SCREENING REPORT

April 2015

SCREENING REPORT – REVISED PROJECT DESIGN

Type-A Water Licence – Meliadine Gold Project, Nunavut

Submitted to:
Mr. Stephane Robert
Manager Regulatory Affairs
Agnico Eagle Mines Limited
10 200, route de Preissac
Rouyn-Noranda, QC
J0Y 1C0

Report Number: Doc 462-1405283 Ver. 1

Distribution:

1 Copy: Agnico Eagle Mines Limited
1 Copy: Golder Associates Ltd.

Golder Associates

ᓇᐃᓈᖅᓯᒪᔪᖅ

ᐊᒎᑯᒃ ᑯᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᒎᓗᒧᑦ ᐅᔭᕋᖕᓂᐊᕐ ᕿᓕᕆᕙᓪᓕᐊᔪᑦ (ᐱᓕᕆᐊᖅ), 25 ᑭᓛᒥᑕᒥᒃ ᐅᐊᖕᓇᖓᓂᑦ ᐅᖓᕙᒃ ᑎᑭᔪᖅ ᑲᖏᖅᖠᓂᕐᒥᑦ, ᐊᒻᒪ 80 ᑭᓛᒥᑕᒥᒃ ᓂᕆᖅᐸᓯᐊᓂᑦ ᐱᖑᖕ ᓇᖅᐸᓯᐊᓂᑦ ᐅᖓᕙᒃ ᑎᑭᔪᖅ ᐃᒡ ᓗᓕᖁᕐᔪᖕᒥᑦ ᑭᕙᓪᓕᕐᒥᑦ ᓄᓇᕗᒻᒥᑦ. ᐱᖑᖕ ᓇᖅᐸᓯᐊᓂᑦ ᑕᓯᐅᔭᕐᔪᐊᑉ, ᐱᓕᕆᐊᑉ ᐃᓂᖓ ᐸᓂᕐ ᓯᓚᖓᑦᑐᖅ (the Peninsula) ᐊᑯᓐᓂᖔᓂᑦ ᑲᓇᖕ ᓇᐅᑉᓗ ᓂᕿᐅᑉᓗ, ᐊᒻᒪ ᐱᖑᖕ ᓇᖕᖓᓂᑦ ᑕᓯᕐᔪᐊᑉ (63°1'23.8'' N, 92°13'6.42"W) ᐃᓄᐃᑦ ᓇᖕᒥᓂᖅ ᓄᓇᕆᔭᖕᖑᓂᑦ. ᐱᓕᕆᐊᖅ ᑕᓯᕐᔪᐊᕐᒦᑐᖅ Wilson ᐃᒪᕐᒧᑦ ᐊᐅᓚᑦ ᑎᓂᐅᑉ (ᓄᓇᕗᒻᒥᑦ ᐃᒪᕐᒧᑦ ᒪᓕᒐᐃᑦ ᑎᑎᖅᑲᖅ 4).

ᐱᓕᕆᐊᖅ ᐅᑯᐊᖑᔪᑦ ᑕᓪᓚᒪᓂᒃ ᖃᐅᔨᒪᔭᐅᔪᓂᒃ ᒎᓗᖕᓂᑦ: ᑎᕆᓚᓂᐊᖅ, F Zone, Pump, Wesmeg, ᐊᒻᒪ Discovery. ᐊᒡᓂᑯᒃᑯᑦ ᐱᕙᓪᓕᐊᓂᖃᕈᒪᔪᑦ ᒎᓗᖕᓂᑦ ᐊᑉᑑᖅᓯᒪᔫᖕᒍᑦ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐱᕐᑯᑎᕐᔪᐊᖅᑖᕗᓂᐊᖅᑐᓂᒃ ᐱᔭᕆᐊᖃᖅᑐᑦ ᒎᓗᓕᐅᖅᐸᓪᓕᐊᓂᕐᒧᑦ ᕿᓂᖅᓴᐃᓂᖅ ᑲᔪᓯᑎᓪᓗᒍ ᐊᖏᓕᑎᐊᕈᒪᒧᑦ ᖃᐅᔨᒪᔭᐅᔪᑦ ᐅᔭᕋᖕᓂᐊᖅᑕᐅᔪᒃᓴᐃᑦ. ᓯᕗᓪᓕᖅᐸᐅᑎᔭᐅᓯᒪᔪᖅ ᐱᕙᓪᓕᐊᓂᖅ (Phase 1) ᐱᓕᕆᐊᖅᑳᖅᑐᖅ ᐱᕙᓪᓕᐊᓂᐅᔪᒥᒃ ᑎᕆᓚᓂᐊᖅ-ᒥᑦ ᒎᓗᓂᒃ ᐊᑐᖅᓱᑎᒃ ᐊᑐᖅᑕᐅᕙᒃ ᑐᑐᖅᑲᑎᒍᑦ ᐅᒃᑯᐃᖕᖏ ᓗᒍ ᒪᓂᖅᑲᖅ ᐊᒻᒪ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ. ᒪᕐᕉᒃ ᐅᒃᑯᐃᖕᖏᑦ (ᑎᕆᓚᓂᐊᖅ Pit 1 ᐊᒻᒪ ᑎᕆᓚᓂᐊᖅ Pit 2) ᐊᒻᒪ ᐊᑕᐅᓯᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᖕᓂᐊᕐᓂᖅ (ᑎᕆᓚᓂᐊᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ) ᐱᕙᓪᓕᐊᔭᐅᓂᐊᖅᑐᖅ.

