Technical Memorandum

Date: 17 March 2008

To: **Amy Liu, David Balint (DFO)**

Cc: **Larry Connell, Rachel Gould (AEM)**

Dan Walker (Golder)

From: **Gary Mann and Randy Baker**

RE: **Fisheries status of Tear Drop and other ponds near Meadowbank Site**

A survey of five small ponds (**Figure 1**) was conducted during 2006 to investigate whether any of these ponds are capable of sustaining fish populations. Previous surveys have examined ponds NP1 (Dogleg Lake), NP2 and NP3, and each of these have viable populations of lake trout and round whitefish (BAER, 2005).

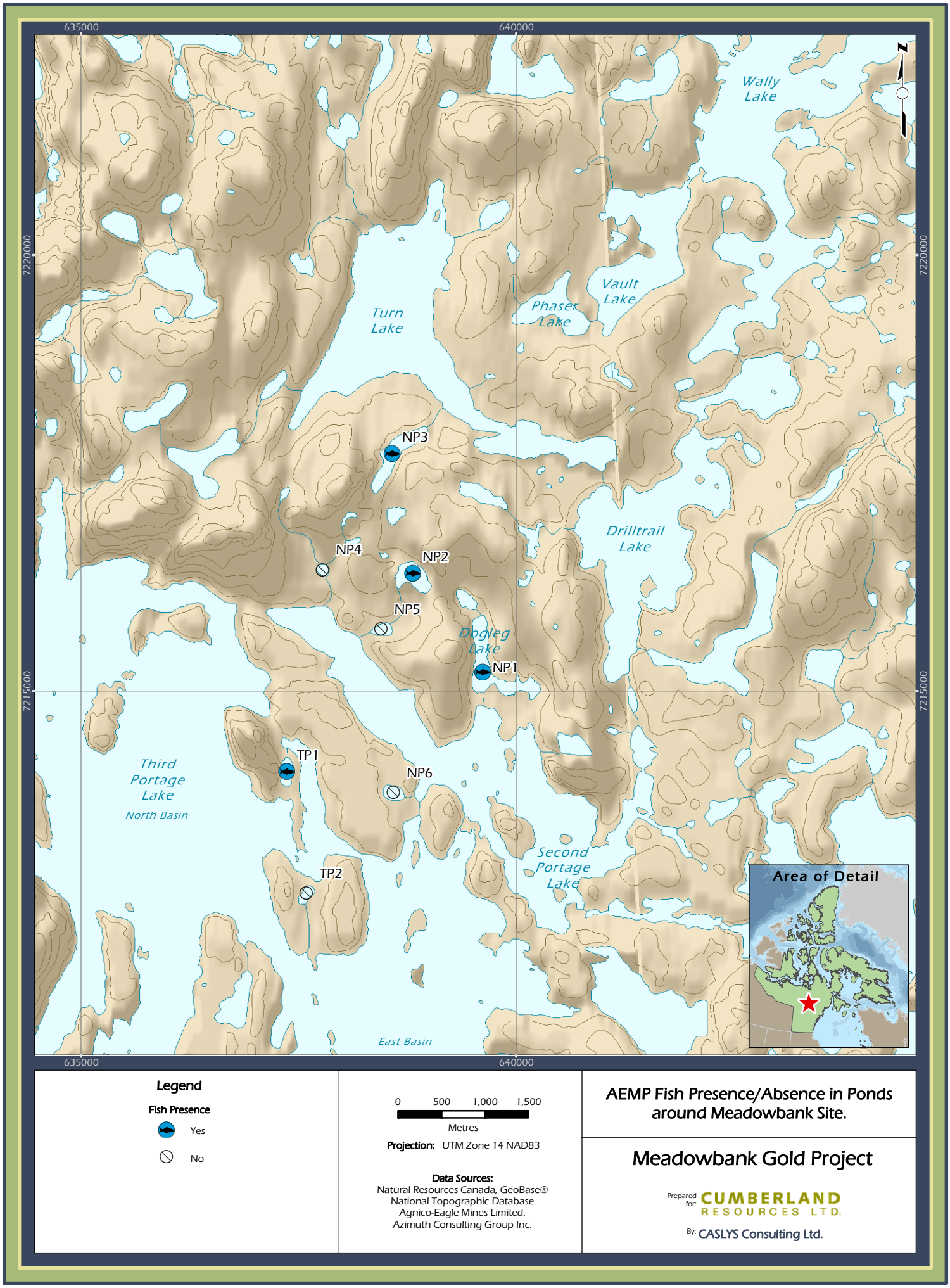
Each pond was first surveyed from the air by helicopter to determine approximate water depth and substrate distribution to evaluate the overall likelihood of presence of fish and the over-wintering potential of the ponds. Ponds were also observed closely for the presence of fish and the degree of connectivity to larger water bodies. If the available information suggested potential fish presence (i.e., sufficient depth and/or good connectivity), gillnets were set to verify the presence/absence and species composition of fish. The results, summarized in **Table 1**, were as follows:

