No Net Loss Planning Consultation Summary

Date	Description	Attendees	Document Included?
07-Mar-11	AEM No Net Loss Contingency Plan Terms of Reference	Sent to DFO by AEM	✖
28-Apr-11	DFO Approves Terms of Reference	Accepted by DFO	
30-May-11	Invitation to attend July 13th Workshop	sent to: KIA, NWB, NIRB, HTO, DFO	✖
13-Jun-11	Meadowbank Site visit with HTO- inpart discussed NNL Planning	HTO and AEM	
13-Jul-11	No Net Loss Planning Workshop	HTO, KIA, DFO, AEM, Consultants	✖
08-Aug-11	Email to DFO outlining DFO Authorization discrepancies	Sent to DFO by AEM	✖
12-Aug-11	Helicopter Tour with Workshop Attendees	HTO, KIA and AEM	
15-Aug-11	DFO Site Visit to Meadowbank and Meliadine	AEM and DFO	
11-Nov-11	Agenda sent for November 17th meeting in Ottawa	AEM and DFO	✖
17-Nov-11	November 17th and 18th meetings in Ottawa	AEM and DFO	✖
13-Dec-11	Follow-up teleconference	AEM, DFO and Consultants	
31-Jan-12	Technical Memorandum detailing a HEP method comparison	AEM, DFO and Consultants	✖
12-Feb-12	Exploratory Meeting with DFO Science to discuss research opportunities	AEM, U of G researchers, DFO Habitat and DFO Science	✖
30-Mar-12	Email from DFO detailing expectations for a new Meadowbank NNLP	Sent by DFO to AEM	✖
07-Jun-12	Technical Memorandum detailing a adjusted HEP with example	Sent to DFO by AEM	

TECHNICAL MEMORANDUM

DATE: March 7, 2010

TO: Derrick Moggy, Team Leader Arctic Region, Department of Fisheries and Oceans Canada

FROM: Ryan VanEngen- Environment Biologist
Stéphane Robert – Environment Superintendent

RE: Agnico-Eagle Mines Ltd: Meadowbank Division – Terms of Reference for the No Net Loss Contingency Plan

Background

On July 30, 2008, Agnico-Eagle Mines Ltd. (AEM) was granted Fisheries Authorization NU-03-0191 for the Meadowbank gold project. The development and construction of habitat compensation for the loss of fisheries habitat (either due to harmful alteration, disruption or destruction) is a requirement of the project.

In addition to the development of habitat compensation, Condition 4.5 of this Fisheries Authorization states:

> *A Contingency Plan addressing alternative habitat compensation measures to be implemented to meet the required ratio of gained HUs : lost HUs in the event the primary compensation plans fail either due to inability to construct as per the proponent plan, or failure of the habitat compensation measures to meet the criteria for success established in the Habitat Compensation Monitoring Plan, version 4, dated May 2008, shall be developed by the Proponent through consultation with impacted communities and/or the local Hunters and Trappers Organizations. These plans shall be submitted within one (1) year of the issuance of this Authorization to the Iqaluit, Nunavut office of Fisheries and Oceans Canada– Fish Habitat Management, Eastern Arctic Area for review and subject to DFO approval.*

On January 15, 2009 AEM sent a letter to the Department of Fisheries and Oceans Canada (DFO) raising concerns with the development of an appropriate contingency plan in the specified period of time. These concerns regarded the current limited scientific research on the effectiveness and legacy of engineered structures in Arctic waters and the lack of potential locations for suitable habitat creation in the vicinity of the mine site and the Hamlet of Baker Lake. On May 19, 2009 DFO acknowledged these concerns and that for the benefit of all parties involved agreed to defer the development of a habitat compensation contingency plan. In follow-up meetings the DFO and AEM met to review the options for a contingency plan and the DFO recommended that the Terms of Reference for a contingency plan be developed.

Objectives

The Terms of Reference (ToR), outlined in this memorandum will guide the process for AEM to develop a no-net loss (NNL) habitat contingency plan that will meet the goals of the DFO. To ensure the goals of the contingency plan are met in a conciliatory manner, various workshops will be held to inform, involve and consult with stakeholders in the development of the contingency plan. The final product of the workshops, research and discussions is to submit an agreeable no-net loss contingency plan that is acceptable to the Department of Fisheries and Oceans.

The scope of the ToR includes:

- Identifying the stakeholders and their involvement;
- Outlining applicable deliverables;
- Areas of potential research; and
- Proposing a timeline that outlines the development of the Meadowbank no-net loss contingency plan.

Identification of Stakeholders and Their Responsibilities

As stated above, AEM will invite stakeholder participation by hosting workshops. The goal of these workshops will be to engage and provide consultation for identifying and developing alternative habitat compensation strategies for the Meadowbank Mine. The workshop invitees will be comprised and not limited to:

- The proponent (Agnico-Eagle Mines Ltd. [AEM]);
- Department of Fisheries and Oceans Canada (DFO);
- Baker Lake Hunters and Trappers Organization (HTO);
- Kivalliq Inuit Association (KIA); and
- Consultants or Researchers hired by any of the groups listed above.

In general, the following roles and responsibilities are assigned as part of the development of the No-Net-Loss Contingency Plan.

The proponent (AEM): Responsible for coordinating the workshops and organizing meetings with DFO representatives and researchers to meet the timelines proposed in the ToR. Responsible for researching and proposing alternative habitat compensation options, developing and assessing the feasibility, costs and schedules for any proposed habitat compensation features and lastly for preparing the NNL contingency plan.

DFO: When possible, the DFO is responsible to provide feedback and participate in the workshops and meetings hosted by AEM. Although the DFO is not directly responsible to develop an alternative plan, they are requested to participate in researching and providing advice on suitable alternative habitat contingency options for the project. The DFO is responsible for approving the final no-net loss habitat contingency plan under the Fisheries Authorization.

Inuit Associations: As representative land owners, the KIA is invited to participate and provide consultation by attending the workshops. As representative resource users, the Baker Lake HTO will be invited to participate in the workshop and provide consultation.

Consultants and Researchers: Responsible for participating and assisting group members in the development of alternative habitat compensation options for the project.

As outlined, consultation through meetings with DFO representatives and stakeholder workshops will provide accountability and guidance during the process of developing the No-Net-Loss contingency plan. Ultimately, the proponent is responsible for designing and providing the DFO with a compliant no net loss contingency plan.

Areas of Potential Research and Discussion for Alternative Habitat Compensation Options

Items that will be researched, pursued and discussed through the process of developing a no net loss contingency include (but are not limited to):

A review of the originally proposed habitat compensation

- A review of the originally proposed habitat compensation features (i.e. shoals, finger dikes, mounts), construction designs and costs.
- A review of the number of habitat units that are to be compensated for and the methods used to quantify habitat units.
- A review of the success criteria established in the Habitat Compensation Monitoring Plans.
- A review of in-water construction methods and the experiences learned during Meadowbank in-water dike construction in 2008 to 2010.
- The limitations of the originally proposed habitat compensation options.

Identification of contingency plan habitat compensation options

- Available methods to improve upon the currently proposed habitat compensation features (consideration for alternate accounting systems).
- A review of the scientific literature for any new developments on habitat compensation features in the Arctic.
- Consideration of developing an alternative accounting system (i.e. replacing habitat units with alternative units such as fish population or biomass replacement).
- A review of other constructed habitat compensation features in the Arctic, and if possible, the effectiveness of those features (i.e. end pit lakes, mounts, shoals).
- The identification of compensation options within the watershed of the mine site, near to the Hamlet of Baker Lake, within the Kivalliq region and/or outside the region.
- Creative alternative strategies for habitat compensation in the north
- The identification of compensation options that provide a tangible benefit to the local community. This might include: non like-for-like or off-site (e.g. improving the fisheries industry and researching related fisheries management in Nunavut).
- The identification of a suite of contingency options that collectively provides a suitable no net loss contingency plan.

Options Analysis

- The feasibility of any of the proposed compensation features.
- The environmental, social and economical benefits and risks from any of the proposed compensation options.
- Defining the measures and limitations in quantifying success (field data collection may be needed to assist with the formulation of a potential habitat compensation options).

Deliverables

Deliverables for the proponent include the following:

- Completing and distributing meeting agendas to DFO representatives and documenting minutes from each of the meetings and stakeholder workshops.
- A Meadowbank- No Net Loss Contingency Plan, as developed in consultation with the stakeholders and DFO representatives, shall be provided to the DFO for approval.

Timeline

- April 2011 – The proponent will contact all stakeholders and request their participation in a workshop.

- May- July 2011 – AEM will host a workshop with stakeholders to review the approved habitat compensation features at Meadowbank, review the requirements of the No-Net-Loss contingency and identify alternative options for habitat compensation.
- September- December 2011- AEM and DFO will meet to review the identified options and discuss the preferred options based on their feasibility.
- January- March 2012- AEM will host a workshop with stakeholders to review the feasibility of the options and the direction of the contingency plan.
- April 2012 - The proponent will formally submit the No-Net-Loss contingency plan to the DFO for approval.

AGNICO-EAGLE
MEADOWBANK DIVISION

May 30, 2011 (see translated version below)

Dear Workshop Invitee,

On July 30, 2008, Agnico-Eagle Mines Ltd. (AEM) was granted Fisheries Authorization NU-03-0191 for the Meadowbank Mine. The development and construction of habitat compensation for the loss of fisheries habitat (either due to harmful alteration, disruption or destruction) is a requirement of the project.

In addition to the development of habitat compensation, Condition 4.5 of this Fisheries Authorization states:

> *A Contingency Plan addressing alternative habitat compensation measures to be implemented to meet the required ratio of gained HUs : lost HUs in the event the primary compensation plans fail either due to inability to construct as per the proponent plan, or failure of the habitat compensation measures to meet the criteria for success established in the Habitat Compensation Monitoring Plan, version 4, dated May 2008, shall be developed by the Proponent through consultation with impacted communities and/or the local Hunters and Trappers Organizations. These plans shall be submitted within one (1) year of the issuance of this Authorization to the Iqaluit, Nunavut office of Fisheries and Oceans Canada– Fish Habitat Management, Eastern Arctic Area for review and subject to DFO approval.*

In response to discussions with the Department of Fisheries and Oceans Canada (DFO), on March 7th, 2011, AEM submitted a Terms of Reference to the DFO to guide the completion of a No Net Loss Contingency Plan for the Meadowbank Mine. On April 28, 2011 the DFO provided comments and approval for the Terms of Reference memorandum.

As stated in the Terms of Reference, AEM is encouraging the participation of relevant stakeholders during the No Net Loss Contingency plan development; it is for this reason that AEM would like to invite you and relevant members of your organization to participate in a workshop that will be held on July 13th, 2011 in Baker Lake. A follow-up workshop will also be completed at the beginning of 2012 prior to the final submission of the plan.

The goal of these workshops will be to engage and consult with relevant stakeholders for identifying and developing alternative habitat compensation strategies for the Meadowbank Mine. The workshop invitees will be comprised and not limited to:

- The proponent (Agnico-Eagle Mines Ltd. [AEM]);
- Department of Fisheries and Oceans Canada (DFO);
- Baker Lake Hunters and Trappers Organization (HTO);
- Nunavut Water Board (NWB);

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Tel: 819-759-3700 Fax: 819-759-3663

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X0C 0A0
Tel: 867-793-4610 Fax: 867-793-4611

- Kivalliq Inuit Association (KIA); and
- Consultants or Researchers hired by any of the groups listed above.

During the July 13th workshop, we invite at least one representative of your organization to participate in an introduction to the project, a review of the approved no-net loss plan & habitat compensation for the Meadowbank Mine and a discussion on the development of alternative habitat contingencies for the *Meadowbank Mine No Net Loss Contingency Plan*.

We are requesting your response ASAP or at the latest by June 15th, 2011. Please reply to Ryan VanEngen: rvanengen@agnico-eagle.com or call Stephane or Ryan at the below email address.

Feel free to contact the undersigned any time if you have any questions or comments, otherwise we look forward to meeting with you on July 13th, 2011.

Regards,

Ryan Vanengen
rvanengen@agnico-eagle.com
519-400-7979
Environment Biologist

Stéphane Robert
Stephane.robert@agnico-eagle.com
819-763-0229
Environment Superintendent

ᒪᐃ 30, 2011

ᑎᑎᕋᕕᐅᔪᑦ, ᑲᑎᒪᔪᖅᑐᕈᓇᖅᑐᑦ

ᐅᐸᓗᑎᓗᒍ ᔪᓚᐃ 30, 2008ᒥ, ᐊᒡᓂᖃ ᐃᖃ ᐅᔭᕋᒃᑕᕆᐊᑦ, ᐊᖏᒐᐅᓚᐅᖅᑐᑦ ᑕᓯᐅᑉ ᐃᓚᖓ ᐊᐳᖅᑎᓐᓇᖅᑐᒥ ᐱᓕᕆᐊᕆᔭᐅᕐᑯᐸᓗᒍ, ᐃᖃᓗᐃᑦ ᐃᓱᒪᒋᐸᓗᒋᑦ. ᑕᒫᓇ ᐊᖏᕈᑦ ᑲᕙᒪᑐᖅᑲᖃᓂᑦ ᑕᕆᐅᓕᕆᔾᑯᖏᓂᑦ ᐱᔪᖅ ᓇᓗᓇᐃᖁᑕᓕᒃ, NU-03-0191. ᐊᐳᖅᑎᓐᓇᖅᑐᒥ ᒥᕕᒃ ᑕᑭᓕᕆᐊᒐᐅᓂᐊᕐᑎᓗᒍ, ᐃᖃᓗᖅᕐᕕᒃ ᐃᓚᖓ ᑕᓯᕐᒥ ᑕᒪᕐᓂᐊᕐᒪᑦ. ᑕᓯᕐᒥ ᐃᓚᓂ ᐊᖏᓕᒐᐅᓂᐊᕐᒪᑦ,
ᐃᖃᓗᐃᑦ ᐃᓱᒪᒋᐸᓗᒋᑦ, ᑕᒫᓇ ᐱᓕᕆᔪᑕᐅᓂᐊᕐᑐᖅ, ᐊᐳᖅᑎᓐᓇᖅᑐᒥ.