Phase 1 ᐅᑭᐅᓅᓂᐊᖅᑐᖅ 8-ᓄᑦ ᐱᑎᐊᕐ ᓗᓂᓗ ᒎᓗᓕᐅᖅᐸᓪᓕᐊᓂᖅ 3,000 ᑕᓐᓂᒃ ᐅᑉᓗᖅ ᐊᑕᐅᓯᖅ (TPD) ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᑎᕆᓚᓂᐊᖅ-ᒥᑦ ᒎᓗᑕᓕᐅᑉ ᕿᑎᐊᓃᑐᒥᒃ, ᑎᑭᐅᑎᓗᓂ 5,000 TPD-ᓄᑦ ᐊᐅᓛᕐ ᓂᖓᓄᑦ ᓯᑕᒪᕆᔭᖕᖓᓂᑦ ᐅᑭᐅᒥᑦ ᐃᓚᐅᓗᑎᒃ ᒪᕐᕉᒃ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖕᖕᖏᒃ ᑎᕆᓚᓂᐊᖅ-ᒥᑦ. Phase 2 ᑐᑭᓕᐅᖅᑕᐅᓯᒪᓂᐊᖅᑐᖅ ᐊᒻᒪ ᐱᔪᖕ ᓇᖅᑎᑕᐅᓗᓂ Phase 1-ᒥ ᑎᓪ ᓗᒍ, ᐊᓯᖏᑦ ᑐᑭᓕᐅᖅᑕᐅᓯᒪᑦ ᑎᐊᓕᖅᐸᑕ ᕿᓂᖅᓴᐃᑎᓪ ᓗᕆᑦ ᐃᑰᑕᐃᓂᒃ ᑯᑦ. ᑕᒪᕐᒥᒃ Phase 1 ᐊᒻᒪ Phase 2 ᑕᐅᑐᒃ ᑕᐅᔪᑦ ᐱᓕᕆᐊᑉ ᐃᓂᖕᖠᓐᓇ ᓂᐊᕐ ᓂᖕᖓ ᓄᑦ ᐅᖃᐅᓯᐅᓚᐅᖅᑐᖅ ᐊᕙᑎᒥᒃ ᐊᒻᒪ ᐃᓄᐃᑦ-ᐱᕈᖅᐸᓪᓕᐊᔪᓪ ᓗ ᖃᐅᔨᓴᐃᓂᐅᓚᐅᖅᑐᒥᑦ ᓄᓇᕗᒻᒥ ᐊᒃ ᑐᖅᓯᓂᕐ ᒧᑦ ᕿᒥᕐ ᕈᔨᖕᖓᓄᑦ (NIRB), ᑕᐃᑲᖖᒍ ᑐᓂᓯᓕᓚᐅᖅᑐᑦ ᐱᓕᕆᐊᒧᑦ ᓇᓗᓇᐃᑯᑕᕐᒥᒃ ᓈᓴᐅᑎᖓ 006.

Phase 1-ᒥᑦ ᐃᓚᐅᔪᖅ ᒥᑭᓂᖅᓴᖅ ᐱᓕᕆᐊᑉ ᐃᓂᖓ (ᑕᐅᑐᒐᖅᖁᓂᕐ ᒧᑦ ᑎᕆᓚᓂᐊᖅ-ᒥᑦ ᒎᓗᓂᒃ ᐊᒻᒪ ᑭᖑᕙᕆᐊᖅᑕᐅᓂᖕᖓᓄᑦ ᐱᕙᓪᓕᐊᓂᖅ ᐊᒥᓯᓂᒃ ᐊᓯᖏᓐᓂᒃ ᒎᓗᖕᓂᑦ ᑭᓯᐊᓂ Phase 2, ᐱᓗᐊᖅᑐᒥᑦ F Zone, Pump, Wesmeg ᐊᒻᒪ Discovery), ᐊᓯᐊᓄᑦ ᓅᑎᓐᓂᖅ ᐃᓚᖏᑦ ᐃᓂᐅᔪᒦᑐᑦ ᐱᖁᑏᑦ ᐃᓐᓃᓴᓂᖅᑕᖅᓗᐊᖁᓇᒍ ᑐᒃᑐᐃᑦ ᐊᑉ ᖁᑎᕆᕙᒃ ᑕᖕᖓᓂᒃ, ᐊᓯᐊᖑᕐ ᓂᖅ ᕿᒪᒃ ᑎᑦ ᑐᓄᑦ ᐊᐅᓚᑦ ᑎᓂᕐ ᒧᑦ ᖃᓄᖅᑑᕈᑎ ᒥᒃ ᓴᕆᐊᖅᑎᓐᓂᕐ ᒧᑦ ᕿᒪᒃ ᑎᑦ ᑐᓄᑦ ᐊᐅᓚᑦ ᑎᕖᐅᑉ ᐃᓂᖓ (TSF), ᐊᒻᒪ ᐊᒃ ᑐᐊᔪᑦ ᐋᕿᐊᖅᓯᓃᑦ ᐃᒪᕐᒥᒃ ᐊᐅᓚᑦ ᑎᓂᕐ ᒧᑦ ᐃᓂᐅᔪᒥᑦ ᐊᖏᓂᖅᓴᐅᔪᒥᑦ ᐱᓕᕆᐊᒥᑦ ᑕᑯᒃ ᓴᐅᑎᑕᓚᐅᕐ ᓂᖓᑦ ᑭᖑᓪ ᓕᖅᐹᖅ ᐊᕙᑎᒧᑦ ᐊᒃ ᑐᖅᓯᓂᕐ ᒧᑦ ᑎᑎᖅᑲᒥᑦ (FEIS). ᑖᑉ ᑯᐊ ᐱᓕᕆᐊᒧᑦ ᐋᕿᐊᖅᓯᓂᐅᔪᑦ ᐱᓕᕆᐊᓇᔪᒪᑉ ᓗᕆᑦ ᐃᓯᒫᓘᑕᐅᓚᐅᖅᑐᑦ ᐊᕙᑎᒥᒃ ᖃᐅᔨᓴᐃᓂᖅᑕᖅᖢᑎᓪ ᓗᒍ ᐊᒻᒪ ᐃᓅᖕ ᓂᒃ ᐅᖅᑲᖅᑎᖅᑲᑦ ᑕᐅᑎᓂᖅᑲᖅᑎᓪ ᓗᕆᑦ ᐊᒻᒪ ᐱᐅᓯᕚᓪ ᓕᖅᑎᓐᓂᕐ ᒧᑦ ᑕᒪᐃᓂᓗᒃ ᑖᖅ ᐱᕈᖅᐸᓪᓕᐊᓂᕐ ᒧᑦ ᐃᓗᐊᖅᑐᑦ ᐱᓕᕆᐊᒥᑦ ᐊᑐᕐ ᓗᕆᑦ ᓇᓕᐊᖕᓂᑦ ᐱᕙᓪᓕᐊᓂᐅᔪᒃ ᑯᑦ.