- NP4 is a small isolated pond that drains into the northwest corner of Second Portage Lake via a small braided channel with vegetation as substrate. The pond is only 2 m deep with a boulder (70%) cobble (30%) substrate with little or no transition zone to finer substrates. It does not have sufficient depth to contain fish.
- NP5 also flows into the northwest arm of Second Portage Lake via a small vegetated channel. Depth is approximately 2.7 m with a primarily boulder bottom (70%) with a small amount of cobble (25%) with a small amount of fines. Depth is insufficient to support fish.
- NP6 (Tear Drop) is a very small, isolated pond on the isthmus separating Second and Third Portage lakes. Bottom substrate is predominantly boulder (85%) with some cobble (15%) and no fines. The outlet is poorly defined with no clear channel for fish passage. Depth is only 2.5 m and is insufficient to support fish.
- NP7 (TP1) had a maximum water depth of 7.1 m. There was a steep transition zone between littoral and deep habitat with what appeared to be good spawning/nursery habitat. Multi-mesh gill nets (1.5, 2 and 3 inch mesh net), were set on August 11 to determine the presence of fish. Lake trout (n=7) and Arctic char (n=3) were captured with an average length of 45 cm. A small braided channel connects NP-7 to Third Portage Lake at the north end of the

small arm adjacent to the proposed mine development. Fish are unable to move between the lakes, even during freshet because the connecting channel is shallow and braided with vegetation and exposed soil substrate. The presence of fish indicates that there is sufficient depth for overwintering and other life history requirements.

- Pond NP8 (TP2) is a small, isolated pond situated on 'camp island' that has shallow depth (2.0 m) and a small discharge channel with boulder or subsurface drainage. Bottom substrate is very coarse (70 % boulder, 30% cobble) with no fines. Depth is too shallow to support fish.

Of the eight small ponds that drain into Second or Third Portage Lake in the vicinity of the proposed mine development (**Figure 1**), four contain no fish. Only ponds NP-1 (Dogleg), NP-2, NP-3 and NP-7 have sufficient depth to contain viable fish populations. However, the drainage area of each of these ponds is so small that drainage out of the lakes is negligible. None of the ponds have good hydraulic connections to a larger lake, so the fish populations are isolated and have been for many tens or hundreds of years.



Legend

Fish Presence

- Yes
- No

0 500 1,000 1,500

Metres

Projection: UTM Zone 14 NAD83

Data Sources:
Natural Resources Canada, GeoBase®
National Topographic Database
Agnico-Eagle Mines Limited.
Azimuth Consulting Group Inc.

AEMP Fish Presence/Absence in Ponds around Meadowbank Site.

Meadowbank Gold Project

Prepared for: CUMBERLAND RESOURCES LTD.

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Table 1. Fish presence/absence in ponds around Meadowbank Site.

Location ID	UTM Coordinates	Approx. Max. Depth (m)	Over-wintering Potential	Connectivity	Fish Presence	Source
NP1 (Dogleg)	N7215250 E639500	***??***	Yes	Nil connectivity to 2PL	Yes	BAER 2005
NP2	N7216500 E638750	8	Yes	Nil connectivity to 2PL via NP5	Yes	BAER 2005
NP3	N7217500 E638600	12	Yes	Nil connectivity to Turn Lake	Yes	BAER 2005
NP4	N7216375 E637750	2	None	Poorly connected to SPL by a small cascading/ braided stream with vegetated substrate.	No	unpub 2006[1]
NP5	N7215675 E638500	2.75	None	Poorly connected by a braided stream with vegetation.	No	unpub 2006[1]
NP6 (Tear Drop)	N7213875 E638600	2.5	None	Nil connectivity	No	unpub 2006[1]
TP1	N7214125 E637375	7.1	Yes	Poor connectivity to SPL through a braided channel.Possible passage during freshet.	Yes; LKTR & ARCH	unpub 2006[1]
TP2	N7212650 E637600	2	None	Nil, former stream bed through boulder field	No	unpub 2006[1]

Notes: 1. Data to be published in 2006 AEMP report due on 31 March 2008.