ᐊᐳᖅᑎᓐᓇᖅᑐᒥ ᒥᕕᐅᐸ ᑕᑭᓕᕆᐊᕐᓂᖓᓄᑦ, ᑕᓯᐅᐸ ᐃᓚᖓᓄᑦ, ᐃᖃᓗᖅᕐᕕᐅᔫᒃᓇᕐᑐᖅ ᑕᓯᐅᐸ ᐃᓚᖓᓂ ᐱᓕᕆᐊᕆᔭᐅᓂᐊᕐᒪᑦ, ᐊᖏᕈᒥ ᓇᓴᐅᑎᓕᒃ 4.5 ᑎᑎᕋᒃᓯᒪᔪᖅ ;

ᒥᕕᒃ ᓴᓇᔭᐅᑎᓗᒍ ᑕᓯᐅᐸ ᐃᓚᖓᓄᑦ ᓴᓇᔭᐅᓂᐊᕐᒪᑦ, ᐃᖃᓗᖅᑲᕈᓇᕐᑐᖅ ᑕᒪᐃᔭᐅᓂᐊᕐᒪᑦ.
ᑕᒪᐃᔭᐅᓂᖃ ᓴᓇᔭᐅᔭᕆᐊᖃᖅᑐᖅ ᑕᓯᐅᐸ ᐃᓚᖓᓂ, ᐃᖃᓗᖅᑲᕈᓇᑲᓂᕐᑯᐸᓗᒍ. ᑕᒪᓇ ᐸᕐᓇᒍᑕᐅᓂᐊᕐᑐᖅ, ᐊᖑᓇᓱᒃᑎᑦ ᐃᓚᐅᖅᑕᐅᓗᑎᒃ. ᑕᒪᓇ ᐱᓕᕆᐊᕆᔭᐅᔭᕆᐊᖃᖅᑐᖅ ᑎᑎᕋᒃᓯᒪᒪᑦ, ᓂᕐᔪᑎᑦ ᐃᓂᖏᑦ ᐊᑐᒐᐅᐸᑕ, ᑎᑎᖅᑲᒥ ᐸᕐᓇᒍᒥ Version 4, May 2008ᒥ. ᑕᒪᓇ ᐱᓕᕆᐊᕆᔭᐅᓂᐊᕐᑐᖅ ᓄᓇᓕᑦ ᐱᓕᕆᕕᒋᔭᐅᔪᑦ, ᐊᒪᓗ ᐊᖑᓇᓱᒃᑎᑦ ᑲᑎᒪᔨᖏᑦ ᐃᓚᐅᖅᑕᐅᓗᑎᒃ. ᑎᑎᖅᑲᖅ ᐱᓕᕆᐊᕆᔭᐅᔭᕆᐊᖃᖅᑐᒥᒃ ᑐᓂᔭᐅᒪᑦ,
ᐱᓕᕆᐊᕆᔭᐅᔭᕆᐊᖃᖅᑐᖅ
ᐅᑭᐅᖅ 1 ᐱᐊᓂᖅᑲᑎᓇᒍ. ᑕᒫᓇ ᑎᑎᖅᑲᖅ ᐱᓚᐅᕐᒪᑦ ᐃᖃᓗᒃᓂ, ᑲᕙᒪᑐᖅᑲᑦ ᑕᕆᐊᓕᕆᔾᑯᖏᓂᑦ. ᐱᓕᕆᐊᕆᔭᐅᓂᐊᕐᑐᕐᓗ ᐸᕐᓇᒃᓯᒪᓕᖅᐸᑦ ᖃᐅᔨᓴᒐᐅᔭᕆᐊᖃᖅᑐᖅ ᑕᑯᓇᖓᑦ ᐊᖏᒐᐅᒥᓗᓂ.

ᐊᒡᓂᖃ ᐃᖃ ᐅᔭᕋᒃᑕᕆᐊᑦ ᐊᒪᓗ ᑲᕙᒪᑐᖅᑲᑦ ᑕᕆᐊᓕᕆᔾᖓᑕ ᑎᑎᕋᕕᖓᑦ,
ᐸᕐᓇᖅᑎᒋᓚᐅᕐᒪᓂᒃ,
ᒪᔾ 7, 2011ᒥ. ᑲᑎᒪᓂᑲᒥᒃ ᐱᓕᕆᐊᕆᔭᐅᓂᐊᕐᑐᑦ ᑎᑎᕋᒃᓯᒪᓕᖅᓱᑎᒃ ᒪᓕᒐᐅᓂᐊᕐᒪᑦ. ᐊᒪᓗ ᐊᐃᕆᓕ 28, 2011ᒥ, ᑕᕆᐊᓕᕆᔾᑦ ᓇᒪᒃᓴᕐᓱᑎᒃ ᐊᖏᓚᐅᕐᑐᑦ ᐱᓕᕆᐊᕆᔭᐅᓂᐊᕐᑐᒥᒃ. ᑕᒪᓇᓗ ᐱᓕᕆᐊᕆᔭᐅᓂᐊᕐᑐᖅ.

ᑎᑎᕋᒃᓯᒪᔪᓂ ᐱᓕᕆᐊᕆᔭᐅᓂᐊᖅᑐᓂ, ᐅᖅᑲᖅᓯᒪᔪᖅ, ᐊᒡᓂᖃ ᐃᖃ ᐅᔭᕋᒃᑕᕆᐊᑦ ᐃᓚᐅᖅᑕᐅᕐᑯᔾᔪᑦ
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ᐃᓚᐅᖅᑕᐅᔫᒃᓇᕈᐸᓯ, ᑕᒪᓇ ᐸᕐᓇᒐᑕᐅᓂᐊᕐᒪᑦ, ᑲᑎᒪᓗᑎᒃ ᔪᓚᐃ 13, 2011ᒥ. ᐊᒪᓗ ᑕᒪᓇ ᑲᑎᒪᔪᑕᐅᒐᓂᒃᐸᑦ, ᐅᑭᐅᒥ 2012ᒥ ᑲᑎᑲᓂᕆᐊᕐᓂᐊᖅᑐᑦ, ᑕᒪᓇᓗ ᐱᐊᓂᒃᐸᑦ ᑐᓂᔭᐅᓂᐊᕐᒪᑦ ᑕᕆᐅᓕᕆᔾᑯᓄᑦ, ᑲᕙᒪᑐᖅᑲᖃᓂᓄᑦ.

ᑲᑎᒪᑎᓗᒋᑦ ᐸᕐᓇᓂᐊᖅᑐᑦ ᑕᒪᓇ ᓂᕐᔪᓯᕆᓂᕐᓗ ᐊᒪᓗ ᓄᓇᐃᑦ ᓂᕐᔪᑎᓄᑦ ᐊᑐᒐᐅᔪᓂᕐᑐᑦ ᖃᓄᖅ
ᐊᓚᖁᑦ ᐊᑐᒐᐅᕕᖅᑲᕈᓇᕐᒪᖓᑕ, ᐊᐳᖅᑎᓐᓇᕐᑐᒥ. ᐅᖁᐊ ᐊᓯᖏᑦᓗ ᑲᑎᒪᔪᖅᑐᕐᑯᔭᐅᓂᐊᕐᑐᑦ:
➢ ᐊᒡᓂᖃ ᐃᖃ ᐅᔭᕋᒃᑕᕆᐊᑦ

AGNICO-EAGLE
MEADOWBANK DIVISION

- ᑲᖏᒪᑐᖅᑯᓂᓂ ᑕᓗᐅᓕᓗᓂᔨᑦ
- ᖃᒪᓂᑐᐊᖏᒥ ᐊᖏᔪᓇᓯᑎᑦ ᑲᑎᒪᔨᖏᑦ
- ᑭᖑᓕᖏᒥ ᐃᓄᐃᑦ ᑲᑐᔨᖃᑎᒋᑦ ᐊᒪᓗ

- ᑲᑎᒪᓴᖅᑐᖅᑐᑦ ᑎᒥᐅᔨᑦ ᐱᓕᓗᑎᒃᖏᑦ, ᖃᐅᔨᓴᖅᑎᑦᓗ.

ᑲᑎᒪᓂᐊᖏᑎᓗᒋᑦ ᔨᓪᓗᐃᒥ ᑎᑯᐊᖅᑕᐅᓯᒪᔨᑦ ᑲᑎᒪᓴᖅᑐᖅᑯᓯᐅᐅᔨᑦ ᐃᓪᓕᐅᔨᓱᓐᓂᑦ. ᐃᓯᒪᒋᑲᓴᓯᓂᒃ ᑲᑎᒪᓴᖅᑐᕈᓐᖅᑐᓂᒃ ᑎᑯᐊᖅᓯᓂᐊᖅᓴᓯ. ʔᑎᒪᓴᖅᑐᖅᑐᑦ ᑐᑭᓯᑎᑕᐅᓂᐊᖅᑐᑦ ᓯᓇ ᐱᓕᓕᐊᓱᐅᓂᐊᖏᓐᓄᑦ. ᑕᒪᓇ ᐸᖅᓇᒋᑕᐅᓂᐊᖏᓪ ᐊᐅᖅᑎᓇᖅᑐᒥ ᐅᓴᖃᑦᕋᐃᒥ ᐱᓕᓕᐃᐅᔨᖅ.
ᐊᒪᓗ ᑎᑎᕃᓯᒪᔨᑦ ᐱᓕᓕᐊᓱᐅᑯᓯᐅᐅᒪᔨᑦ ᐅᖃᐅᓯᐅᒪᓂᑐᑦ.

ᑕᐃᒪ ᑕᒪᓇ ᐸᖅᓇᒋᑕᑭᓕᐊᓕᖏᓪᓕᒡ, ᖃᐅᔨᔨᒪᔨᒍᑦ ᑭᑐᑦ ᐃᓕᐅᓂᐊᖏᓪᓕᒡ, ᐊᒪᓗ ᐊᔨᖅᓇᖕᐸᑦ ᔨᓂ 15ᖏᒍᖃᕆᓇᒍᒍ ᖃᐅᔨᑎᑕᐅᓂᐊᖅᐳᒍᑦ. ᖃᓇᑕᐅᕈᒪᑦ ᑎᑎᑭᐃᐅᔨᓇᖅᑎᒋᔨᖏᓪ ᐅᑉᖏᓪ; rvanengan@agnico-eagle.com. ᐅᖃᓗᐃᐅᔨᓇᖅᑎᒋᔨᑦ ᕿᐃᕈᓐ ᐊᒪᓗ ᓯᑎᑭᓐ, ᑐᕿᑭᑎᑉᑦ ᑕᒡᑭᓂ ᑎᑎᖃᒥ ᑎᑎᕃᓯᒪᔨᖅ. ᑕᑯᔨᒪᖅᑕᐸᓯ ᔨᓪᓗᐃᒥ 13, 2011ᒥ.

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AGNICO-EAGLE
MEADOWBANK DIVISION

Meeting summary for:
Meadowbank Gold Project No Net Loss Contingency Plan Workshop
July 13, 2011 Nunamuit Lodge, Baker Lake, NU

In attendance:
Ryan VanEngen, AEM ; Stephane Robert, AEM ; Leilan Baxter, consultant to AEM- Meadowbank Mine; John Witteman, consultant to AEM- Meliadine Project; Michael Haqpi, AEM (Translator); Simeon Mikkungwak, KIA; James Tiriganiaq, HTO; Bobby Bedingfield, DFO

Minutes
Start - 9am.

Morning Session Summary

Ryan VanEngen presented an update on activities occurring at the mine site, including details on water management, construction of the in-lake dikes and the environmental monitoring programs. He continued to present a summary of the current fisheries no net loss plan (NNLP), including where habitat losses and gains will occur at the Meadowbank site. Leilan Baxter presented a summary of NNLP compensation options from other northern mines. Ryan VanEngen re-iterated the purpose of today's workshop and explained why AEM needs to develop a NNL contingency plan. See presentation file for details.

Morning Session Questions and Answers (paraphrased)

JK: When I was young in 1959 we fished in the mine site area and the fish were fat and healthy. Are they still?
RV: Yes they are. We monitor the condition factor of fish in the mine site area and they are healthy. We will continue to monitor the health of fish.
JK: On the E, W and S sides of the mine site there were a lot of fish.
RV: These areas are still very productive and that is where the best habitat is. We caught over 2000 fish in the Bay-Goose area (portion of east basin of Third Portage Lake) in 2009.
SM: Where did you put the fish that you caught in that area?

RV: 58% of the fish caught were released in Third Portage Lake outside the Bay-Goose dike. Those that died during collection were used for meristics (DFO required biological data), frozen and later delivered to the community for animal food.
JT: All around the mine site (E, W,S) is traditional fishing areas
RV: We have monitoring stations near the mine, as well as at far field sites that have been monitored prior to mine construction and will be monitored throughout production, in order to detect any effects on fish as a result of the mine.
SM: Before the mine was there, fish travelled from the north down into Tehek Lake.
RV: They can still do that – the channels draining to Tehek are unchanged. Are there any streams that you are aware of near the mine site that could be improved for fish passage?
JT: Most channels around that area have minnows and fish eggs in spring.
RV: Since most of the fish around here spawn in the fall usually the eggs that you see in the spring are likely unfertilized eggs from the fall and wash in the channels.
JT: How does the diversion channel used at Ekati improve fish habitat?
JW: For example, at Ekati they supplemented the channel construction with boulders and cobbles to make it good fish habitat, rather than leaving as a barren ditch. It provides some habitat for arctic grayling and studies are on-going to determine their effectiveness.

LUNCH BREAK

<u>Afternoon session summary</u>
Ryan VanEngen further explained the requirements of a contingency plan and what factors need to be considered in assessing the options. Several ideas were presented and discussed by the workshop participants. See presentation file for details.

<u>Afternoon Session Discussion (paraphrased)</u>
Re. stream habitat enhancements
SR to JK: Do you have any ideas for locations to improve fish habitat?
JT: At the mine site there are lots of shallow streams.
RV: Is there anywhere close to Baker Lake?
JT: Quich River stream between the mine and Baker Lake would be possible.

SM: The stream south of the mine flowing south.
JW to JK: Are there any waterfalls?
JT: There are some on the Quich.
RV: Where are they?
Looked at maps.
JK and SM: There are some places in the streams that flow through White Hills to Prince.
JT: People in the community would know more places to improve. There are a few people that used to live in that area. The small rivers flowing to White Hills would be the best place to help people fishing. There are lots of small streams along the Prince River that dry up. The other places maybe too far.
SM: There is a small falls (rapids with a pool below) south of the Prince River bridge and it's a traditional fishing spot (spearing).
RV/SR: Can the fish go up the falls or is it too high?
SM: You can see them jumping up the falls, but not all get through.
RV/SR: Do they swim up the rapids?
SM and JK: The small fish stay above the rapids, the big ones go back and forth.
SR: Would this be a good area to change?
JT and SM: No, people like this area how it is. But another good area to improve is further up from km 18 – a shallow area that maybe fish can't pass. Also by km 15/16 (all connections to White Hills Lake).

Re. Airplane Lake/sewage treatment enhancements
J: Before the sewage flowed to Airplane Lake it had lots of good fish (trout and grayling) and people used to fish there.

<u>Final Comments</u>
JT: There might be some areas to improve streams between Amarulik Lake and White Hills Lake too.
SM: Hardly anyone fishes north of the mine because it's too rocky. Any projects there wouldn't help local hunters.
BB: Good options presented.
JW: Some possibilities here could work for Meliadine NNLP as well.
AEM: Thank you for coming and contributing ideas.

Next Steps

AEM to go for a helicopter with HTO representatives in August to look at areas that could be candidates for improved stream habitat.

There will be additional meetings with the DFO in late 2011 and with the stakeholders (HTO, KIA and AANDC) in early 2012.

The community will be consulted before any options are finalized and implemented.

End - 2:30pm.

Table 1A. Total Habitat Units (HU) altered, disturbed or destroyed by the Meadowbank Gold Project (2006/2007 NNLP).

	Mine Component	High			Medium			Low			Total HUs			Difference of Mine vs DFO Auth
		HS I	ha	HU	HS I	ha	HU	HS I	ha	HU	Mine Site	DFO Authorization	TIA	
Second Portage Lake	*Tailings Impoundment Area*	8.90	12.70	**112.99**	6.06	20.95	**126.92**	2.34	55.75	**130.59**			**370.50**	
Second Portage Lake	*East Dike Footprint*	8.90	0.00	0.00	6.06	5.99	36.26	2.34	1.29	3.02	39.28	39.28		
	West (Central) Dike Footprint	8.90	0.03	0.24	6.06	0.64	3.88	2.34	7.75	18.15	22.27	22.27		
	*Second Portage - Basin**	8.90	1.13	10.05	6.06	12.87	77.94	2.34	9.95	23.31	111.30	111.30		
	*Portage Pit - Second Portage Lake**	8.90	0.004	0.04	6.06	3.55	21.52	2.34	12.03	28.18	49.75	49.75		
	Second Portage Habitat Mounts Footprint,1*	8.90	0.000	0.00	6.06	0.00	0.00	2.34	1.25	2.93	2.93			2.93
	East Dike Extension Habitat Footprint,1*	8.90	0.000	0.00	6.06	0.00	0.00	2.34	5.03	11.78	11.78			11.78
	Total			**10.3**			**139.6**			**87.4**	**237.3**	**222.6**	**0.0**	14.7
Third Portage Lake	*Goose Island (Bay Goose) Dike Footprint*	8.90	1.34	11.88	6.06	4.24	25.69	2.34	15.32	35.89	73.46	73.46		
	South Camp Dike Footprint	8.90	0.00	0.00	6.06	0.17	1.00	2.34	0.00	0.00	1.00	1.00		
	*Third Portage - Basin**	8.90	10.37	92.20	6.06	20.75	125.70	2.34	35.49	83.14	301.04	301.04		
	*Goose Pit - Third Portage Lake**	8.90	2.00	17.77	6.06	3.70	22.43	2.34	8.91	20.87	61.07	61.07		
	*Portage Pit - Third Portage Lake**	8.90	0.01	0.07	6.06	4.87	29.50	2.34	2.39	5.59	35.16	35.16		
	Finger Dike Extension Habitat Footprint,1*	8.90	0.00	0.00	6.06	0.00	0.00	2.34	11.07	25.93	25.93			25.93
	*Finger Dike Habitat Footprint**	8.90	0.10	0.85	6.06	0.10	0.58	2.34	19.44	45.53	46.95	46.95		
	Total			**122.8**			**204.9**			**217.0**	**544.6**	**518.7**	**0.0**	25.9
										Subtotal Not Including Vault	**781.93**	**741.28**	**370.50**	40.6
Vault Lake	*Vault Dike Footprint**	8.90	0.00	0.00	6.06	0.00	0.00	2.34	0.04	0.09	0.09			
	Vault Pit - Vault Lake	8.90	0.65	5.79	6.06	7.79	47.18	2.34	0.00	0.00	52.97			
	Vault - Basin	8.90	34.89	310.38	6.06	42.90	259.87	2.34	11.02	25.82	596.07			
	Total			**316.2**			**307.1**			**25.9**	**649.1**		**0.0**	
Total HADD (HUs)											**1431.1**	**741.28**	**370.5**	

Note: * Component habitat loss temporary; future habitat quality may be vary (changed or enhanced) from baseline conditions.
1. Features were from the 2007 NNLP Addendum.