ᐱᓕᕆᐊᒥᑦ ᖃᓄᐃᓕᐅᖅᐸᓪᓕᐊᓂᐅᔪᑦ ᐅᕙᓃᓐᓂᑦ ᐃᓗᐊᓐᓂᑐᑦ ᐱᓕᕆᖃᑎᖃᕐ ᓂᖃᖅᑐᑦ ᐊᕙᑎᒥᒃ ᐊᒻᒪ ᐃᓄᐃᑦ-ᐱᕈᖅᐸᓪᓕᐊᓂᐅᔪᒥᑦ ᐃᒪᓐᓇᐃᑑᔪᑦ:

- ᓈᑎᓇᓂᖅ ᐱᖁᑎᓂᒃ ᐱᓕᕆᐊᑉ ᐃᓂᐊᓂᑦ ᐊᒻᒪ ᓈᑎᓂᖅ emulsion-ᓕᕐ ᔪᑎᒥᒃ ᓯᓚᑖᓄᑦ ᖃᐅᔨᓴᕐ ᕕᐅᔾᔭᑉ;
- ᒥᒃ ᓴᕆᐊᕐ ᓗᒍ ᐊᒃ ᑖᖅᑕᐅᔪᑦ ᐅᔭᖅᑲᐃᑦ ᑎᕆᓚᓂᐊᖅ-ᒥᑦ ᐱᔭᐅᔪᑦ ᐊᒻᒪ ᐃᓕᖑᕐ ᓗᕆᑦ ᒥᑭᓂᖅᓴᒧᑦ ᐃᓂᐅᔪᒧᑦ;
- ᓈᓪ ᓗᕆᑦ ᐸᓂᖅᑐᑦ ᑲᑎᓯᒪᔪᑦ ᕿᒪᒃ ᑎᑦ ᑐᑦ ᐃᓕᖑᕐ ᓗᕆᓪ ᓗ ᒥᑭᓂᖅᓴᒧᑦ ᐃᓂᐅᔪᒧᑦ ᓄᓇᒥᑦ; ᐊᒻᒪ
- ᐱᕕᖅᑲᖅ ᓂᖅ ᒧᑦ ᓄᖅᑲᖓᓂᖅ ᐱᕙᓪᓕᐊᓂᖓᓄᑦ F Zone, Pump, Wesmeg, ᐊᒻᒪ Discovery-ᒥᑦ ᒎᓗᐃᑦ.

FEIS ᐱᓕᕆᐊᖑᓚᐅᖅᑐᖅ ᑐᓂᐅᑕᐅᓂᐊᕐ ᓂᖅ ᒧᑦ NIRB-ᑯᓐᓄᑦ ᖃᐅᔨᓴᐃᓂᖅᑲᓚᐅᖅᑐᖅ ᐱᓕᕆᐊᒥᒃ ᐊᑐᖅᓱᑎᒃ ᐱᐅᖏᑖᒃ ᑰᖓᔭᕐ ᓂᒃ ᑯᑦ ᐅᕙᓃᓐᓂᑦ ᐊᖏᑖᒥᒃ ᐊᕙᑎᒧᑦ ᐊᒃ ᑐᖅᓯᓂᐅᓇᔭᕐ ᓂᒃ ᑯᑦ (ᐊᒡᓂᑯᒃ ᑯᑦ 2014). ᐱᔾᔪᑎᒋᔭᖓ

