971-2000 and 1981-2010) Monthly Mean Total Precipitation at Yellowknife Airport**





# Giant Mine Environmental Assessment IR Response Template

Round One: Information Request - North Slave Métis Alliance #14

June 17, 2011

## INFORMATION REQUEST RESPONSE TEMPLATE

**EA No: 0809-001**

**Information Request No: NSMA #14**

**Date Received**

February 28, 2011

**Linkage to Other IRs**

**Date of this Response**

June 17, 2011

**Request**

GNWT (and INAC?) have adopted Ontario's air quality criterion for airborne arsenic. Ontario is perceived by many Northerners to be a very industrialized and polluted place. Please explain whether the criterion are (sic) more or less protective for sensitive northern species in comparison to other industrialized and non-industrialized regions (ie: Poland and Iceland).

**Reference to DAR (relevant DAR Sections)**

s.7.3.3.1 Air Quality Indicators and Standards

**Reference to the EA Terms of Reference**

s.3.6 Monitoring, Evaluation and Management

**Summary**

The NWT does not have established ambient air quality standards for arsenic, so in accordance with the Guidelines for Ambient Air Quality Standards in the NWT, the most applicable standard from another jurisdiction may be adopted. The Ontario Ministry of the Environment ambient air quality criterion for arsenic is based on protection of human health and is therefore considered to be appropriate for use at the Giant Mine site.

**Response**

The NWT does not have established ambient air quality standards for arsenic, so in accordance with the Guidelines for Ambient Air Quality Standards in the NWT, the most applicable standard from another jurisdiction may be adopted. The Ontario Ministry of the Environment (MOE) has an ambient air quality





# Giant Mine Environmental Assessment

## IR Response Template

Round One: Information Request - North Slave Métis Alliance #14

June 17, 2011

criterion for arsenic of  $0.3 \mu\text{g}/\text{m}^3$ , based on a 24 hr average. This is a human health-based criterion, established as a level below which adverse health effects are not expected. For comparison, Alberta Environment's Ambient Air Quality Objectives (under their EPA) for arsenic are  $0.1 \mu\text{g}/\text{m}^3$  for a 1-hr averaging period and  $0.01 \mu\text{g}/\text{m}^3$  for an annual averaging period. The Alberta objectives were adopted from Texas. Additionally, the monitoring equipment to be used at the Giant Mine (hi-vol units) will be collecting arsenic data over a 24 hour sampling period (for emissions that will occur seasonally) thus the Ontario MOE criterion of  $0.3 \mu\text{g}/\text{m}^3$  for a 24 hr average is more applicable in this case than are the Alberta objectives.

Since the Ontario MOE criterion is based on protection of human health, it is considered to be appropriate for use at the Giant Mine site. Furthermore, modeling results for the project predict that arsenic in ambient air will reach maximums of  $0.01$  or  $0.02 \mu\text{g}/\text{m}^3$  (24 hour average) at the closest receptors to site.

A network of 17 dustfall collectors was established across the site in July 2010 as a means to validate the model results and to verify the effectiveness of the dust suppression measures. These are currently serving to collect baseline data on fugitive dust settling from the air and will provide measurements throughout the life of the remediation project. As an additional verification of the model predictions and complementary to the dustfall network, dust in the ambient air will be measured through a series of hi-vol units which will be speciated for arsenic levels.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #15

June 17, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #15**

**Date Received**

February 28, 2011

**Linkage to Other IRs**

**Date of this Response**

June 17, 2011

**Request**

What process was used to determine the size and shape of the North Slave Métis Land Claim Area?