Table 1B. Total Habitat Units (HU) gained after closure implementation at the Meadowbank Gold Project (2006/2007 NNLP).

	Mine Component	High			Medium			Low			Total HUs			Difference of Mine vs DFO Auth	Portion of TIA gains included in DFO Auth?
		HS I	ha	HU	HS I	ha	HU	HS I	ha	HU	Mine Site	DFO Authorization	TIA		
Second Portage Lake	*East Dike - Exterior*	8.90	0.24	2.13	6.06	0.35	2.12	2.34	0.00	0.00			4.3		
	*East Dike - Interior**	8.90	0.04	0.36	6.06	0.34	2.06	2.34	0.00	0.00			2.4		
	*West (Central) Dike - Exterior**	8.90	1.04	9.25	6.06	0.83	5.03	2.34	0.00	0.00			14.3		
	*Second Portage - Basin**	8.90	23.95	213.01	6.06	0.00	0.00	2.34	0.00	0.00	213.0	401.0			
	*Portage Pit - Second Portage Lake**	8.90	2.27	20.15	6.06	0.19	1.14	2.34	20.475	47.96			69.2		69.2
	*Portage Pit - 2P Land to Lake**	8.90	3.81	33.87	6.06	0.32	1.91	2.34	34.42	80.63			116.4		116.4
	Second Portage Habitat Mounts,-*	8.90	1.25	11.12	6.06	0.00	0.00	2.34	0.00	0.00	11.1	8.2			
	East Dike Extension Habitat,1*	8.90	5.03	44.74	6.06	0.00	0.00	2.34	0.00	0.00	44.7	33.0			
	Total			**334.6**			**12.3**			**128.6**	**268.9**	**442.2**	**206.6**	173.32	185.6
Third Portage Lake	*Goose Island (Bay Goose) Dike - Exterior*	8.90	1.90	16.87	6.06	1.76	10.69	2.34	0.00	0.00			27.6		
	Goose Island (Bay Goose) Dike - Interior	8.90	0.89	7.92	6.06	0.59	3.57	2.34	0.00	0.00			11.5		
	Goose Island (Bay Goose) Dike - Restored	8.90	2.99	26.58	6.06	0.00	0.00	2.34	0.00	0.00	26.6	26.6			
	Finger Dike Habitat	8.90	19.63	174.59	6.06	0.00	0.00	2.34	0.00	0.00			174.6		
	Finger Dike Extension Habitat,1*	8.90	11.07	98.47	6.06	0.00	0.00	2.34	0.00	0.00	98.5	81.6			
	Third Portage - Basin	8.90	56.84	505.65	6.06	9.89	59.94	2.34	0.00	0.00	565.6	701.6			
	Goose Pit - Third Portage Lake	8.90	1.49	13.30	6.06	0.69	4.18	2.34	17.67	41.39			58.9		58.9
	Portage Pit - Third Portage Lake	8.90	1.97	17.57	6.06	0.16	0.99	2.34	17.85	41.81			60.4		60.4
	Goose Pit - 3P Land to Lake	8.90	0.98	8.68	6.06	0.45	2.73	2.34	11.53	27.01			38.4		
	Total			**869.6**			**82.1**			**110.2**	**690.6**	**809.8**	**371.3**	119.15	119.3
										Subtotal Not Including Vault	959.53	1252.00	577.90	292.47	304.90
Vault Lake	*Vault - Basin*	8.90	34.89	310.38	6.06	42.90	259.87	2.34	11.02	25.82	596.1				
	Vault Dike - Restored	8.90	0.04	0.36	6.06	0.00	0.00	2.34	0.00	0.00	0.4				
	Vault Pit - Vault Lake	8.90	1.13	10.01	6.06	0.15	0.92	2.34	11.423	26.76			37.7		
	Vault Pit - Vault Land to Lake	8.90	3.99	35.53	6.06	0.54	3.26	2.34	40.537	94.96			133.8		
	Total			**356.3**			**264.0**			**147.5**	**596.4**		**171.4**		
Habitat Gain (HUs)											**1556.0**		**749.3**		

Note: * Habitat components will be in the Third Portage Lake drainage after mine closure, but are shown here for "accounting" purposes.
1. Features were from the 2007 NNLP Addendum.

Table 2A. Total Habitat Units (HU) altered, disturbed or destroyed by the Meadowbank Gold Project (revised November 2009).

	Mine Component	High			Medium			Low			Total HUs			
		HS I	ha	HU	HS I	ha	HU	HS I	ha	HU	Mine Site	DFO Authorization	TIA	Difference of Mine vs DFO Auth
Second Portage Lake	*Tailings Impoundment Area*	8.90	12.55	**111.61**	6.06	19.96	**120.90**	2.34	51.56	**120.77**			**353.28**	
Second Portage Lake	*East Dike Footprint*	8.90	0.00	0.00	6.06	4.97	30.09	2.34	0.02	0.04	30.13	39.28		
	Central Dike Footprint	8.90	0.16	1.38	6.06	1.22	7.38	2.34	11.08	25.96	34.73	22.27		
	*Second Portage - Basin**	8.90	1.12	9.97	6.06	7.50	45.41	2.34	11.50	26.94	82.33	111.30		
	*Portage Pit - Second Portage Lake**	8.90	0.039	0.35	6.06	3.49	21.15	2.34	11.32	26.52	48.02	49.75		
	East Dike Extension Habitat Footprint	8.90	0.000	0.00	6.06	0.00	0.00	2.34	5.03	11.78	11.78			
	Second Portage Habitat Mounts Footprint	8.90	0.000	0.00	6.06	0.00	0.00	2.34	1.25	2.93	2.93			
	Total			**11.7**			**104.0**			**94.2**	**209.9**	**222.6**		**12.7**
Third Portage Lake	*Bay Goose Dike Footprint*	8.90	3.14	27.91	6.06	4.58	27.74	2.34	8.33	19.51	75.16	73.46		
	South Camp Dike Footprint	8.90	0.00	0.00	6.06	0.17	1.00	2.34	0.00	0.00	1.00	1.00		
	*Third Portage - Basin**	8.90	7.58	67.45	6.06	15.60	94.51	2.34	28.06	65.74	227.69	301.04		
	*Goose Pit - Third Portage Lake**	8.90	1.86	16.53	6.06	3.02	18.31	2.34	7.04	16.50	51.33	61.07		
	*Portage Pit - Third Portage Lake**	8.90	0.00	0.00	6.06	6.74	40.84	2.34	5.01	11.74	52.58	35.16		
	*Finger Dike Habitat Footprint**	8.90	0.01	0.10	6.06	0.02	0.13	2.34	14.04	32.89	33.12	46.95		
	Finger Dike Habitat Extension Footprint	8.90	0.00	0.00	6.06	0.00	0.00	2.34	10.53	24.66	24.66			
	Total			**112.0**			**182.5**			**171.0**	**465.5**	**518.7**	**0.0**	**53.1**
										Subtotal Not Including Vault	**675.47**	**741.28**	**353.28**	**65.81**
Vault Lake	*Vault Dike Footprint**	8.90	0.00	0.00	6.06	0.04	0.24	2.34	0.00	0.00	0.24			
	Vault Pit - Vault Lake	8.90	1.37	12.21	6.06	8.03	48.65	2.34	0.00	0.00	60.86			
	Vault - Basin	8.90	38.05	338.46	6.06	42.65	258.38	2.34	6.83	15.99	612.83			
	Total			**350.7**			**307.3**			**16.0**	**673.9**		**0.0**	
Total HADD (HUs)											**1349.4**		**353.3**	

Note: * Component habitat loss temporary; future habitat quality may vary (changed or enhanced) from baseline conditions.

Table 2B. Total Habitat Units (HU) gained after closure implementation at the Meadowbank Gold Project (revised November 2009).

	Mine Component	High			Medium			Low			Total HUs				
		HS I	ha	HU	HS I	ha	HU	HS I	ha	HU	Mine Site	DFO Authorization	TIA	Difference of Mine vs DFO Auth	Portion of TIA gains included in DFO Auth?
Second Portage Lake	*East Dike - Exterior*	8.90	0.63	5.60	6.06	0.47	2.85	2.34	0.00	0.00			8.5		8.5
	East Dike - Interior [1]	8.90	0.91	8.10	6.06	0.41	2.48	2.34	0.00	0.00			10.6		10.6
	Central Dike - Exterior [1]	8.90	1.37	12.19	6.06	0.30	1.82	2.34	0.64	1.50			15.5		15.5
	Second Portage - Basin [1]	8.90	20.12	178.98	6.06	0.00	0.00	2.34	0.00	0.00	179.0	401.0			
	Portage Pit - Second Portage Lake [1]	8.90	0.88	7.82	6.06	0.01	0.04	2.34	23.340	54.67			62.5		
	Portage Pit - 2P Land to Lake [1]	8.90	4.11	36.56	6.06	0.67	4.06	2.34	51.61	120.90			161.5		161.5
	Second Portage Habitat Mounts [2]	8.90	1.25	11.12	6.06	0.00	0.00	2.34	0.00	0.00	11.1	8.2			
	East Dike Extension Habitat [2]	8.90	5.03	44.74	6.06	0.00	0.00	2.34	0.00	0.00	44.7	33.0			
	Total			**305.1**			**11.2**			**177.1**	**234.8**	**442.2**	**258.6**	**207.4**	**196.1**
Third Portage Lake	*Bay Goose Dike - Exterior*	8.90	0.39	3.47	6.06	0.74	4.48	2.34	0.00	0.00			8.0		8.0
	Bay Goose Dike - Interior	8.90	0.53	4.71	6.06	0.63	3.82	2.34	0.00	0.00			8.5		8.5
	Bay Goose Dike - Restored	8.90	1.96	17.42	6.06	0.00	0.00	2.34	0.00	0.00	17.4	26.6			
	Finger Dike Habitat	8.90	13.18	117.24	6.06	0.00	0.00	2.34	3.27	7.66			124.9		124.9
	Finger Dike Extension Habitat	8.90	11.07	98.47	6.06	0.00	0.00	2.34	0.00	0.00	98.5	81.6			
	Third Portage - Basin	8.90	51.24	455.81	6.06	0.00	0.00	2.34	0.00	0.00	455.8	701.6			
	Goose Pit - Third Portage Lake	8.90	1.72	15.30	6.06	0.06	0.36	2.34	19.61	45.94			61.6		61.6
	Portage Pit - Third Portage Lake	8.90	0.69	6.17	6.06	0.00	0.02	2.34	18.48	43.29			49.5		49.5
	Goose Pit - 3P Land to Lake	8.90	0.00	0.00	6.06	0.00	0.00	2.34	5.43	12.72			12.7		
	Total			**718.6**			**8.7**			**109.6**	**571.7**	**809.8**	**265.2**	**238.1**	**252.5**
										Subtotal Not Including Vault	806.55	1252.00	523.78	445.45	448.60
Vault Lake	*Vault - Basin*	8.90	38.05	338.46	6.06	42.65	258.40	2.34	6.83	15.99	612.9				
	Vault Dike - Restored [2]	8.90	0.04	0.36	6.06	0.00	0.00	2.34	0.00	0.00	0.4				
	Vault Pit - Vault Lake	8.90	2.11	18.77	6.06	0.73	4.42	2.34	16.260	38.09			61.3		
	Vault Pit - Vault Land to Lake	8.90	3.01	26.78	6.06	0.95	5.76	2.34	42.870	100.42			133.0		
	Total			**384.4**			**268.6**			**154.5**	**613.2**		**194.2**		
Habitat Gain (HUs)											**1419.8**		**718.0**		

Note: 1. Habitat components will be in the Third Portage Lake drainage after mine closure, but are shown here for "accounting" purposes.
2. Areas for these features were not revised in 2009 (i.e., either the 2006 NNLP or 2007 NNLP Addendum figures were used).

MEETING AGENDA

Agnico Eagle Mines Ltd: Meadowbank Division
Environmental Department
Meadowbank, Nunavut, X0X 0A0
867.793.4610

November 17th and 18th, 2011

Department of Fisheries and Oceans and AEM - Meadowbank and Meliadine No Net Loss Planning Meeting

LOCATION: Sheraton Ottawa Hotel, Ottawa ON.

November 17th 9:30 to 18:00

Meeting Room: Sheraton Hotel- Salon C

9:15- Continental Breakfast Provided by AEM

9:30- Introduction (Larry Connell)

9:45 to 10:15- Meadowbank Mine Update (Ryan VanEngen)

- Second Portage Lake and Bay-Goose Dewatering,
- Water Management and
- Revised Waste Rock Storage to include pit backfilling

10:15 to 10:45- Revised Airstrip Extension and Vault Pit Extension

10:45 to 11:00- Overview of 2011 Fisheries Monitoring

11:00 to 11:15- Break

11:15 to 14:00- No Net Loss Contingency Plan

- No Net Loss Contingency Compensation Ideas
- Review of DFO Authorization
- Path Forward

14:00 –15:00- Lunch Break – Provided by AEM

15:00 to 16:00- Meliadine Project Update (Larry Connell)

16:00- 18:00- Meliadine Draft No Net Loss Plan

- Environmental Setting and Baseline Fisheries Review (Jack Patalas)
- No Net Loss Plan Methods (Jack Patalas)
- No Net Loss Compensation (Ryan VanEngen)
  - Schedule 2 Options and Mine Site Options

18:00- Closing

November 18th- 8:30 to 12:00

Meeting Room- Sheraton Hotel- Penthouse B

8:15- Continental Breakfast Provided by AEM

8:30 to 9:30- Review and Discussion of Meadowbank No Net Loss Planning

9:30 to 10:30- Review and Discussion of Meliadine Draft No Net Loss Plan

10:30 to 11:30- Round Table Discussion

11:30 to 12:00- Closing Remarks

If you have any questions please contact Larry Connell (lconnell@agnico-eagle.com) or Ryan VanEngen. 519.400.7979. (rvanengen@agnico-eagle.com)

MEMORANDUM

Agnico Eagle Mines Ltd: Meadowbank Division
Environmental Department
Meadowbank, Nunavut, X0X 0A0
867.793.4610

Follow-up Action Items for the Department of Fisheries and Oceans and AEM Meadowbank and Meliadine
RE: No Net Loss Planning Meeting on November 17th and 18th, 2011 at the Sheraton Ottawa Hotel, Ottawa ON.