ᐱᓕᕆᐊᒥᒃ ᕿᒥᕐᕈᓂᕐᒧᑦ ᐅᓂᑉᑳᖅ ᑐᓂᓯᓂᕐᒧᑦ ᑕᑯᒃᓴᐅᔪᒃᑯᑦ ᑎᑎᖅᑲᒥᒃ ᐊᕙᑎᒧᑦ ᐊᒪᓗ ᐃᓄᖕᓄᑦ ᖃᓄᐃᖕᓕᕈᑏᑦ ᐱᓕᕆᐊᒥᒃ ᖃᐅᔨᓴᐃᓂᕐᒥᑦ FEIS-ᒥᑦ ᐊᔾᔨᖃᕐᓂᐊᕐᒪᑕ ᐊᒪᓗ ᐊᑐᖅᑑᓗᑎᒃ Phase 1-ᒧᑦ.

ᕿᒥᕐᕈᓂᖅ ᐊᑐᓚᐅᖅᑐᖅ ᖃᐅᔨᓴᐃᓂᕐᒧᑦ ᐱᐅᓯᕆᐊᖅᓯᓂᕐᓄᑦ ᐱᓕᕆᐊᒥᒃ ᐊᔾᔨᖃᖅᑐᖅ ᐊᑐᖅᑕᐅᔪᓂᒃ FEIS-ᒥᑦ (ᐊᒡᒌᒃᑯᑦ 2014). ᖃᐅᔨᓴᐃᓂᖅ ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓂᕐᓂᑦ ᐱᐊᓂᒃ ᑕᐅᓚᐅᖅᑐᖅ ᐃᓕᑕᖅᓯᓂᕐᒧᑦ ᐊᒃᑐᐊᓂᖃᖅᑐᓂᒃ ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓂᐅᑐᐃᓐ ᓇᕆᐊᓕᖕᓂᒃ ᐱᓕᕆᐊᒥᒃ ᐱᐅᓯᕆᐊᖅᓯᒃ ᑲᓐᓂᕐᓂᐅᔪᓂᒃ ᐃᒃᐱᕆᔭᐅᔪᑦ ᓄᓇᒦᓕᖕᖏᓄᑦ ᐃᓕᕆᔭᐅᔪᑦ VEC-ᓄᑦ ᐅᕙᓃᑦ ᐃᒃᐱᕆᔭᐅᔪᑦ ᐃᓄᐃᑦ-ᐱᕈᖅᐸᓪᓕᐊᔪᓄᓪᓗ ᐃᓕᕆᔭᐅᔪᑦ VSEC-ᓄᑦ, ᐊᑐᖅᑕᐅᓗᐊᖅᑐᓂᒃ ᐊᑉᖁᑎᕆᔭᐅᔪᓂᒡ ᓘᓃᑦ ᐃᓱᒪᕆᔭᖅᖢᓂ. ᖃᓄᐃᓕᐅᖅᐸᓪᓕᐊᓂᐅᔪᑦ ᓯᖁᓯᐊᖕᖏᐸᑕ, ᐊᔾᔨᖏᓪᓚᖓᓂᑦ ᐊᕙᑎᒋᔭᐅᔪᒥᑦ, ᐊᒪᓗ ᑕᒪᑐᒧᖓ ᖃᐅᔨᓴᖅᑕᐅᓂᖓᑐᑦ FEIS-ᒥᑦ, ᓇᓕᑐᐃᓐᓇᖕᖏ 'ᐊᒃᑐᐊᓂᖃᖕᖏᑐᑦ' ᐊᑉᖁᑎᖕᖏ ᐊᑐᖅᑕᐅᓗᐊᖅᑑᓕᕐᓗᓂᑦ ᐅᕙᓃᑦ ᒥᑭᔪᒃᑯᑦ ᐊᑉᖁᑎᕆᔭᐅᓕᕝᔫᖕᖏᒪᑕ, ᑕᐃᒪᓐᓇᒧᓪᓗ ᐃᓱᒪᕆᔭᐅᖕᖏᓚᐅᖅᑐᑦ ᐱᓕᕆᐊᒥᒃ ᕿᒥᕐᕈᔭᐅᓂᕐᒧᑦ.