**Reference to DAR (relevant DAR Sections)**

Section 7.6 Aboriginal Interests

**Reference to the EA Terms of Reference**

3.2.3 Description of Existing Environment

3.2.3.12 Historic and present past land usage, with the identification of traditional land use groups and areas of overlapping land usage

**Response**

Figure 7.6.1 Aboriginal Land Claim Areas in the Developer's Assessment Report (DAR) represents established interests in the lands on and adjacent to Giant Mine per historic or modern treaties or potential interests being actively negotiated. Canada is not engaged in negotiations with the North Slave Métis Alliance (NSMA) as the NSMA has not established that it is a group that officially represents Aboriginal rights holders. Hence, Figure 7.6.1 does not depict the size and shape of the land claimed by the NSMA.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request – North Slave Métis Alliance #16

May 31 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA IR #16**

**Date Received:**

February 28 2011

**Linkage to Other IRs:**

**Date of this Response:**

May 31 2011

**Request**

What was the detection limit relevant for each time period of the reported arsenic level in fish tissue data? Is there a temporal trend in the data – please illustrate.

**Reference to DAR (relevant DAR Sections):**

S.7.4.2.5 Arsenic Concentrations in Fish

**Reference to the EA Terms of Reference**

S.3.4.2 Health and Human Safety

S.3.5.2 Fish and Aquatic Habitat

**Summary**

The detection limit of arsenic in fish tissue was 0.05 µg/kg, on a wet weight basis, and was the same for each time period. The concentrations of arsenic in fish tissue data in Yellowknife Bay are similar between 1996 and 2004 and therefore the data do not support the development of a temporal trend.

**Response**

The data presented for fish in Table 7.4.6 of the DAR had a reported detection limit of 0.05 µg/g wet weight (ww). In Baker Creek and Resolution Bay, none of the samples were below the detection limit, while in Yellowknife Bay only 9 samples out of a total of 408 were below the detection limit.

The mean measured concentrations of arsenic in fish have not changed with time; in Yellowknife Bay, the mean concentration of arsenic in fish tissue (muscle) in 1996 was 0.20 mg/kg ww while in 2004 it was 0.21 mg/kg ww. These results do not support an evaluation of temporal trends in the data. It should be noted that the arsenic levels in fish from Yellowknife Bay are similar to those in fish in Northern





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request – North Slave Métis Alliance #16

May 31 2011

Saskatchewan, where the mean arsenic concentration was 0.18 mg/kg ww for fish in water with less than 4 µg/L arsenic. Data from Northern Saskatchewan has been used in this comparison for four reasons: i) arsenic is one of several constituents of concern in the vicinity of a number of large mining operations in the province; ii) there is a large fish chemistry database collected at these operations; iii) fish are exposed to a range of arsenic levels which provides a good database for assessing the effects of a range of exposure levels on fish tissue levels; and, iv) the chemistry of water in Northern Saskatchewan are fairly similar to those in the NWT.







# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - NSMA #17

May 31, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #17**

**Date Received:**

February 28, 2011

**Linkage to Other IRs:**

**Date of this Response:**

May 31, 2011

**Request:**

The Métis role in mineral development of the North has not been mentioned. Is there a reason for this information gap?

**Reference to DAR (relevant DAR Sections):**

7.6.4.3 Métis

**Reference to the EA Terms of Reference:**

3.2.3.13

**Response:**

This section was not intended to deal with Aboriginal roles in mineral development in the Northwest Territories.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #18

June 17, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #18**

**Date Received**

February 28, 2011

**Linkage to Other IRs**

**Date of this Response**

June 17, 2011

**Request**

It appears that the Métis have been neglected (again). How will Métis heritage resources be identified, and when will that process begin?

**Reference to DAR (relevant DAR Sections)**

s. 7.6.6.1 Aboriginal Heritage Resources in the Local and Site Study Areas

**Response**

Information available to the Giant Mine Remediation Project Team did not identify any Métis heritage resources in the Site Study Area.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - NSMA #19

May 31, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #19**

**Date Received:**

February 28, 2011

**Linkage to Other IRs:**

**Date of this Response:**

May 31, 2011

**Request:**

It seems that the existing situation is being treated as a baseline for a new project, and as if the Crown was not responsible for (permitting if not encouraging) the damage in the first place. The proposed reduction of predicted ongoing negative and potentially catastrophic effects is being treated as if they were positive effects. The reduction of the magnitude of a negative effect does not create a positive effect. There seems to be little focus on the proposed continuation of loss of use of lands and waters for traditional uses. Please explain, quantitatively, and with illustrations, which areas of the land, air and water will remain unavailable and/or unsuitable for traditional use during the life of this project.