Meadowbank Action Items and Deadlines:

DFO Deadline- December 23rd (mid December)

- DFO is to provide a rationale or reason for the habitat unit discrepancies in the Meadowbank DFO authorization- dated July 30, 2008. Specifically, AEM is requesting how the second portage and third portage basin habitat units were calculated or the basis for the difference in HU valuation for these compensation features compared to the mine site calculation. The DFO authorization provides a 1.68 to 1 ratio of gains to losses that cannot be accounted for in the mine site HU calculations mainly because of the discrepancy in the basin HUs (see Table 2B provided to DFO Sept 8 and Nov 8, 2011).
- AEM proposes to revise the mine site NNL Plan and incorporate a contingency plan within it. This will meet the conditions of the contingency plan terms of reference and provide clarity and transparency for no net loss planning at Meadowbank. AEM requests confirmation from DFO to move forward with a revised Mine Site NNL Plan.
- DFO is to provide feedback on the process to amend the TIA compensation. The TIA compensation presently is comprised of end-pit lake reflooding, dike face habitat and finger dikes which provides a 2:1 ratio of habitat unit gains to losses. AEM accepts the 2:1 ratio of the original TIA compensation plan but is requesting from DFO the replacement of finger dikes (which are technically complex and challenging to construct) with the creation of high and moderate value backfilled 40% and reflooded fish habitat in portage pit.
- DFO is to provide a confirmation that Vault will require a separate NNL Plan and subsequent authorization; DFO is to provide feedback on compensation concepts for Vault (pit backfilling and enhancement, improving connection between Vault and Wally, introducing arctic char given the creation of deep overwintering habitat)
- DFO is to provide an answer whether Vault pit should be calculated using the Cumberland (2005) HEP model or using the new Meliadine (2011) HEP model. AEM supports using the Meliadine model which will allow for comparison between projects, assist in research/ data collection and reduce uncertainties moving forward for backfilled pit lakes.

AEM Deadline- January 17th

- AEM to confirm with Environment Canada that PAG material is acceptable for backfilling portage pit.
- Provide DFO with maps (depth) for Wally and Vault lake

DFO Deadline- January 17th

- DFO to give feedback and guidance on the HU calculation for the spawning pads- specifically feedback on the comparison of immature fish/ HU at R02 vs immature fish/HU in Second Portage Lake fishout.
- Provide AEM with fish-out data from Diavik, Ekati, Snap Lake and other northern fishouts (specifically all of the "DFO fish-out protocol" data for these projects including: water quality, primary productivity, benthos data, fish meristics and CPUE data).
- DFO to inquire/ request DFO science's participation in research (productive capacity models)- DFO will speak/ present some of this information to DFO science

DFO Deadline – after 2011 annual report submission- March 31, 2012

- Frequency of testing at R02 (as per the authorization 2007 to 2010 and every other year after; AEM has completed monitoring from 2005-2011 and is requesting that we begin monitoring every other year).
- Is it possible to open discussions of sewage treatment in the north at a higher bureaucratic level? If so, using the Baker Lake sewage and landfill example, to whom should we address our request. AEM believes this to be a true benefit to the communities, the fishery and the environment in the north.

Meliadine Action Items and Deadlines:

AEM Deadline- November 29th- see attached spreadsheet

- AEM to provide Habitat Unit calculation spreadsheet to DFO for review of the Meliadine method of HU calculations

DFO Deadline- December 12th

- AEM is requesting DFO to review and provide feedback on the Meliadine method of calculating HUs: specifically- HSIs, sensitivity weighting, biomass and fishery valuation.
- If the method is not acceptable, will the DFO support a Delphi-type workshop to develop HSI for northern projects. AEM or Golder would host a workshop with experts from DFO, consultants and academics to determine HSI for each northern species and determine suitable weighting systems for use in the Meliadine method.
- DFO to confirm the inclusion of arctic char, lake trout and arctic grayling (?) as Valued Ecosystem Components in the EIS.

DFO Deadline- January 17th

- DFO to determine if AEM will require section 36 for pond H17 that *may* have TSS runoff and will be surrounded by multi-purpose pads.
- DFO to provide feedback on the fishout requirements for stickleback.

AEM will provide a Draft Meliadine No Net Loss Plan to DFO prior to EIS submission.

Next meeting is proposed for Jan 17th in Winnipeg; otherwise that week in Calgary or Edmonton.

If you have any questions please contact Ryan VanEngen. 519.400.7979. (rvanengen@agnico-eagle.com)

AGNICO-EAGLE
MEADOWBANK DIVISION

Date: January 30, 2011

To: Bobby Bedingfield and Derrick Moggy
Department of Fisheries and Oceans
Eastern Arctic Area

CC: Stephane Robert (Meadowbank Environment Superintendant) and Leilan Baxter (Environmental Scientist)

In follow-up to our recent discussions and workshops regarding an approved methodology of calculating habitat units in eastern arctic lakes, the following document briefly provides an introductory literature review, compares the Cumberland (2005) Meadowbank Gold Project No Net Loss Plan methodology with a recently developed AEM and Golder (2011) Meliadine Gold Project methodology for habitat units, and provides results and discussion using the Dogleg Pond Connection compensation project. The text, figures and data presented in this document are in *draft form* and therefore have not been finalized nor thoroughly peer reviewed. The calculations in this document are made for the comparison of habitat unit calculations methods and are not final habitat values for the Dogleg Pond Connection Compensation Project. The data presented in this document are for the purposes of assisting DFO in their upcoming workshop and subsequent discussions with AEM.

Should you require any further information or questions please contact the below via email or by telephone.

Regards,

Ryan Vanengen
rvanengen@agnico-eagle.com
519-400-7979
Environment Biologist- Meadowbank Division

DRAFT- Comparison of Cumberland (2005) and AEM/Golder (2012) HEP- A Case Study using the Meadowbank Gold Mine Dogleg Pond Connection

By: Ryan VanEngen (AEM) and Leilan Baxter (Independent Research Assistant)

Introduction

As a condition of an authorization from DFO to permit habitat alteration, disruption or destruction (HADD), the proponent must ensure there is no net loss of *productive capacity* of fish habitat. Since it is normally not possible to directly measure production of fish populations (i.e. kg/yr) because of time and expense, alternative metrics such as habitat area and suitability are commonly measured instead (Randall and Minns 2002). The concept of HUs as a surrogate measure for productive capacity of fish communities was first developed by the US Fish and Wildlife Service in the 1980s and has since been adopted by habitat managers in northern Canada. However, in order to establish quantifiable links between fish production and habitat, fish production must first be measured directly (Minns 1995) and a habitat-productivity model established. A system to provide managers with repeatable habitat suitability indices based on measurable physical properties, such as the scientifically defensible Habitat Suitability Matrix model for fishes of the Great Lakes region (Minns, Moore et al. 2001), is not currently available for arctic development projects. With the exception of arctic grayling (Hubert, Helzner et al. 1985; Jones and Tonn 2004), no habitat models are available for arctic species, to our knowledge. Furthermore, while general life history characteristics have been published for arctic fishes, it is recognized that major gaps even exist in current understanding of northern fish preferences (Richardson, Reist et al. 2001), let alone productivity relationships. In order for habitat suitability indices to be developed and used effectively, data on habitat preferences must first be collected and the appropriate models generated (De Kerckhove, Smokorowski et al. 2008).

A further consideration is that even if standardized habitat suitability models were to be developed from observational data, it has been argued that correlative studies of habitat selectivity are not necessarily representative of actual habitat requirements, and these models are rarely validated with experimental evidence (Rosenfeld 2003). According to Rosenfeld (2003), the removal or conversion of an apparently “preferred” habitat may not actually affect productivity of the population, if alternate habitats provide adequate life-functions.

As a result of this lack of information, habitat suitabilities for northern fish species are extrapolated from southern-developed models, with an unknown degree of certainty. It has been suggested that the accuracy of predictions made using HSIs may not transfer well between watersheds (De Kerckhove, Smokorowski et al. 2008), let alone ecozones. Furthermore, it is known that the way fish adapt to habitat change is dependent on many factors, including location, temperature, season, maturity, population diversity and the availability of habitat (Smokorowski and Pratt 2006). While uncertainty factors

(associated with habitat suitability determinations) can be included in compensation ratio calculations (Minns 2006) by increasing required compensation amounts, it may be difficult for northern project proponents to find feasible opportunities for compensation that have historically been demonstrated as cost-effective and successful. Thus plans which optimize the required ratio will likely have a greater chance at achieving NNL. An even greater consideration in this situation may be that compensation options in the north typically involve further alterations of pristine habitat, which arguably are not desirable.

Since no reference models are available for most northern species, and no standardized NNLP approach is available, proponents have developed slightly different HEP methods and new Habitat Suitability Indices for their projects. Usually, HSI values are determined by professional judgement, and/or modifications from previously developed NNLPs at other northern mines. Aside from the loss of efficiency and the extreme variability of results inherent in this exercise, this approach means that compensation units are not directly comparable between sites, impeding the creation of area habitat management plans which may become increasingly important as development in the north progresses.

In the interest of advancing general understanding of HEP methodology and the advantages and disadvantages of different approaches, AEM has conducted a comparison of HU results based on two methods. One was used historically at AEM's Meadowbank site while under the ownership of Cumberland Resources, while the other is proposed for use at AEM's Meliadine site in the near future.

In this document, we use the Meadowbank Mine Dogleg Pond Connection project to compare these two HEP methodologies: the Cumberland (2005) Meadowbank Gold Project No Net Loss Plan methodology ("Cumberland method") and the recently developed AEM/Golder (2012) Meliadine Gold Project methodology ("AEM/Golder method"). The text, figures and data presented in this document are in draft form and therefore have not been finalized nor thoroughly peer reviewed. The calculations in this document are made simply for the comparison of habitat unit calculations methods and are not final habitat values for this compensation project, and are presented for the purposes of assisting DFO in their upcoming workshop only.

Dogleg Pond Connection Concept (See Figure 1 and 2)

North of Second Portage Lake is a series of isolated ponds termed the "North Portage Ponds". The proposed project examines three of these ponds, named Dogleg Pond (or NP1, the largest), Dogleg North Pond, and NP2 (See Figure 1 and 2). In 2003, detailed water chemistry, fish population, benthic and zooplankton surveys were conducted to evaluate the North Portage ponds (NP) . NP1 (Dogleg Pond) and NP2 were found to have similar water chemistry, sediment chemistry and limnology as the project lakes. Zooplankton community abundance differed considerably among the ponds and differed

from the project lakes with no apparent patterns. Benthic species composition was similar among ponds and the project lakes. Only lake trout were found in NP1 and NP2, evidence of a relic population limited by overwintering and the ponds' historical isolation from Second Portage Lake. It was suspected that Dogleg North Pond did not contain fish, as it was too shallow.

In 2009, AEM biologist and technicians completed a follow-up bathymetric survey and habitat classification (including underwater video) in NP2, Dogleg Pond (NP1) and Dogleg North Pond (NP1-N). Additionally, 12.5, 25 and 38 mm gill nets were set for over 24 hrs in NP2 and Dogleg North Pond to collect both small bodied fish and large bodied fish. Lake trout were collected in NP2 and no fish were collected in Dogleg North Pond confirming the findings of 2003.

On January 19th 2012, DFO approved AEMs efforts to complete an updated Mine Site No Net Loss plan which will reflect changes of the mine site infrastructure (including pit dimensions and basin habitat features) and include updated habitat compensation concepts such as the Dogleg Pond connection. In concept, NP2, a pond located north of the waste rock pile, will be connected via a diversion ditch to Dogleg North pond to assist with non-contact water management at the mine site. Presently, Dogleg North Pond is isolated and freezes to the bottom and therefore is not inhabited by fish. As a result of connection to NP2, the water level in Dogleg North Pond is expected to increase by approximately 0.5 to 1 m and ultimately provide additional shoreline habitat and overwintering habitat similar to the reference pond (which has a small isolated lake trout and arctic char population; see Figure 2 for location). NP1-N would then drain into Dogleg Pond, eventually increasing water levels and creating additional shoreline habitat. Ultimately, NP2, NP1-N and NP1 will be connected and fish will have access to habitats in all ponds throughout the open water season. AEM proposes to transfer a small number of fish to this system during the Vault Pit fish transfer and closely monitor the success and habitat preferences of the introduced population. Monitoring data will assist in the validation of productive capacity models and HEP modelling at Meadowbank and Meliadine Projects.

Methods used for Calculating Habitat Units of Dogleg Pond Connection Comparison

Summary of Cumberland (2005) Method

The Cumberland (2005) HEP method involved the classification of the entire project lakes area by six attributes containing up to four classes as follows:

- Morphology (classes = apron, shoal, platform, sediment basin)
- Substrate (classes = boulder, boulder /cobble, boulder/cobble/fines, >90% fines).
- Depth (classes = 0-2m, 2-4m, 4-6m, >6m)
- Complexity (classes = uniform, moderate, complex)
- Ice-scour (classes = ice scoured (<2m) or not)

- Slope (classes = flat slope, steep slope)

The spatial extent of each attribute class was delineated and mapped. This resulted in a total of 627 spatially distinct polygons with different combinations of attribute classes.

A rank of the habitat structure or feature was calculated based on the cumulative contribution of morphology, substrate, depth, complexity, ice scour and slope for each polygon (See Cumberland 2005, Section 3.4). The structures were ranked and summed to derive a score that is a reflection of a generic habitat value in order to relate the physical attributes to fisheries resources. The polygons were grouped into 3 categories based on their score (high =18-22 points, medium/moderate=13-17 points and low value = <12 points). These groups were described as follows:

- High Value: High Value habitat polygons are characterized as complex, heterogeneous boulder or boulder/cobble substrate with few fines situated in moderate depth (2 to 5m) below the ice scour zone, but above the transition zone. These are typically situated near shoals or platforms or near sloped shorelines.

- Medium Value- Medium or Moderate value habitat polygons are typically found within two depth ranges: 0 to 2m and 4 to 6 or 8 meters. Moderate value polygons in shallow waters are characterized by large boulders and low complexity. Although they are not available throughout the open water season, these areas provide excellent rearing and foraging habitat. Moderate value polygons in deeper areas (>4m) are transition zones that provide good protection for all fish species, especially juveniles and is important for rearing and feeding.

- Low Value- Low value habitat polygons consist primarily of uniform fine substrate of low complexity in deep water (> 8m). The value of this habitat varies depending on species and has been ranked accordingly.

It should be noted that because of the scoring system used, it is theoretically possible for a polygon to possess an attribute that is different from the general group description, but to still fall into that category (e.g. a shallow, uniform boulder platform receives a score of 11, but is not well described by the “low value” group).

As is typical with all HEP methods, an HSI for project lake species for four life function stages (spawning, foraging, nursery and overwintering) was multiplied by the area of the habitat value and the HSI was weighted by species according to the species assemblages during baseline data collection; ultimately total habitat units lost and conceptual gains were determined by:

$HUTotal = \sum[HSI \text{x species assemblage from baseline data}] \text{ x area of habitat value})$

Refer to Cumberland (2005) for complete description of the methodology.

In 2009, the substrate and bathymetry of Dogleg Ponds were mapped using the Cumberland (2005) habitat groups. Boulder aprons of depth below 2 meters are likely candidate spawning areas for lake trout and are thus considered high value habitat (See Figure 3). The remainder of the shoreline is classified as boulder platforms (moderate value) and sediment basins (low value). Dogleg Pond North and NP2 area were also mapped according to the Cumberland (2005) habitat groups (see Figure 4).

Applying AEM and Golder (2012) Meliadine Method to Dogleg Pond

The methodology for calculating habitat units for the Meliadine Gold Project, located in Rankin Inlet, Nunavut was developed by AEM and Golder in 2011, and later presented to DFO at a workshop on November 17 and 18, 2011. The DFO has recently accepted the method presented and AEM will use this to finalize the No Net Loss plan for the Meliadine Gold Project (AEM/Golder, 2011).

In brief, the physical classification of habitat is separated into 3 depth intervals with 3 substrate categories for a total of 9 unique habitat classification identifiers. See Table 1 for identification of the substrate categories.