ᐃᒃᐱᕆᔭᐅᔪᑦ ᓄᓇᒦᓕᖕᖏᓂᑦ ᐃᓕᕆᔭᐅᔪᑦ ᕿᒥᕐᕈᓂᕐᒥᑦ ᐃᓚᐅᔪᑦ: ᐊᓂᖅᓵᖅᑐᖅᑕᑦ, ᓂᐱᖃᕐᓃᑦ, ᖁᐊᖑᐃᓐᓇᐅᔭᖅᑐᑦ, ᐃᐸᔪ, ᐱᕈᖅᑐᐃᑦ, ᓂᕐᔪᑏᑦ ᐊᒪᓗ ᑎᖕᒥᐊᑦ, ᐃᒪᐅᑉ ᖃᓄᐃᓐᓂᖓ ᐊᒪᓗ ᖃᓄᑎᒋᐅᓂᖓ, ᐃᒪᐅᑉ ᖃᓄᐃᓕᐅᕐᓂᖓ ᐊᒪᓗ ᐃᒪᐅᑉ ᖃᓄᑎᒋᐅᓂᖓ, ᐃᒪᐅᑉ ᖄᖓ ᐊᒪᓗ ᑕᓯᐅᑉ ᓇᑎᐊᓃᑦᑐᑦ ᖃᓄᐃᓐᓂᖓ, ᐊᒪᓗ ᐃᖃᓗᐃᑦ ᐃᓂᖓ. ᑕᒪᐃᓂᒃᑯᑦ ᑖᖅ VEC, ᖃᐅᔨᓴᐅᓚᐅᖅᑐᖅ ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓂᐅᔪᑦ ᐱᔾᔪᑎᖃᖅᑐᑦ Phase 1-ᒥᑦ ᐱᓕᕆᐊᖅ ᐱᐅᓯᕆᐊᖅᑕᐅᓂᖓᓄᑦ ᐊᑦᑎᖕᓂᖅᓴᐅᓚᐅᖅᑐᑦ ᐅᕙᓃᑦ ᓯᖁᓯᙱᑎᒃ ᓇᓚᐅᑖᖅᑕᐅᔪᓂᑦ ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓂᐅᔪᓄᑦ FEIS-ᒥᑦ. Phase 1 ᐱᓕᕆᐊᖅ, ᒥᒃᓵᓂᐊᖅᓗᒍ ᐃᓂᐅᔪᖅ, ᒥᒃᓵᓂᐊᖅᑎᑦᑎᔪᖅ ᐊᖓᓂᐅᔪᒥᒃ ᑕᒪᐃᓄᖅᑲᔭᖅ ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓂᐅᔪᓂᒃ. ᐊᒪᓗ, ᖃᐅᔨᓴᐅᔪᑦ FEIS-ᒥᑦ ᑕᑯᒃᓴᐅᑎᑦᑎᔪᑦ 'ᐱᐅᖕᓖᒃ ᑰᕿᔭᕐᓂᒃᑯᑦ' ᐊᒪᓗ ᕿᒪᒃᑎᑦᑐᓄᑦ ᐊᖕᖑᔪᒥᒃ ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓂᑦ ᐃᓱᒪᕆᔭᐅᔪᖕᓇᖅᑐᑦ ᓱᓕ ᐊᖕᖑᔫᔾᔫᖕᖏᓂᖕᖏᓄᑦ.

VSEC ᐃᓱᒪᕆᔭᐅᔪᑦ ᕿᒥᕐᕈᓂᕐᒥᑦ ᐃᓚᐅᔪᑦ: ᐱᖅᑯᓯᒃᑯᑦ ᐊᒪᓗ ᓂᐅᕕᐊᒃᓴᖅᓂᕐᒧᑦ ᒪᖃᐃᑕᐅᔪᑦ, ᓄᓇᒥᒃ ᐊᑐᕐᓂᖅ ᐊᒪᓗ ᓃᑦᑕᕐᓂᖅ, ᐱᓕᕆᐊᖃᕐᓂᖅ, ᖃᑉᓯᐅᓂᖕᖏ ᖃᓄᐃᓐᓂᖕᖏ, ᐱᖁᑏᑦ ᐊᒪᓗ ᐱᕈᖅᐸᓪᓕᐊᓂᐅᑉ ᐱᕈᕐᓂᖓ, ᐱᑖᕐᓂᖅ, ᒐᕙᒪᒃᑯᑦ ᐅᑭᐅᕆᓴᖕᖑᔭᑕ ᓇᓃᓐᓂᖓ, ᐊᒪᓗ ᐃᑦᑕᕐᓂᑕᐃᑦ ᑎᑎᕋᖅᑕᐅᓯᒪᓂᖕᖏ. ᑕᒪᐃᓄᑦ VSEC-ᓄᑦ, ᖃᐅᔨᓴᐅᓚᐅᖅᑐᖅ ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓃᑦ ᐱᔾᔪᑎᖃᖅᑐᑦ ᐱᓕᕆᐊᒥᑦ ᐱᐅᓯᕆᐊᖅᑎᑦᑎᓂᕐᒧᑦ ᐊᔾᔨᒋᔭᖕᖏ ᓇᓚᐅᑖᖅᑕᐅᔪᓂᒃ ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓂᐅᔪᓂᒃ FEIS-ᒥᑦ. ᐱᐅᔪᑦ ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓂᐅᔪᑦ ᐱᖅᑯᓯᕆᓴᐅᔪᑎᒍᑦ ᓄᓇᒥᒃ ᐊᑐᕐᓂᕐᒧᑦ, ᓄᓇᓕᖕᒥᑦ ᐱᓕᕆᐊᓄᑦ, ᐱᕈᖅᐸᓪᓕᐊᔪᓕᕆᓂᕐᒧᑦ ᐊᒪᓗ ᐃᓄᖕᓄᑦ ᑮᓇᐅᔭᓕᐅᕈᑏᑦ ᓇᓚᐅᑖᖅᑕᐅᔪᑦ ᓱᓕ ᐱᓕᕆᐊᒧᑦ.