**Reference to DAR (relevant DAR Sections):**

8.10.3.1 Positive Effects of Remediation on Traditional Land Use

**Reference to the EA Terms of Reference:**

3.4.3 Cultural Impacts

**Response:**

Post remediation conditions are represented in Figure 6.1.2 *Conceptual Post Remediation Site Conditions* in the Developer's Assessment Report (DAR). Following implementation of the Remediation Project, the arsenic storage areas will be fully frozen and the freezing system converted to a passive system, such as thermosyphons, to maintain the frozen state indefinitely. A fence will be constructed around each of the arsenic trioxide storage areas and any associated infrastructure. The enclosed areas will remain under the control of Indian and Northern Affairs Canada (INAC) and the Government of the Northwest Territories (GNWT), as outlined in the INAC-GNWT Cooperation Agreement referenced in Section 1.1.4 of the DAR.





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - NSMA #19

May 31, 2011

The water level in the open pits will be maintained below the bottom of the open pits to prevent the formation of contaminated pit lakes. Access to the open pits will be restricted by fencing or berms to ensure public safety. All openings to the underground, including those in the pits, will be permanently sealed where warranted by safety issues.

A new Water Treatment Plant will be constructed and will be operated year-round. The discharge point for treated minewater will be moved from Baker Creek to Yellowknife Bay following the construction of a new outfall and diffuser.

Hazardous materials will be placed in engineered facilities and, with the exception of buildings that may be preserved for their heritage value within the Townsite, all existing structures will be removed.

Soils exceeding industrial soil contamination criteria will be removed or covered with clean fill to make these areas suitable for industrial uses.

The tailings and sludge impoundments will be regraded and surfaced with covers to allow vegetation to establish and for the reclaimed areas to eventually be available for traditional or public use. All quarries, borrow pits and waste disposal areas will be regraded and covered to promote drainage and revegetation in areas not consisting of exposed bedrock.

Various options for the remediation of Baker Creek are currently being developed. The designs will take into consideration input from Aboriginal and local residents that will be obtained through future consultation activities. The selected approach will physically stabilize the creek and improve both the quantity and quality of habitat. In this regard, the Remediation Project is expected to result in a gradual increase in numbers and diversity of fish, animals, wildfowl and native vegetation present in the drainage area of the creek. However, traditional use of the fisheries may need to be discouraged, depending on the level of residual arsenic contamination.

Future land use will also be restricted to those activities that will not interfere with or affect remediation efforts on site or any engineered remediation structures (e.g. tailings cap covers, freeze infrastructure, water treatment infrastructure.)





# Giant Mine Environmental Assessment

## IR Response

Round One: Information Request - North Slave Métis Alliance #20

June 17, 2011

### INFORMATION REQUEST RESPONSE

**EA No: 0809-001**

**Information Request No: NSMA #20**

**Date Received**

February 28, 2011

**Linkage to Other IRs**

**Date of this Response**

June 17, 2011

**Request**

Does the Giant Mine Remediation Project Team commit to bring forwarding the valid Compensation Concerns of the Métis to the Crown?

**Reference to DAR (relevant DAR Sections)**

Section 13.5 Resulting Commitments

**Reference to the EA Terms of Reference**

3.2.6.1.b: All commitments and agreements made in response to issues raised by the public during these consultations, and how these commitments altered the planning of the proposed the development

**Response**

No, it is the responsibility of an Aboriginal organization to advance its claims to government and/or bring forth any claim during the regulatory process.