Table 1: AEM/Golder (2011) habitat classifications

Classification ID	Depth (m)	Substrate Type
1	<2	Fines
2	<2	Mixed
3	<2	Boulder/ Cobble
4	2-4	Fines
5	2-4	Mixed
6	2-4	Boulder/ Cobble
7	>4	Fines
8	>4	Mixed
9	>4	Boulder/ Cobble

As is typical with all HEP methods, an HSI was developed for project lake species for 4 life functional stages (spawning, foraging, nursery and overwintering) and the HSI was weighted by species according to the species abundance during baseline data collection. Furthermore, as recommended by Minns (2010), a fisheries value was used to weight species according to importance for traditional, sport and commercial fisheries. Overall the equation to calculate the habitat units lost and conceptual gains is:

HUTotal = ∑[(HSI x species specific biomass from baseline data x fish value) x habitat area of 9 classification identifiers]

HEP Method Comparison

The Cumberland (2005) and AEM/Golder (2011) method comparison, investigates the physical classification of habitat and does not include the specific species biomass/assemblage or fishery value weightings. For consistency, high, medium and low habitat values were assigned to the AEM/Golder (2011) substrate classification based on professional judgement to compare HU totals to those derived from the Cumberland (2005) method (see Table 2). To briefly introduce the application of the AEM/Golder (2011) physical classification to the Dogleg Pond connection, lake trout HIS are multiplied and presented in Figures 5-9, but these data are not quantitatively compared. In the future, other quantitative comparisons may be used that could include weightings for multispecies HSIs, however given the time constraints and need for GIS mapping, the generalized valuation approach provides a simple means of comparison between the two methods.

Table 2: Habitat Type Classification and Generalized Valuation

Classification ID	Depth (m)	Substrate Type Cumberland (2005)	AEM/Golder (2011) ID	Generalized Valuation for comparison to MBK (Low, Med. or High)
1	<2	Fines	Fines	Low
2	<2	Mixed	Mixed	Med
3	<2	Boulder/ Cobble	Course	Med
4	2-4	Fines	Fines	Low
5	2-4	Mixed	Mixed	Med
6	2-4	Boulder/ Cobble	Course	High
7	>4	Fines	Fines	Low
8	>4	Mixed	Mixed	High
9	>4	Boulder/ Cobble	Course	High

Results and Discussion

Table 3 presents the results of the habitat valuation for the Dogleg Ponds using the AEM/Golder 2011 method with a generalized valuation. Table 4 compares the final values in hectares by habitat type (high, medium and low value habitat). Figures 3 to 11 present the maps for comparison of the methods. More specifically, Figures 3 and 4 illustrate the habitat mapping results using Cumberland (2005) method and Figures 10

and 11 summarizes the AEM/Golder (2011) classifications, adapted with the generalized valuation.

Despite the methodological faults and over-simplification for comparison (by using the generalized valuation), the data presented in this case study indicates that medium value habitat is similarly estimated between the two methods, but that high and low value habitats differ between methods. The AEM/Golder 2011 method resulted in up to 3x ~~less~~ more high value habitat compared to the Cumberland 2005 method, and up to 2x ~~more~~ less low value habitat.

Although the HSIs have not been validated for either method, the Cumberland (2005) HU estimate for the northwest arm of Second Portage Lake was field-verified after de-watering of that basin. Field crews re-mapped the basin according to the habitat attributes originally established, and re-calculated the baseline HU estimate. Results of that study conducted by Azimuth Consulting Group in 2009 on behalf of AEM indicated an over-estimate of HUs by approximately 15%, largely due to over-estimates of high value habitat area.

Table 3: Dogleg Ponds Area by Classification ID (substrate, depth and generalized valuation)

				Area (ha)		
Classification ID	**Depth (m)**	**Substrate Type**	**Generalized Valuation**	**Dogleg Pond (NP1)**	**Dogleg Pond North (NP1N)**	**NP2**
1	<2	Fines	Low	0.07	0.19	0.01
2	<2	Mixed	Moderate	1.56	0.23	0.46
3	<2	Boulder/ Cobble	Moderate	11.32	2.31	5.28
4	2-6	Fines	Low	2.06	0.22	1.06
5	2-6	Mixed	High	2.30	0.24	1.38
6	2-6	Boulder/ Cobble	High	1.83	0.21	1.04
7	>6	Fines	Low	1.59		0.01
8	>6	Mixed	High	1.90		0.19
9	>6	Boulder/ Cobble	Moderate	0.22		0.00

Table 4: Cumberland (2005) and AEM/Golder (2011) comparison of the High, Medium and Low Habitat Type Area (in ha) quantification

Pond ID	Area (ha)	Cumberland (2005) Habitat Type (Area in ha)			AEM/ Golder (2011) Habitat Type (Area in ha)		
		High	Med	Low	High	Med	Low
Dog leg Pond - NP1	22.85	2.75	13.54	6.56	6.03	13.10	3.72
Dog leg North Pond- NP1N	3.40	0.31	2.17	0.92	0.45	2.54	0.41
NP2	9.42	0.78	6.31	2.33	2.61	5.74	1.07

Although these maps were not quantified or thoroughly evaluated in this report, Figures 5 to 9 were produced as discussed during a conference call with DFO on December 13th, 2011. These figures use the lake trout HSIs from AEM/Golder (2011) to identify areas associated with specific habitat values (as estimated by professional judgement used to create the HSI model) for different life history/functional stages (Figure 5 to 8). Ultimately a map with the overall weighted life history habitat values for lake trout is provided with a colour coded scale (Figure 9). If this method is applied in the future, this type of mapping and scaling could be used to produce habitat value type areas in hectares using site specific ranges (for depth and substrate) with field-verified habitat suitability weightings. Although it has not been validated in the field for species use or productive capacity, this method is a transparent and robust method of quantifying habitat using modern GIS tools in non-complex northern aquatic systems.

Although the Cumberland (2005) methods provided detailed description of habitat from numerous polygons, the method is subjective and requires interpretation due to descriptive classifications such as morphology, ice scour and complexity which is later distilled into 3 habitat classifications. In our opinion, despite very good habitat description initially, the eventual grouping into only three categories, and the problems with scoring as previous discussed make this method inconsistent and non-transparent.

Further problems arise when re-weighting for site-specific limitations is required. Given that the Dogleg Ponds are small, overwintering habitat is undoubtedly the limiting factor for fish survival. In the 2005 method, overwintering areas are considered low value, which is representative of the larger project lakes such as Second Portage and Third Portage Lake (where overwintering habitat is nearly unlimited). In contrast the AEM/Golder (2011) model is adaptable to all lake sizes, and re-weighting for site-specific limitations is intuitive (whereas in the Cumberland 2005 method, “high value” habitat is not in fact good for overwintering). See Figure 9 - pockets >8 m are scored 0.25-0.75. These differences are primarily based on the fact that AEM/Golder (2011) method is less subjective and does not arbitrarily group habitat types, rather uses transparent and reproducible quantification of habitat features and multiplies the information directly from the physical data to the habitat suitability indices. Furthemore, it

is our opinion that the AEM/Golder (2011) method is superior because it incorporates species weightings based on both abundance and fisheries valuation.

AEM has requested the use of a common method for calculating habitat units at its projects in the north. With DFO acceptance and additional research funding (which AEM is interested to contribute to), it is our goal to pursue the development of a database of fisheries monitoring studies that will facilitate the eventual validation of HSI values through better understanding of fish habitat preferences in the north. Consistency in HEP methods will not only assist in expediting the NNL planning process, but will increase the utility of cross-site comparisons. A requirement of all DFO authorizations is that the proponent is to demonstrate the success of compensation projects. Currently only the physical construction must be shown successful, because presently habitat units are physical features. Measures of productivity are, however, necessary to determine whether NNL has actually occurred. A larger database of data from northern lakes would allow us to compare our success and failures consistently between projects and will ultimately assist in decision criteria for determining success of compensation projects *a priori*.

AEM feels the AEM/Golder (2011) HEP method is transferable between projects and could be used throughout the eastern arctic and possibly throughout the north with more field validation. Given that eastern arctic lakes rarely stratify and substrates types are simple and homogenous (i.e. there are few or no vegetation with little or no gravel at Meadowbank and Meliadine project lakes), substrate types across the north can be very easily subdivided into three categories: fines, mixed, and boulder/cobble. Subdivision by depth could be site specific (not limited to 0-2, 2-4, >4m); however in all cases, a depth range in the north requires a partitioning of ice cover along the shores which is between water level and maximum ice depth (approximately 2m).

Although the data presented has not been field validated, the Dogleg Pond connection case study comparison demonstrates that the methods of AEM/Golder (2011) are robust, transferable, ecologically relevant and less subjective than Cumberland (2005). In using a similar method across projects in the north, AEM can design monitoring studies and fish removal studies to validate our HEP methods and possibly relate it to productive capacity modelling through monitoring of introduced populations at the Dogleg Pond connection project.

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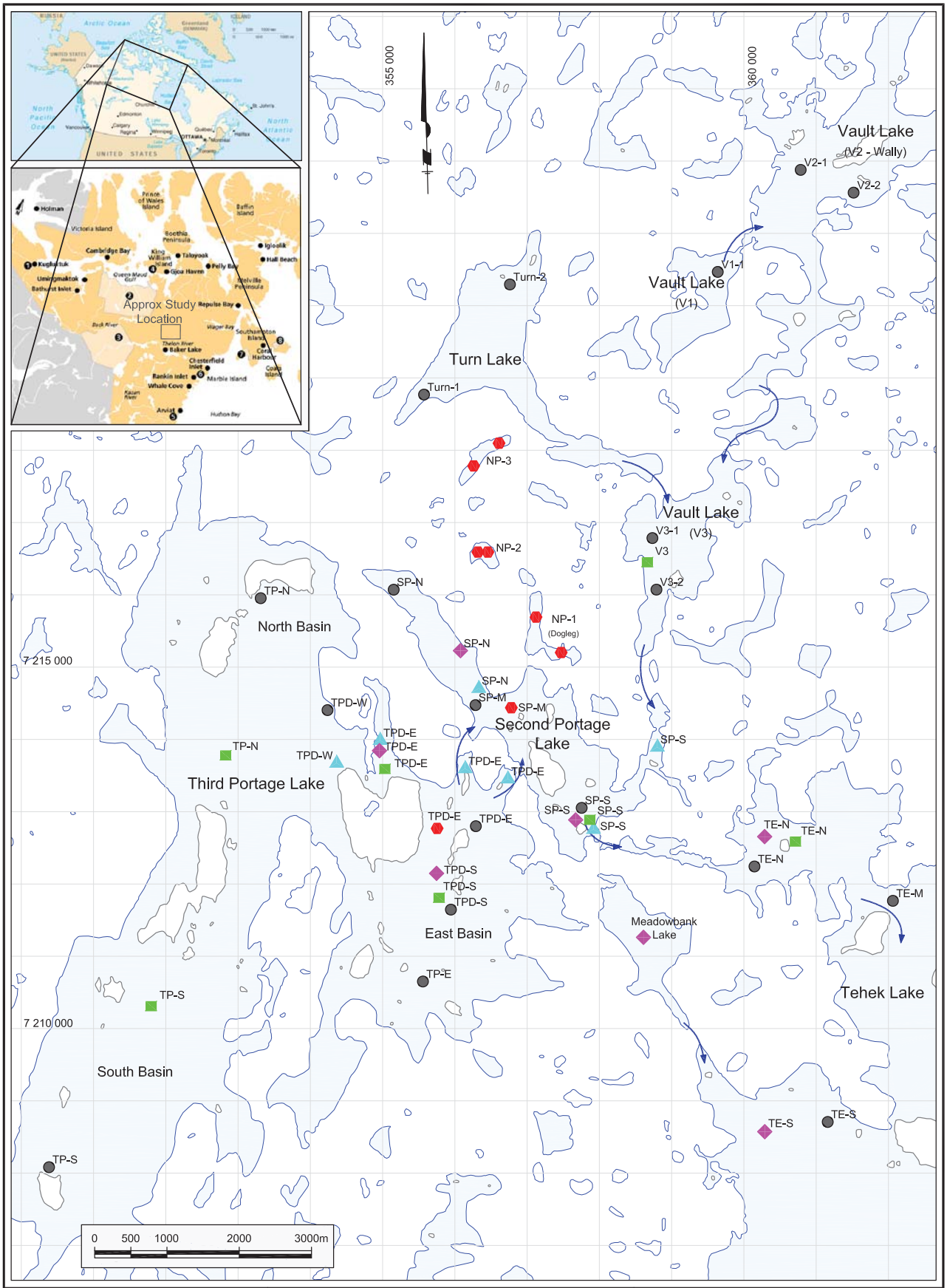

Legend

- Flow Direction
- 2003 Sampling Station
- 2002 Sampling Station
- 1998 Sampling Station
- 1997 Sampling Station
- 1996 Sampling Station

Azimuth Consulting Group Inc.
218-2902 West Broadway
Vancouver BC, V6K 2G8

PROJECT: Meadowbank Baseline Study

TITLE: **Historic (1996 - 2003) Sampling Stations**

Meadowbank Project Area Lakes

(Water and Sediment Chemistry; Lower Trophic Level Biota)

DRAWN BY:	CHK. BY:	PROJECT No:	CLIENT:
BT	RB	CBD-03-01	Cumberland Resources
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Date: February 15, 2012

To: Derrick Moggy
Department of Fisheries and Oceans
Eastern Arctic Area

CC: Bobby Beddingfield (DFO), Bev Ross (DFO), Julie Dahl (DFO), Stephane Robert (Meadowbank Environment- Superintendant), Leilan Baxter (Research Assistant) and Dr. Paul Sibley (Professor, U of G)

Throughout the development of the Meliadine Gold Project No Net Loss Plan and Meadowbank Mine Site Updated No Net Loss Plan, AEM has endeavoured to improve habitat evaluation procedures in the North. In preparation for the exploratory meeting with DFO Science on February 17th, the following letter outlines the preliminary steps taken by AEM towards establishing validated HSIs and a consistent, transparent HEP methodology. This letter presents potential research ideas that we feel will assist with this effort and could be pursued in collaboration with AEM, DFO Science and the University of Guelph researchers.

Habitat Evaluation Procedure and Habitat Suitability Index development

In 2011, AEM began working with Golder to refine an HEP method at the Meliadine Gold Project, using 9 combinations of simple habitat characteristics (depth and substrate). AEM and Golder have completed or will complete the following steps towards method development of a No Net Loss Plan at Meliadine Gold Project.

- A brief Meadowbank Dogleg Pond case study comparing 2005 Cumberland HEP methods versus 2011 AEM/Golder HEP method. These analyses found a similarity in evaluating *moderate* value habitat (i.e. year-round foraging) but differences in *high value* (i.e. nursery and spawning habitat) and *low value* habitat. These comparisons confirmed the transferability and precision of the 2011 AEM/Golder model to identify habitat types that the 2005 model does not allow. Furthermore, these models identified the need for field validation of HEP methods.
- Use of the HEP model and Habitat Suitability Indices for the submission of the Meliadine Project No Net Loss Plan by applying it to conceptual end pit lakes.
- Development of a risk characterization approach at Meliadine that uses a *GIS-based regional scale of negative effects* analysis to assist in the evaluate of impacts to ponds that freeze or nearly freeze to depth for 8 months of the year.

Gains in stream productivity vs. gains in lake productivity

Currently, we have no means to account for differences in stream and lake productivity in No Net Loss planning. This means that one HU gained in a stream is equal to one HU gained in a

lake. However, from personal experience we believe that actual gains in productivity from compensation efforts are higher in artic streams than in lakes. AEM has begun a comparison of productivity gains per HU in streams and lakes, using field data from the Meadowbank site (instream monitoring program and lake fishout data). To date we have:

- Conducted a preliminary comparison of Second Portage Lake (2008 fishout data), which examined immature fish per HU in the lake and changes in number of recruits after construction of the R02 Habitat Compensation feature (constructed spawning habitat). In this comparison, one stream HU was found to be associated with approximately 40x more immature fish than one lake HU.