ᓇᐃᓈᖅᓗᒍ, ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓂᕐᒧᑦ ᖃᐅᔨᓴᐃᓂᖅ ᐊᒪᓗ ᓇᓚᐅᑖᖅᑕᐅᔪᑦ ᐃᓗᐊᓂᑦ FEIS ᐊᔾᔨᒋᔭᖕᖏ ᐊᒪᓗ ᐊᑐᖅᓗᑎᒃ Phase 1-ᒥᑦ ᐱᕙᓪᓕᐊᓂᕐᒥᑦ. ᖃᐅᔨᓴᐅᔪᑦ ᐊᕙᑎᒧᑦ ᐊᒪᓗ ᐃᓄᖕᓄᑦ ᖃᓄᐃᖕᓕᖅᑎᑦᑎᓂᐅᔪᑦ ᐱᓕᕆᐊᒥᒃ ᖃᐅᔨᓴᐃᓂᕐᒥᑦ FEIS-ᒥᑦ ᐊᑐᖅᑐᑦ ᐊᒪᓗ ᓈᒻᒪᒃᓗᑎᒃ ᐱᑦᓗᑎᒃ ᑐᒃᑯᑦ ᐱᐅᓯᕆᐊᖅᑎᑦᑎᓂᖃᕐᓂᐊᕐᓗᓂ Phase 1-ᒥᑦ ᐊᒪᓗ ᐊᑐᖅᑑᑉᓗᑎᒃ ᓯᓕ.

EXECUTIVE SUMMARY

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Gold Project (the Project), located approximately 25 kilometres north of Rankin Inlet, and 80 kilometres southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson Bay, the Project site is located on a peninsula between the east, south, and west basins of Meliadine Lake (63°1'23.8'' N, 92°13'6.42"W) on Inuit Owned Land. The Project is located within the Meliadine Lake watershed of the Wilson Water Management Area (Nunavut Water Regulations Schedule 4).

The Project is composed of five known gold deposits: Tiriganiaq, F Zone, Pump, Wesmeg, and Discovery. AEM proposes to develop these deposits in a phased approach to manage the initial capital investment required and to allow production to commence while ongoing exploration continues to increase the known ore reserve. The initial phase of development (Phase 1) focuses on the development of the Tiriganiaq gold deposit using a traditional open-pit mining method and underground mining. Two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one underground mine (Tiriganiaq Underground) will be developed.

Phase 1 encompasses an 8 year time period and starts commercial production as a nominal 3,000 tonne per day (TPD) underground mine centered on the Tiriganiaq deposit, expanding to a nominal 5,000 TPD mine in operating Year 4 with the addition of the two Tiriganiaq open pits. Phase 2 will be defined and permitted during Phase 1, once the other deposits are better defined through ongoing exploration drilling. Both Phase 1 and 2 are envisioned to be within the Project that was the subject of the environmental and socio-economic assessment conducted by the Nunavut Impact Review Board (NIRB), culminating in the issuance of Project Certificate No. 006.

Phase 1 incorporates a smaller Project footprint (due to the focus on the Tiriganiaq deposit and deferral of the development of many of the other deposits until Phase 2, specifically F Zone, Pump, Wesmeg and Discovery), relocation of some of the site infrastructure to reduce interference with an historic caribou migration corridor, a change in the tailings management strategy to reduce the Tailings Storage Facility footprint, and associated revisions to water management at the site from the larger Project as presented in the Final Environmental Impact Statement (FEIS). These Project revisions were made in consideration of Inuit Qaujimajatuqangit (traditional knowledge), to address concerns that arose during consultation and the environmental assessment process, and to improve the overall economic feasibility of the Project by applying a phased development approach.

Refinements to Project activities or components that interact with environmental and socio-economic components are as follows:

- movement of infrastructure within the Project footprint and movement of the emulsions plant outside the assessed footprint;
- decrease of waste rock tonnage from the Tiriganiaq deposit and deposition over a smaller footprint;
- move to dry stack tailings and deposition over a smaller footprint on land; and
- temporal delay in the development of F Zone, Pump, Wesmeg and Discovery deposits.

The FEIS prepared for the NIRB assessed the Project under a scenario that was considered worst case or greatest environmental impact (Agnico Eagle 2014). The goal of this Project Screening report is to provide

transparent documentation that environmental and social effects from the Project assessed in the FEIS are equally relevant and applicable to Phase 1.

The screening approach used to assess the refinements to the Project is consistent with the methods used in the FEIS (Agnico Eagle 2014). An analysis of effects pathways was completed to identify linkages of potential effects of the Project refinements to the Valued Ecosystem Components (VECs) or Valued Socio-Economic Components (VSECs), with primary and minor pathways considered. As the Project activities remain the same, in a similar environment, and for the same purpose as assessed in the FEIS, none of the 'no linkage' pathways become primary or minor pathways, and subsequently were not considered relevant to this Project screening.

Valued ecosystem components considered in the screening include: air quality, noise levels, permafrost, soil, vegetation, wildlife and birds, groundwater quality and quantity, hydrology and water quantity, surface water and sediment quality, and fish habitat. For all VECs, it was concluded that effects associated with the Phase 1 Project refinements were lower than or remain unchanged from the predictions of effects presented in the FEIS. The Phase 1 Project, with a reduced footprint, decreased the magnitude for the majority of the effects. Consequently, the conclusions made in the FEIS represent a 'worst case' scenario and the residual adverse effects are still considered not significant.

The VSECs considered in the screening include: traditional and commercial harvesting, land use and mobility, employment, population stability, gross domestic product and economic growth, investment, government fiscal situation, and archaeological records. For all VSECs, it was concluded that effects associated with the Project refinements are consistent with the predictions of effects presented in the FEIS. Positive effects to traditional land use, local employment, economic activity and public revenue are still predicted for the Project.

In summary, the effects analysis and predictions provided in the FEIS are equally relevant and applicable to the development of Tiriganiaq (i.e., Phase 1). The conclusions regarding environmental and social effects from the Project assessed in the FEIS are applicable and sufficiently robust to accommodate the refinements to Phase 1 and are subsequently still valid.

Table of Contents

TABLES

FIGURES

APPENDICES

ACRONYMS AND UNITS

AANDC	Aboriginal Affairs and Northern Development Canada
Agnico Eagle	Agnico Eagle Mines Limited
AWAR	All-weather Access Road
CCME	Canadian Council of Ministers of the Environment
CP	Collection Pond
CRA	Commercial, Recreational, or Aboriginal
ELC	Ecological Land Classification
FEIS	Final Environmental Impact Statement
GN	Government of Nunavut
ha	hectare
IQ	Inuit Qaujimajatuqangit (traditional knowledge)
KIA	Kivalliq Inuit Association
km	kilometre
LSA	Local Study Area
m	metre
MMER	Metal Mining Effluent Regulations
Mt	million tonne
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
Project	Meliadine Gold Project
RSA	Regional Study Area
SO_2	Sulphur Dioxide
TPD	tonnes per day
TSF	Tailings Storage Facility
TSS	Total Suspended Solids
VEC	Valued Ecosystem Component
VSEC	Valued Socio-Economic Component
WRSF	Waste Rock Storage Facilities

1.0 INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Gold Project (Project), located approximately 25 kilometres (km) north from Rankin Inlet, and 80 km southwest from Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson's Bay, the proposed Project site is located on a peninsula (the Peninsula) between the east, south, and west basins of Meliadine Lake (63°01'23.8"N, 92°13'6.42"W), on Inuit Owned Land.

The Project assessed in the Final Environmental Impact Statement (FEIS) is composed of five gold deposits: Tiriganiaq, F Zone, Pump, Wesmeg, and Discovery (Agnico Eagle 2014). Agnico Eagle proposes to develop these deposits in a phased approach to better manage the initial capital investment required and to allow production to commence while ongoing exploration continues to increase the known ore reserve. The initial phase of development (Phase 1) focuses on the development of the Tiriganiaq gold deposit using a traditional open-pit mining method and underground mining. Two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one underground mine (Tiriganiaq Underground) will be developed. Phase 1 encompasses an 8 year time period and starts commercial production as a nominal 3,000 tonnes per day (TPD) underground mine centered on the Tiriganiaq deposit, expanding to a nominal 5,000 TPD mine in operating Year 4 with the addition of the two Tiriganiaq open pits. Phase 2 will be defined and permitted during this 8 year Phase 1 period, once the other deposits are better defined through ongoing exploration drilling. Both Phase 1 and 2 are envisioned to be within the larger Meliadine Gold Mine Project that was the subject of the environmental and socio-economic assessment conducted by the Nunavut Impact Review Board (NIRB), culminating in the issuance of Project Certificate No. 006.

Phase 1 incorporates a smaller Project footprint (due to the focus on the Tiriganiaq deposit and deferral of the development of many of the other deposits until Phase 2, specifically F Zone, Wesmeg, Pump, and Discovery), relocation of some of the site infrastructure to reduce interference with an historic caribou migration corridor, a change in the tailings management strategy to reduce the Tailings Storage Facility (TSF) footprint, and associated revisions to water management at the site from the larger Project as presented in the FEIS (Agnico Eagle 2014). These Project revisions were made in consideration of Inuit Qaujimajatuqangit (IQ; traditional knowledge), to address concerns that arose during consultation and the environmental assessment process, and to improve the overall economic feasibility of the Project by applying a phased development approach.

Proposed Phase 1 mining facilities include a plant site, an ore stockpile site, two open pits, TSF, waste rock storage facilities (WRSF), water diversion infrastructure, containment dikes, and a freshwater intake and effluent discharge point in Meliadine Lake. A general location plan for the proposed mine is shown in Figure 1-1, with site infrastructure highlighted in Figure 1-2.

The FEIS prepared for the NIRB assessed all the known proposed elements and phases of the Project under a scenario that was considered worst case or greatest environmental impact by Agnico Eagle (Agnico Eagle 2014). The goal of this Project Screening report is to provide transparent documentation that environmental effects from the larger Project assessed in the FEIS are equally relevant and applicable to Phase 1.

For the purposes of this document, reference to the development of the Tiriganiaq deposit is herein referred to as Phase 1, and reference to the FEIS Project or Project assessed in the FEIS encompasses the larger Project that was subject to the NIRB environmental assessment process.