Alternative Compensation Ideas and Fish Production Models

Although DFO advocates like-for-like compensation, opportunities may arise where tangible benefits to local communities could be achieved through offsite compensation options. In the experience of AEM, these benefits may not be well accounted for with HEP methods, and alternate models may need to be considered.

For example, in the past, Airplane Lake near the hamlet of Baker Lake was frequently accessed for recreational fishing but is now considered by many locals as unable *to produce healthy fish, safe for human consumption*, due to outflow from the hamlet's sewage lagoon. Based on preliminary water quality analysis, total phosphorus levels are elevated in this system. AEM believes an investigation into methods for improved sewage treatment, and the ultimate restoration of water quality in Airplane Lake (which flows directly into Baker Lake) could be a valuable compensation option. However, gains in fish habitat through improved water quality do not factor into any known HEP methods.

To address this issue, we have attempted to model fish production in Airplane lake using 2008 and 2010 Meadowbank Fishout data by applying fish production models from Downing et al. (1990). They found that fish production (FP; kg/ha·yr) in lakes worldwide is significantly correlated with average annual primary production (PP; gC/m2·yr), average annual total phosphorus concentration (TP; mg/L) and standing fish biomass (FB; kg/ha) using the following models:

logFP = 0.600 + 0.575logPP (n=19; r2 = 0.79)
logFP = -0.42 + 1.084logFB (n=23; r2 = 0.67)
logFP = 0.332 + 0.532logTP (n=14; r2 = 0.67):

- AEM has requested fishout data from other northern mines to validate these models together with the Meadowbank fishout data.
- These models were also applied to Airplane Lake to estimate fish production in a nutrient enriched arctic system.

- Future compensation monitoring will incorporate data collection that will aim to validate these models (i.e. Dogleg Pond compensation area).

These models may support the use of *alternative* habitat compensation such as restoration that diverges from commonly accepted DFO approach of constructing fish habitat structures.

Specific Research Ideas: AEM, U of G and DFO Science Collaboration

Dr. Paul Sibley at the University of Guelph, and graduated MSc student, Leilan Baxter, are interested in working with AEM and DFO to develop a research program based on the issues described above. The research directions discussed to date have been aimed at developing and testing habitat suitability indices for northern fish species. Further, many HSI models are not validated with experimental manipulations. Compensation programs at Meadowbank could provide the opportunity to research fish habitat requirements (as opposed to preferences) in the north. This program would assist in determining what types of compensation may truly be effective in achieving no-net-loss of productive capacity. Research questions may specifically include the following stages.

Stage 1: Development of HSI models (observational phase)

- determination of potentially suitable indices
    - (e.g. max depth, lake volume, temperature, TP, substrate, invertebrate and fish community composition) from literature review, professional interview
- observation of fish habitat preferences
    - measurement of chosen indices along with total fish biomass and/or health index
    - could include Meadowbank and/or Meliadine; lacustrine and/or riverine
    - much information already available from fishout data, but smaller systems need to be incorporated
        - could include refining CPUE model based on fishout datasets in order to obtain better estimates of population size (or apply another method e.g. capture-recapture)
        - could be for stream (use AWAR data), lake (use historical site data plus Vault, Phaser, data from other mines' fishouts etc.) or both
        - could be for all major species (lake trout, arctic char, lake whitefish, arctic grayling) or one initially
- calculation of HSI equations from observational data

Stage 2: Testing of compensation features (experimental phase)

- observe fish biomass/health/production in response to changes in various identified habitat indices (e.g. increase/reduce substrate complexity)
- could be conducted for streams (R02) or lakes/ponds (Dogleg) or both

We look forward to our exploratory meeting to discuss the work to date and future research ideas. Should you require any further information or questions please contact me via email or by telephone.

Regards,

Ryan Vanengen
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519-400-7979
Environment Biologist- Meadowbank Division

Leilan Baxter
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519-829-5322
Research Assistant

Ryan Vanengen

From: Bedingfield, Robert <Robert.Bedingfield@dfo-mpo.gc.ca>
Sent: March-30-12 3:09 PM
To: Ryan Vanengen; Stephane Robert
Cc: Moggy, Derrick
Subject: Meadowbank Authorization Amendment and NNLP Contingency Plan
Attachments: Regulations Amending the Metal Mining Effluent Regulations - Meadowbank Gold Mine gazette 2.pdf; AEM 2009 TIA and NNLP 2007 vs DFO Authorization.pdf

Hi Gentlemen,
This email is to summarize the agreed upon process to amend authorization NU-03-0191 and to fulfill Agnico-Eagle Mines Ltd (AEM) obligations of developing a NNLP contingency plan for the Meadowbank Mine. The purpose of this email is to ensure that both DFO and AEM are agreeable and clear on the process that will occur.

Amendment of Authorization
The authorization for the Meadowbank mine will be amended to correct the discrepancies that are associated with each habitat compensation feature described in Authorization NU-03-0191. The reason for these discrepancies is unclear but the Habitat units (HU) that are associated with each compensation measure in the Meadowbank 2006/2007 NNLP and the November 2009 Meadowbank revised NNLP do not match the quantity of HU's listed in the authorization (see attachment, *AEM 2009 TIA and NNLP 2007 vs DFO Authorization*). The discrepancies that appear in the current authorization for the mine will be adjusted however the expectation is that that ratio of Compensation HU's to HADD HU's that appears in the authorization will still be honored by Agnico-Eagle. The compensation to HADD ratio for the TIA is 718.0 HU's to 318.3 HU (**2.03 : 1 ratio**) . The compensation ratio for the Mine Site is 1252.00 to 741.8 (**1.68 : 1 ratio**) The authorization will be amended to reflect the type and quantity of compensation that will be presented in the 2012 revised NNLP for the Meadowbank Mine that is currently being prepared by AEM.

The new NNLP that will be developed by AEM will also contain a new HEP model that will be developed based on principles that are presented in the HEP model for the Meliadine Mine. The timelines associated with the development of the revised NNLP for the Meadowbank mine are as follows:

Submission of a draft NNLP by June 15, 2012
Submission of a final NNLP by October 1, 2012

The revised NNLP for the Meadowbank Mine will include a NNLP for the Vault Pit. The NNLP for the Meadowbank mine should be one all-encompassing document but should contain clearly labelled sections discussing compensation associated with the TIA, Meadowank Mine and the Vault Pit. The revised NNLP document should clearly outline which compensation measure is associated with which location (TIA, Mine or Vault).

Contingency NNLP
Condition 4.5 in authorization NU-03-0191 states that a contingency no net loss plan should be developed by AEM by July 30, 2009. For a variety of reasons this contingency plan has not been finalized to date. The understanding that has been agreed upon by AEM and DFO is that a new NNLP will be developed by AEM to address issues such as a reduced mine life and the discrepancies with the amount of HU's that are associated with each compensation measure listed in the current authorization.

TIA compensation modifications
Slight modifications to the compensation that is associated with the TIA may be allowable. The description of the compensation associated with TIA is outlined in the MMER listing regulations. Any changes that occur to TIA related compensation must still satisfy the description of the compensation in the MMER regulations (attached).

If I have left out any important details or there needs to be further clarification or discussion on any of these points please contact myself of Derrick Moggy to discuss in greater detail.

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Biologiste, Habitat du poisson
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Pêches et Océans Canada
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January 19th Conference call meeting notes

In attendance- Ryan VanEngen (AEM), Jack Patalas and Cam Stevens (Golder), Bobby Bedingfield and Derrick Moggy (DFO).

Conference call at 11:00 AM ET (9AM MT) to briefly discuss Meliadine and Meadowbank related NNL Planning.

For Meliadine we discussed the methodology for calculating No Net Loss Habitat Units; AEM received agreement on the methodology presented on Nov 17 and 18th so we can continue with our planning accordingly.

AEM accepted the suggestion not to include the risk factor- no significant difference in overall calculations or ratios. HSI s were changed and habitat 10 adjustments were also made as follow-up to our December discussion. As an updated on the calculations, Golder has calculated gains on pits individually as opposed to grouping them. Golder double checked snap lake and diavik HSIs which appear pretty consistent with Meliadine.

DFO agrees with the methodology and suggest AEM continue using it as presented to the DFO.

We are still in the process of developing and providing a draft risk characterization to the DFO and will have another conference call to discuss this approach in a couple of weeks.

Still working on the risk characterization; Golder has developed a size vs depth correlation of lakes at a site, local and regional level; this will be used as a factor for characterizing the scale of negative effects along with its sensitivity in the risk characterization. DFO reminded AEM to consider isolated vs connected lakes, as connected ponds serve a season purpose and be accounted for accordingly. Preliminarily, of the ~ 82 ponds total within the mine site, 53 were isolated and unconnected – when removed, they do not change the HU calculation losses significantly (this also confirms that the model is robust).

They will be discussing the HEP method used at Meliadine during the DFO workshop involving Minns in early February.

For Meadowbank we discussed the following:

1. Revised No Net Loss Plan for the Meadowbank Mine Site that includes-
    a. Updated mine plan losses (similar to 2009 TIA report) with
        i. Revised Pit dimensions
        ii. Revised dike dimensions
    b. Updated mine plan gains with
        i. NP2 Dogleg pond connection and habitat enhancement
        ii. Backfilling Portage Pit and possibly others
        iii. Additional enhancement features in the basin
    c. Will include a contingency plan (thus meeting the Terms of Reference)
    d. Defined timeline and plan for creation of enhancements during mine life
    e. Provide HU calculations that will support an amended authorization

AEM discussed updating the entire plan to reflect the changes since 2005 and 2009 on both gains and losses.

DFO was unable to determine the authorization habitat unit calculations – for transparency and for the purposes of updating based on the most current mine plans DFO agree with updating the Mine site NNL Plan. As noted above, this will lead to amending the authorization accordingly. For consistency, DFO recommends use the 2005 method for now and submit the memo comparison of methods using Dogleg Pond as a case study. They will have a look at it during their upcoming workshop.

2. Backfilling portage pit and depth of clean material capping of basin habitat features during closure

What is the preferred depth of capping or clean substrate? DFO will check into it. AEM referred to end pit docs by DFO.

3. Revising TIA No Net Loss Plan

DFO will discuss this with EC; to get back to AEM within the next two weeks. What the process would be still has to be hashed out- MMER allows certain lakes to be delisted however the legislation refers to certain plans that have compensation losses and gains; changes in compensation plan may require DFO and EC consultation and may not simply be administrative.

4. Airstrip extension – no update… update

AEM noted that it will unlikely construct the airstrip extenion in 2012 and we will update DFO when it moves forward.

As requested during the Nov 17 and 18th meeting attached you will also find a bathymetric map of Meadowbank Project Lakes-Wally, Vault and Phaser lakes that we can discuss during the conference call.

AEM will conduct additional fisheries studies in the summer of 2012 to confirm the baseline study findings prior to submitting a draft Vault Pit No Net Loss plan.

Other outstanding items from previous meeting action items:

DFO (Derrick Moggy) responded to the following topics in the action item document-

Spawning pads and calculation compared to lake findings- DFO will provide feedback after the Minns workshop; should be able to provide to us information within the next month.
AEM requested from DFO NNL Plans for Diavik and Ekati- DFO will provide it as soon as possible. The data base is at UofA and DFO would like to provide it to us as a complete package.
AEM requested DFO Science participation- Science will participate in Meliadine review and have been looking into habitat productive capacity and standardizing HSI s.

Ryan to complete a memo comparing the 2005 method applied at Dogleg pond; Jack to provide to DFO the updated version of the Meliadine HEP calculations.

HTO Meeting with Agnico-Eagle Meadowbank Division

Date: February 23rd, 2012

Lunch provided by AEM, presentation and discussion (12:30-2), Site tour (2pm) and meet with HR Representative and Assistant Mine General Manager; return to Baker Lake.

Attendance List

	Name	Signature
1	Eugene Niviatsiaq - Director	
2	Thomas Elytook - Chair	
3	Silas Kenalogak - Director	
4	Thomas Anirniq - Directors	
5	Timothy Tungvag - Sec - Treasurer	
6	Michael Akilak - Director	
7	Joedee Joedee - Director	
8	Michael Haqpi (AEM)	
9	RYAN VANENGEN (AEM)	
10		
11		
12		

HTO Board Members Agnico-Eagle Meadowbank Division Site Visit

Date: February 23rd, 2012

Agenda for the visit: Lunch provided by AEM, presentation and discussion (12:30-2), Site tour (2pm) and return to Baker Lake at approximately 3pm.

Attendance List: Thomas Elytook (HTO- Chair), Timothy Tunguaq (HTO-Treasurer), Eugene Niviatsiaq (HTO-Director), Silas Kenalogak (HTO-Director), Thomas Anirnirq (HTO- Director), Michael Akilak (HTO-Director), Joedee Joedee(HTO-Director), Michael Haqpi (AEM) and Ryan VanEngen (AEM)

After lunch Ryan VanEngen hosted a brief tour of the new kitchen, country food kitchen, lounge area, and facilities along the arctic corridor. The HTO and AEM representatives met for an hour presentation and discussion in the AEM board room. Ryan VanEngen presented the following:

- Overview of the mine developments to date.
- Changes to the Life of Mine from 2019 to 2017 and re-assurance that jobs will be kept as many employees will be transferred to the Meliadine Gold Project in Rankin Inlet in 2017.
- Review of Water management and mine site infrastructure development- tailings, central dike to begin construction in 2012 and dewatering of SPL and Bay-Goose.
- Fisheries studies along the AWR at habitat compensation area.
- No Net Loss Planning presention with some of the ideas that we would like to have support from HTO on:
    - Pit reflooding and in pit basin structures
    - Dogleg connection and water management
    - Additional Fish spawning pads along the AWR
    - Airplane Lake concept: research into remediation, possible clean-up and replacement of hanging and poorly installed culverts
        - HTO members noted that they support the Airplane lake concept and would like AEM to draft a letter for them to sign in support of this. They indicated that in the past the Hamlet has discussed the concept of cleaning up the landfill pond and lagoon wetland area to improve water quality in Airplane lake, but felt it may not be completed unless otherwise supported.
    - Research on fish habitat use
- Summary of annual Wildlife Monitoring and Hunter Harvest study promotion.

A few questions regarding fish studies and environmental monitoring in the project lakes, tailings reclamation and capping, Airplane Lake related questions were discussed and answered by AEM.

A brief half hour site tour including a visit to the Portage pit look-out point, Bay-Goose, near the incinerator, primary crusher, secondary crusher, powerhouse and mill was completed. As indicated to Joan Scottie, the HTO is welcomed to email Ryan VanEngen and Michael Haqpi to organize future site tours. At that time, HTO would be interested in meeting with HR and the mine manager.

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ᐅᑉᓗᖕᒐᓂ, ᐱᑉᕈᐊᕆ 23, 2012

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ᑲᑎᒪᔭᖅᑐᖅᑐᑦ, ᑐᒪᓯ ᐃᓚᐃᑐᒃ, ᑎᒧᑎ ᑐᖑᐊᖅ, ᔪᐳᓐ ᓂᕕᐊᑦᓯᐊᖅ, ᓴᐃᓚᓯ ᖅᑭᓇᓗᒐᖅ, ᑐᒪᓯ ᐊᓂᕐᓂᖅ, ᒪᐃᑯ ᐊᑭᓚᒃ, ᔨᑎ ᔨᑎ. ᒪᐃᑯ Hᐊᖅᐱ ᐊᒻᒪᓗ ᕋᐃᔭᓐ ᕙᓂᑲᓐ, ᐅᔭᕋᒃᑕᓕᐊᓂᑦ.

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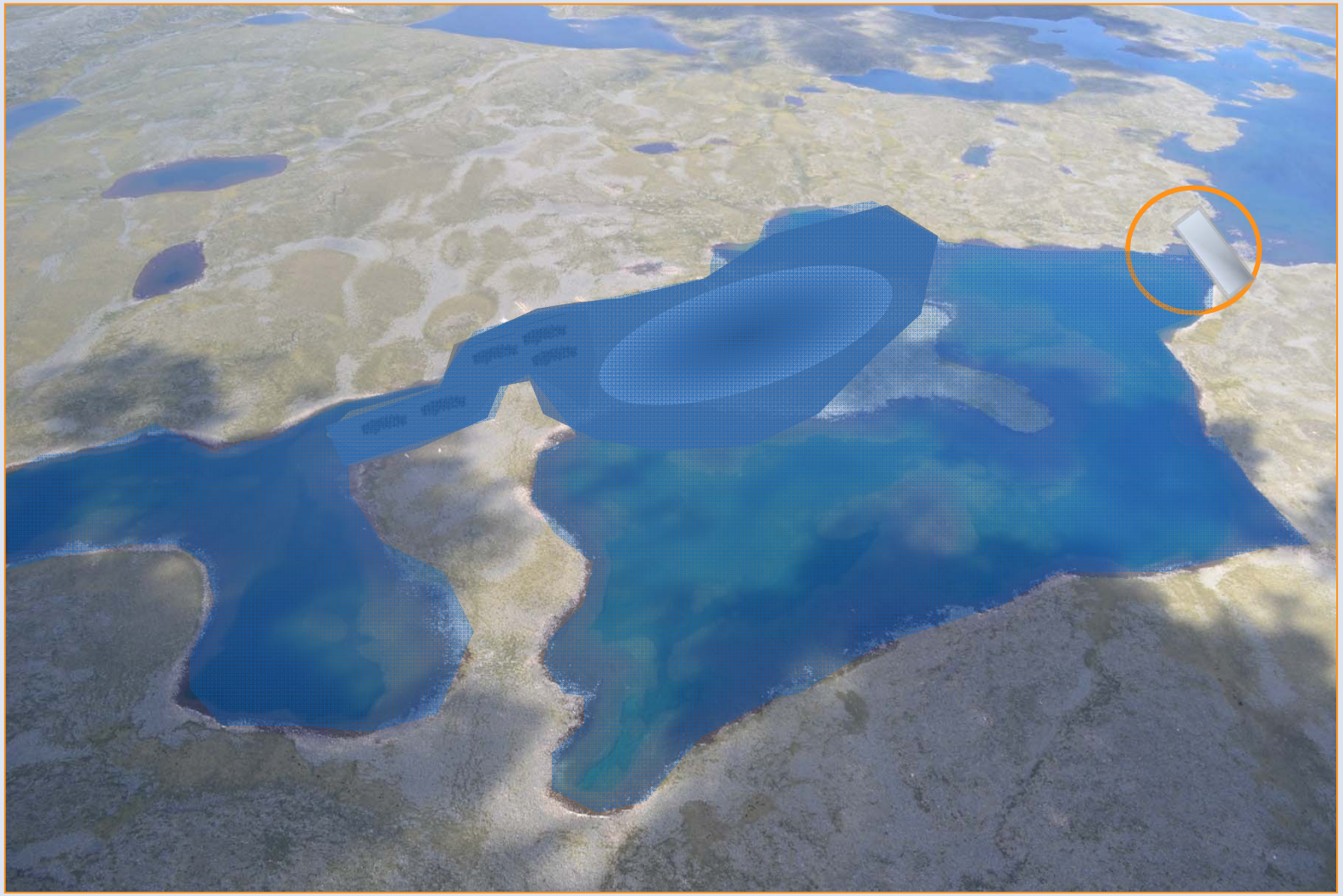
- ᐊᐳᓐᓇᖅᑐᒥ ᐱᕙᓪᓕᐊᔪᑦ ᐅᖅᑲᐅᓯᕆᔭᖏᑦ
- ᐊᐳᖅᑎᓐᓇᖅᑐᑉ ᐅᑯᐊᑲᒃᓂᐊᕐᓂᖓ 2019ᒥᑦ, ᐅᑯᐊᕐᓂᐊᖅᖢᓂ 2017ᒥ ᐅᖅᑲᐅᓯᕆᔭᖓ. ᐊᐳᖅᑎᓐᓇᖅᑐᒥᓗ ᐱᓕᕆᔪᑦ ᐱᓕᕆᑐᐃᓇᕆᐊᖅᑲᕐᒪᑕ, ᑲᖏᖅᓱᓂᐅᑉ ᓴᓂᐊᓂ ᑕᓯᕐᔪᐊᕐᒥ ᐅᖅᑲᐅᓯᕆᔭᖓ, ᑕᒪᓐᓇ ᐅᑯᐃᕐᓂᐊᖅᑐᖅ ᐅᑭᐅᒥ 2017ᒥ.
- ᐅᖅᑲᐅᓯᕆᔭᖓ ᐃᒪᓕᕆᓂᖅ ᐊᐳᖅᑎᓐᓇᖅᑐᒥ ᐊᒻᒪᓗ ᐊᐳᖅᑎᓐᓇᖅᑐᒥ ᐃᒃᓗᔪᐊᓗᖅᑭᑦ ᓴᓇᓯᒪᓂᖏᑦ ᐊᒻᒪᓗ ᐃᒪᐃᔭᕐᕕᒃ, ᐊᒻᒪᓗ ᐃᒪᕐᒥᒃ ᓴᐳᒥᕕᒃ ᓴᓇᔭᐅᓂᐊᕐᓂᖓ 2012ᒥ. ᐅᖅᑲᐅᓯᕆᒥᔭᖓ ᐅᔭᕋᒃᑕᕐᕕᐅᓂᐊᖅᑐᑦ ᐃᒪᐃᔭᕐᓂᐊᕐᓂᖏᑦ ᐱᓕᕆᐊᖑᓂᐊᖅᑐᑦ.
- ᐊᑉᕐᑯᑦᓗ ᐊᕙᑕᓂ ᓴᓂᐊᓂᓗ ᐃᖅᑲᓗᖅᑲᕐᕕᑦ ᖅᑲᐅᔨᓴᕐᓂᖏᑦ, ᐊᒻᒪᓗ ᐃᖅᑲᓗᐃᕈᑎᔪᒃᓇᖅᑐᑦ ᖅᑲᓄᖅ ᐱᓕᕆᐊᕆᔭᐅᓂᐊᕐᒪᖔᑕ ᐃᖅᑲᓗᖅᑲᑲᓂᖅᑯᑉᓗᒥᑦ.
- ᐊᐳᖅᑎᓐᓇᖅᑐᒥ ᑕᓯᕐᓄᑦ ᐊᒃᑐᐊᔪᑦ ᐅᔭᕋᒃᑕᕐᕕᑦ, ᐃᑲᓗᐃᕈᑎᒋᓇᓇᐊᖅᑲᕐᒪᑕ, ᐃᖅᑲᓗᖅᑲᑲᓂᖅᑯᑉᓗᒥᑦ ᑕᒪᓐᓇ ᐱᓕᕆᐊᕆᔭᐅᔪᖅ. ᑕᐃᒃᑯᐊ ᑕᓯᑦ ᐅᔭᕋᒃᑕᕐᓂᕐᒧᑦ ᐊᒃᑐᐊᔪᑦ ᐃᖅᑲᓗᐃᕈᑎᒋᓇᓇᐊᖅᑲᕐᒪᑕ, ᑕᐃᒪ ᑕᓯᕐᓂ ᐊᓚᓂ ᐊᖕᕆᓕᓇᐊᓗᒥᑦᓗᓂᑦ, ᑯᓚᐃᑦᓗᓂᑦ ᐃᑎᓕᓇᐊᕐᓗᒥᑦ, ᑕᒪᑯᐊ ᐊᖅᑭᒐᐅᔪᒃᓇᕐᒪᑕ ᐃᖅᑲᓗᖅᑲᑲᓂᖅᑯᑉᓗᒥᑦ, ᑕᒪᓐᓇ ᐸᕐᓇᒍᑕᐅᔪᖅ, ᑕᑯᐊᓗ ᐊᐳᖅᑎᓐᓇᖅᑐᒥ ᐊᕙᑎᓕᕆᔩᑦ ᐅᒪᔪᓕᕆᔩᑦ ᐃᑲᔪᓚᐅᔪᒪᔪᑦ ᐊᖑᓇᓱᒃᑎᑦ ᑲᑎᒪᔩᖏᓐᓂᑦ ᐅᑯᓂᖓ:
    - ᐊᐳᖅᑎᓐᓇᖅᑐᖅ ᐅᑯᐊᓇᐊᐸᑦ ᐅᔭᕋᒃᑕᕐᕕᑦ ᐃᒥᓚᐅᒥᐊᕐᓂᐊᕐᒪᑕ ᐊᑐᕈᓂᖅᐸᑕ, ᑕᒪᑐᐊ ᖅᑯᓄᖅ ᑲᒪᒋᔭᐅᔪᒃᓇᕐᒪᖔᑕ ᐃᑲᔪᓚᐅᔪᒪᔪᑦ ᐊᐳᖅᑎᓐᓇᖅᑐᒥ ᐅᕙᑎᓕᕆᓕᑦ, ᐅᒪᔪᓕᕆᓕᑦᓗ
    - ᑕᓯᑦ ᐃᓚᖏᑦ ᖅᑲᓂᑐᕋᐅᑦ ᐊᑕᐅᓯᖑᖅᑎᓗᒥᑦ, ᐃᖅᑲᓗᐃᑦ ᐊᒥᓱᖑᑲᓂᖅᑯᑉᓗᒥᑦ ᑕᒪᓐᓇ ᐸᖅᓇᒍᑕᐅᔪᖅ ᐊᒻᒪᓗ ᐃᒪᓕᕆᓂᖅᒧᑦ ᐊᐃᓚᓂᖓ.
    - ᐊᑉᕐᑯᑦ ᐊᕙᑕᓂ ᓴᓂᐊᓂᓗᓂᑦ ᓴᓇᑲᓂᖅᓗᑎᒃ ᐃᖅᑲᓗᐃᑦ ᒪᓂᖅᑲᕐᕕᓂᑦ, ᓯᑉᔭᒥ ᑐᐊᐸᓂᒃ ᐃᓕᐅᖅᑲᐃᓗᑎᒃ ᑕᓯᐅᑉ ᕿᑎᐊᓄᑦ ᑐᖅᓗᑎᒃ.
    - ᑎᖕᒥᓯᐸ ᑕᓯᐊ ᓴᓗᒪᖅᓴᐅᓂᖕᒐᓄᑦ ᐊᒻᒪᓗ ᐃᒪᐃᔭᕐᕕᐅᑉ ᑕᓯᐊ ᖃᒪᓂᑐᐊᕐᒥ, ᐸᕐᓇᒍᑕᐅᖕᒍᔪᑦ ᖃᐅᔨᓴᐅᓯᐊᖅᖢᑎᒃ ᖃᓄᖅ ᓴᓗᒪᖅᓴᐅᓇᔭᕐᒪᖕᒐᓂᒃ. ᐊᖑᓇᓱᒃᑎᑦ ᑕᒪᑦᓯᒥᖕᒐ ᐃᑲᔪᖅᑐᐃᔪᑦ, ᐊᒻᒪᓗ ᑎᑎᖅᑲᒥᒃ ᐊᕿᓯᐃᕐᑯᕐᔪᑦ ᐊᑎᓕᐅᒃᓴᒥᒃ, ᑕᒪᓐᓇ ᐃᑲᔪᕈᑕᐅᓂᐊᕐᒪᑦ ᓴᓗᒪᖅᓴᐅᓂᖕᒐᓄᑦ. ᐊᖕᒋᓚᐅᔭᕆᐊᖅᒪᑦ ᐃᒪᓕᕆᓂᐊᓂᑦ ᑲᕙᒪᑐᖅᑲᑯᓂᑦ. ᐊᖑᓇᓱᒃᑎᑦᓗ ᐅᖅᑲᖅᑐᑦ ᑕᒪᓐᓇ Hᐊᒻᒪᓚᑯᓂᑦ ᐅᖅᑲᐅᓯᐅᓯᒪᔪᖅ ᖅᑲᓄᖅ ᓴᓗᒪᖅᓴᐅᔭᐅᓇᕐᒪᖕᒐᑦ. ᑕᒪᓐᓇ ᐃᑲᔪᖅᑐᓚᐅᐸᑦ ᐃᖕᒋᕆᔭᐅᓇᕐᑐᖅ ᑭᓯᐊᓂ ᐃᒪᓕᕆᓂᕐᑯᑦ ᑲᕙᒪᑐᖅᑲᑯᓂᑦ ᐊᖕᒋᖅᑕᐅᔭᕆᐊᓕᒃ.
    - ᖅᑲᐅᔨᓴᕐᓚᐅᑐᓂ ᐃᖅᑲᓗᖅᑲᕕᑦ ᑕᓯᕐᓂ, ᖅᑲᓄᖅ ᐊᑐᓚᐅᓂᖅᑲᕐᒪᖕᒐᑕ.
- ᐅᖅᑲᐅᓯᐅᓚᐅᕐᒥᔪᖅ ᖅᑲᒪᓂᑐᐊᕐᒥᐅᑦ ᓱᓇᓂᒃ ᐊᖑᓇᓱᒃᑎᓗᒥᑦ ᐱᑕᔪᒃᒪᖕᒐᑕ, ᐅᐸᓗᖅᓯᐅᑎᑦ ᖅᑲᐅᔨᓴᕈᑎᑦ ᐊᑐᖅᖢᒥᑦ, ᑕᒪᑯᐊ ᐊᖑᓇᓱᒃᐸᒃᑐᓄᑦ ᑐᓂᔭᐅᓯᒪᒪᑕ. ᑕᒪᓐᓇ ᐅᑭᐅᓄᑦ ᖅᑲᑉᓯᓄᑦ ᐃᖕᒋᕋᔪᖅ, ᐊᒥᓱᔪᑦ ᖅᑲᒪᓂᑐᐊᖅᒥᐅᑦ ᐃᓚᐅᖅᑲᑕᐅᔪᑦ.

ᐊᖑᓇᓱᒃᑎᑦ ᑲᑎᒪᔩᖏᑦ ᐊᐱᕆᑕᓚᐅᖅᑐᑦ, ᑕᓯᕐᓂᒃᓗ ᐃᖅᑲᓗᓂᒃᓗ ᖅᑲᐅᔨᓴᕐᓂᐅᔪᒥᒃ. ᐊᒻᒪᓗ ᑕᓯᑦ ᖅᑲᐅᔨᓴᕐᓂᖏᑦ ᐊᐳᖅᑎᓐᓇᖅᑐᑉ ᐊᕙᑕᓂ ᐊᐱᖅᓯᑎᐅᓚᐅᕐᒥᔪᑦ. ᖅᑲᐅᔨᔭᐅᓯᐊᓚᐅᕐᒥᔪᖅ ᐃᒪᐃᔭᕐᕕᒃ ᐊᐳᖅᑎᓐᓇᖅᑐᒥ ᖅᑲᓄᖅ ᐊᖅᑭᓚᐅᔪᓕᕐᒪᖔᑦ ᐊᐳᖅᑎᓐᓇᖅᑐᖅ ᐅᑯᐊᓇᐊᖅᐸᑦ, ᑕᒪᑯᐊ ᑐᑭᓯᔭᐅᔪᒪᔪᑦ ᑭᐅᔭᐅᓚᐅᖅᑐᑦ ᐊᖑᓇᓱᒃᑎᑦ ᑲᑎᒪᔩᖏᓄᑦ.

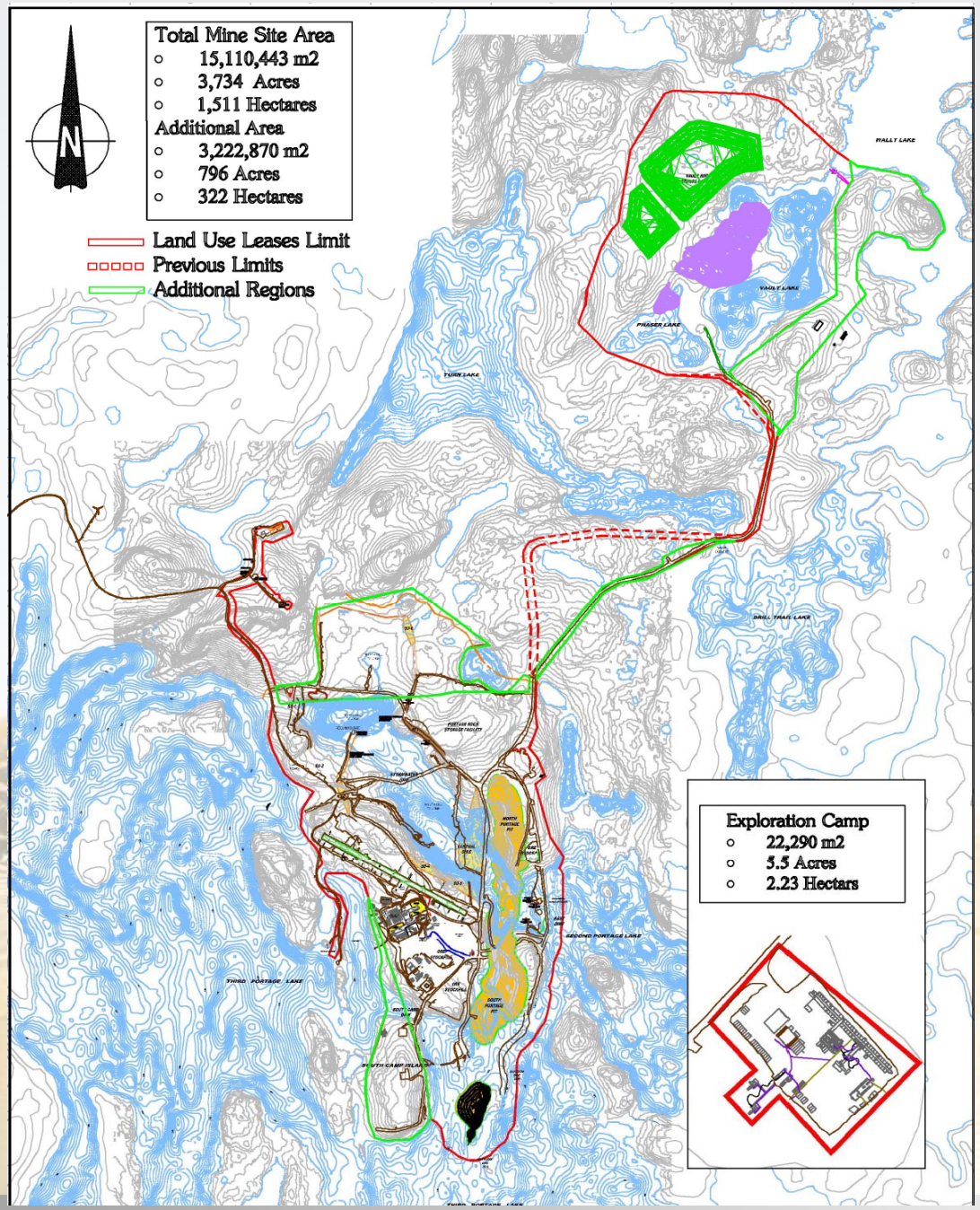
ᑲᑎᒪᓂᒃᒪᑕ ᐊᖑᓇᓱᒃᑎᑦ ᐊᐳᖅᑎᓐᓇᖅᑐᒥᒃ ᓄᓇᑯᕈᑎᖅᔪᐊᑯᑦ ᑕᑯᑎᑕᐅᓚᐅᖅᑐᑦ. ᑕᑯᔭᐅᐸᓗᑎᒃ ᓄᓇᒥ ᐊᑦᓯᓕᖅᐸᓕᐊᔪᑦ ᐅᔭᕋᒃᑕᕐᕕᓗᒃᑕᑦ, ᐅᔭᕋᓂᒃ ᓯᖅᑯᐸᑎᖅᕕᒃ, ᐊᒃᑕᑯᓂᒃ ᐃᑯᐊᓚᑦᓯᕕᒃ ᐊᐅᒪᓕᐅᖅᓯᖅᕕᒃ, ᐅᔭᕋᓂᒃ ᓯᖅᑯᐸᑎᕆᕕᑲᓂᖅ, ᐃᑲᒪᖅᑲᕐᕕᒃ, ᐊᒻᒪᓗ ᐅᔭᕋᓂᒃ ᓯᖅᑯᐸᑎᕆᕕᒃ. ᖅᑲᓇᑕᐅᔭᑯᑦ ᑎᑎᖅᑲᒃᖢᓂ ᔪᓐ ᓯᑲᑎ, ᑐᖕᒐᓱᒃᑎᑦᓯᓚᐅᖅᑐᖅ ᐅᔭᕋᒃᑕᕆᐊᑦ ᐱᓕᕆᔨᖕᒐᓂᒃ, ᑕᒪᑯᐊ ᑲᑎᒪᔩᑕᐅᓂᐊᖅᑎᓗᒋᑦ. ᓯᕗᓂᐊ ᐊᖑᓇᓱᒃᑎᑦ ᑕᑯᔭᖅᑐᐃᔭᐅᓇᖅᑐᑦ ᐊᐳᖅᑎᓐᓇᖅᑐᒥᒃ. ᓯᕗᓂᐊ ᑲᑎᒪᓚᖅᐸᑕ ᐱᓕᕆᔩᑦ ᐊᐅᓚᑦᓯᔨᖏᑦ ᐊᒻᒪᓗ ᐊᐳᖅᑎᓐᓇᖅᑐᑉ ᑲᒪᔨᖓ ᐱᖅᑕᐅᔪᒃᓇᖅᑐᒃ.

Vault Pit Mining and Closure

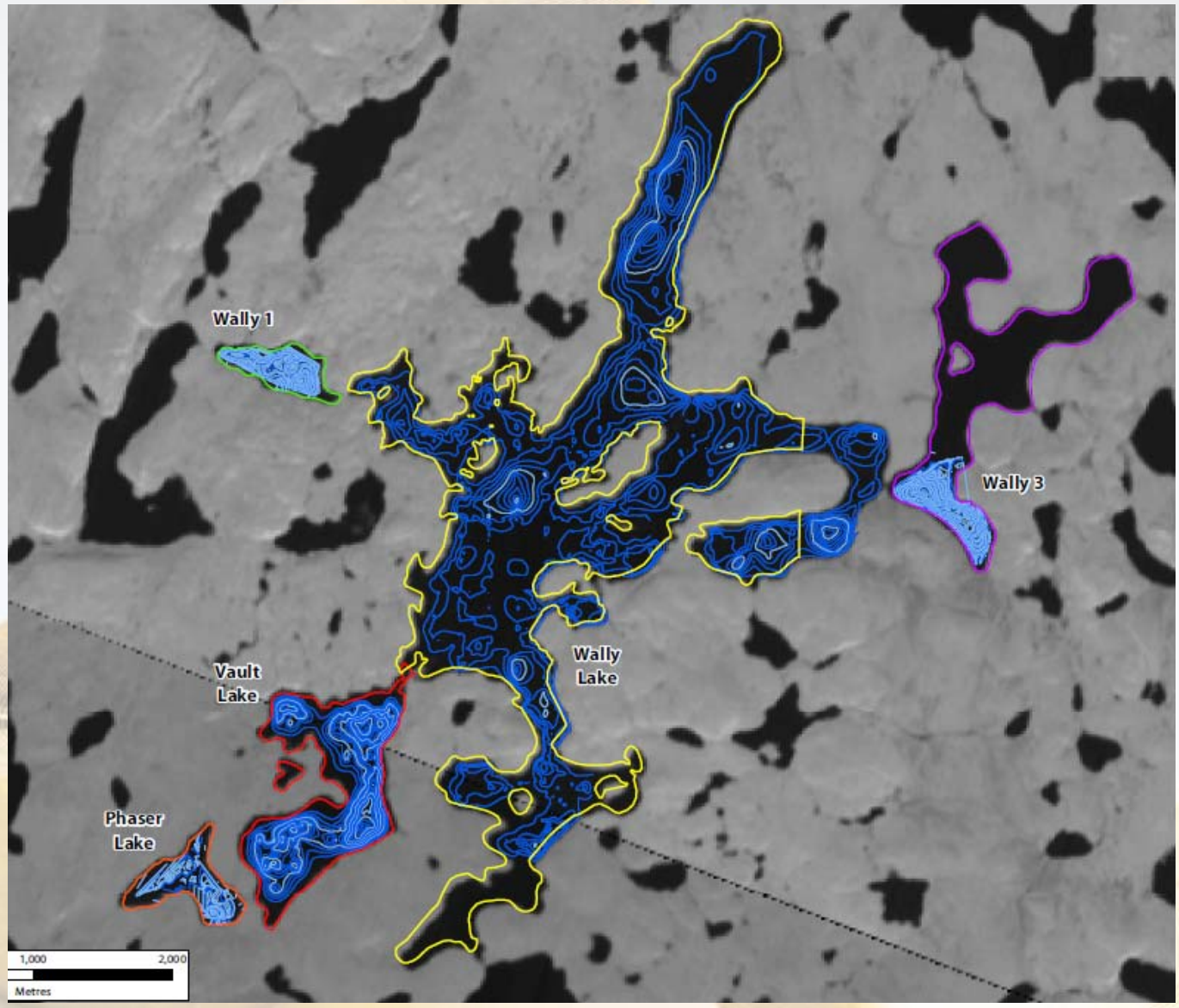


Vault Pit Conceptual Compensation

- A portion of Vault Pit will be backfilled- nearest to Phaser Lake. Creation of lake trout and habitat features- shoals and boulder gardens
- End Pit Basin that connects littoral area of Vault Lake and Phaser Lake converting terrestrial land into shoals and the addition of deep overwintering habitat.
- Improve connectivity between Vault and Wally post operations.
- Fish salvage of Vault and distribute fish between 5 *experimental* lakes.
- Transfer lake trout and round whitefish into Wally, NP2, Dogleg Pond North, and Dogleg Pond (NP1).
  - Research and publication
  - Possible acoustic tagging of lake trout and arctic char
- Introduce arctic char into Vault and Wally? (deep overwintering basin)
- Contingency- connect W3 Lake (deep basin with arctic char) to Vault and Wally.


Total Mine Site Area
15,110,443 m2
3,734 Acres
1,511 Hectares
Additional Area
3,222,870 m2
796 Acres
322 Hectares
Land Use Leases Limit
Previous Limits
Additional Regions
Exploration Camp
22,290 m2
5.5 Acres
2.23 Hectars
WALLT LAKE
VAULT LAKE
PHASER LAKE
TURN LAKE
DRILL TRAIL LAKE
SECOND PORTAGE LAKE
THIRD PORTAGE LAKE

FISHOUT 2013



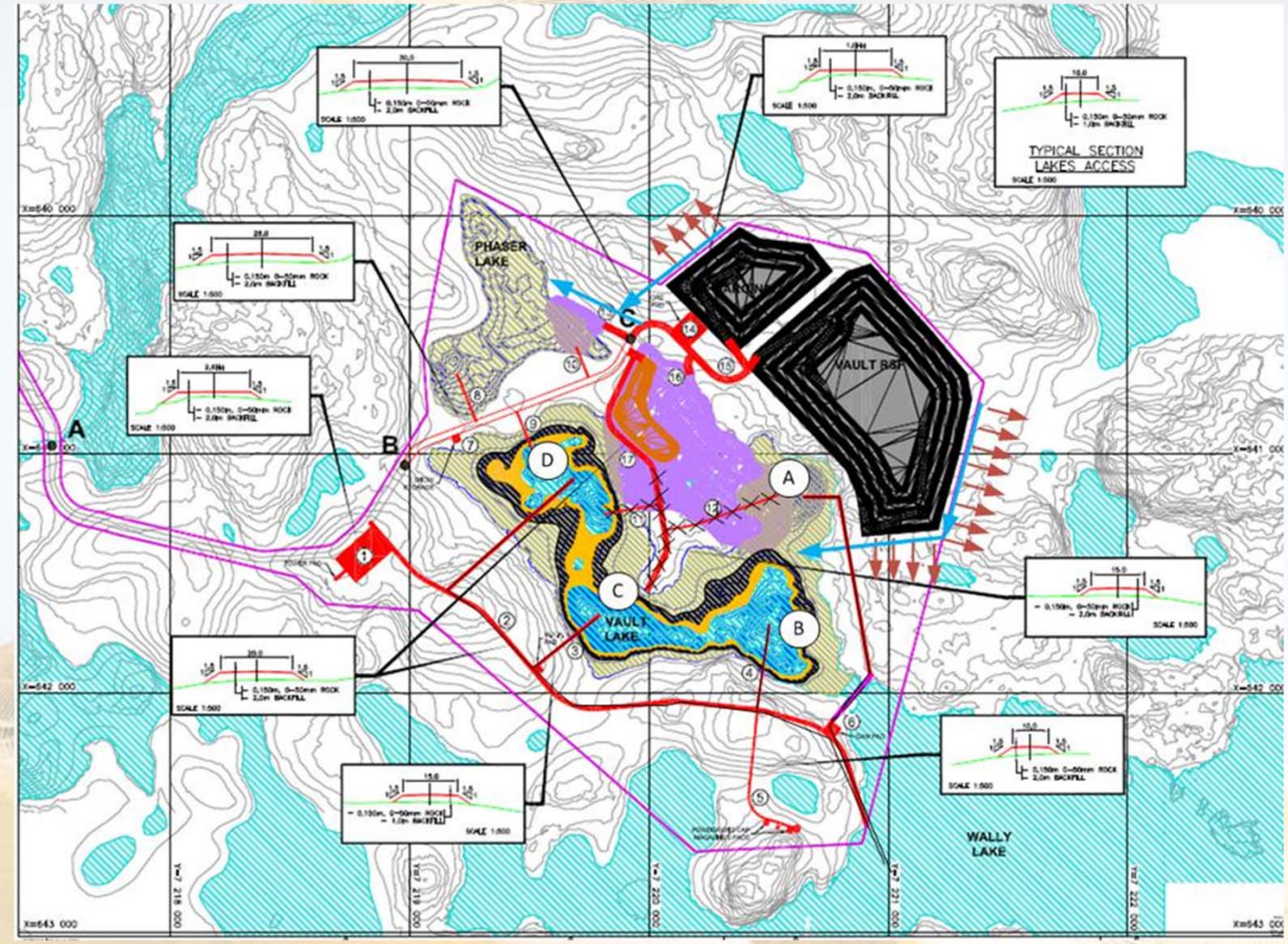
BAY-GOOSE FISHOUT 2010

BAY-GOOSE FISHOUT 2010

BAY-GOOSE FISHOUT 2010

BAY-GOOSE FISHOUT 2010

Proposed Time	Activity	Description
February to April 2013	Vault Dike Construction	Dike construction occurring in shallow, less than 2m water depth. The entire area is frozen to depth. This will isolate Vault Lake from Wally Lake.
May - June 2013	Partial dewatering	Water volume control of freshet inflow and rain event volume control into Vault Lake.
Mid-July 2013	Fishout	Fishout begins with the CPUE and rescue phase- fish community data collection, transfer of fish to Wally Lake and distribution of fish to Baker Lake.
End of August 2013	Fishout	Complete CPUE and rescue phase and transition to final removal phase
End of August 2013	Partial dewatering	Dewatering resumes to create 4 small basins (A, BC and D - See Figure 1-2)
September 2013	Fishout	Final removal phase and fish rescue.
Mid- September 2013	Fishout	Complete fishout
October 2013	Partial Dewatering	Dewatering continues; not completely dewatered until DFO Section 32 is authorized


TYPICAL SECTION
LAKES ACCESS
PHASER LAKE
VAULT PIT
VAULT LAKE
WALLY LAKE
A
B
C
D