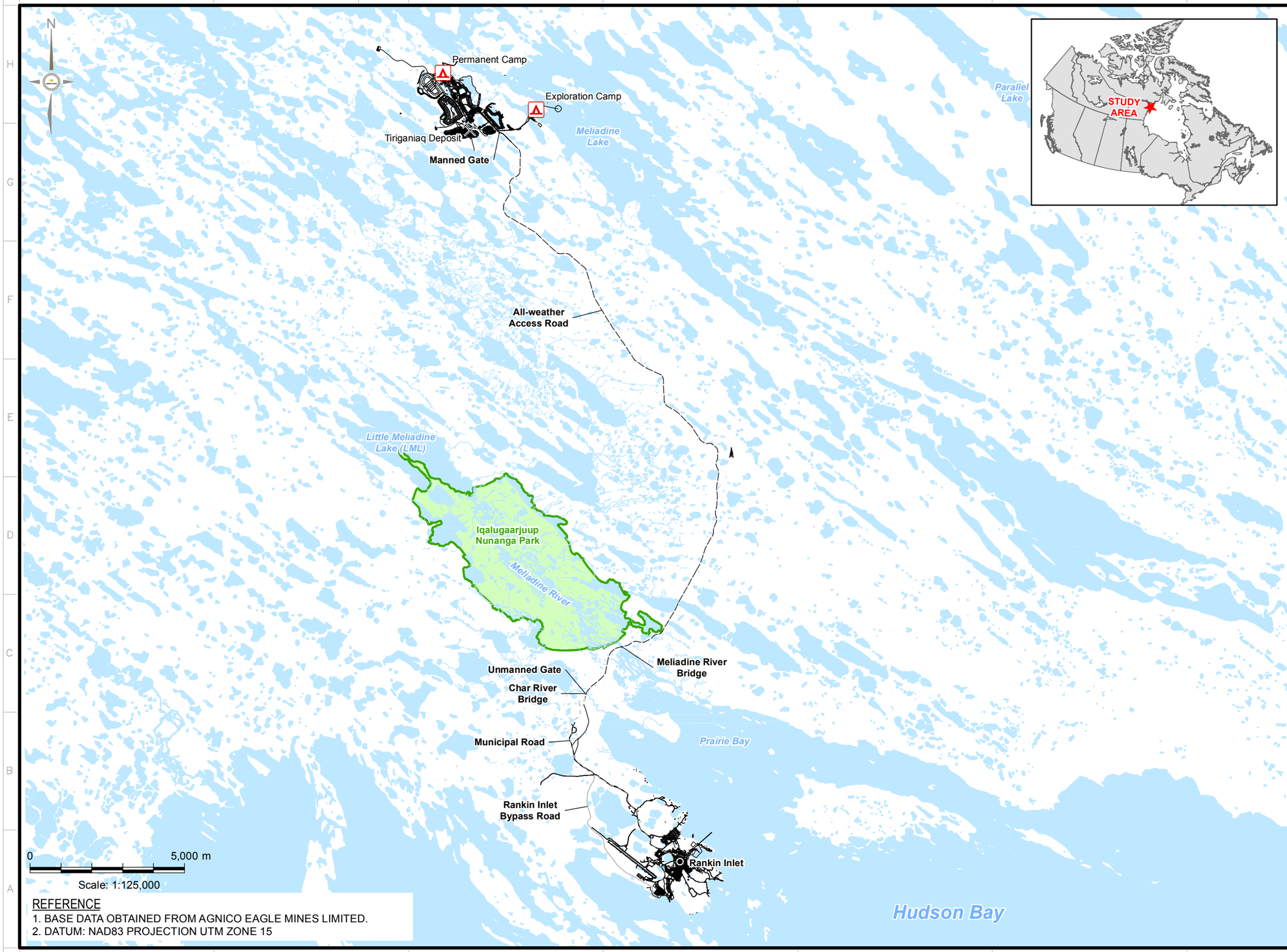
The following documents submitted as part of the Type A Water Licence Application are relevant to this report:

- Main Application Document;
- Mine Plan;
- Water Management Plan and supporting appendices including the Near-Field Modelling and Diffuser Design and the Mine Site Water Quality Predictions; and
- Mine Waste Rock and Tailings Management Plan.

A summary of the regulatory considerations applicable to Phase 1 are discussed in Section 2.0, with a brief summary of the infrastructure and design refinements presented in Section 3.0. Conditions of the existing environment are discussed in Section 4.0. The approach used in this screening is provided in Section 5.0, with the results of the environmental screening presented in Section 6.0 and conclusions in Section 7.0.

NO. DESSIN
DRAWING NO.

FORMAT ANSI B – 11x17



LEGEND

- CAMP
- PROPOSED MINE SITE
- ALL-WEATHER ACCESS ROAD (AWAR)
- ROAD - NEW
- ROAD - EXISTING
- WATERCOURSE
- WATERBODY
- TERRITORIAL PARK

REFERENCE

1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

AGNICO EAGLE

Golder Associates

–	–
–	–
–	–
–	–
–	–
TITRE / TITLE	# DWG

DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
REV	DESCRIPTION	DATE	PAR BY

REVISIONS

DESSINÉ PAR DRAWN BY	CDB	DATE 12–02–2015
VÉRIFIÉ PAR CHECKED BY	LY	15–03–2015
APPROUVÉ PAR APPROVED BY	DRW	15–03–2015
No. PROJET PROJECT NO.	1405283	
DATE	–	

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
FIGURE 1–1 GENERAL PROJECT
SITE LAYOUT LOCATION PLAN

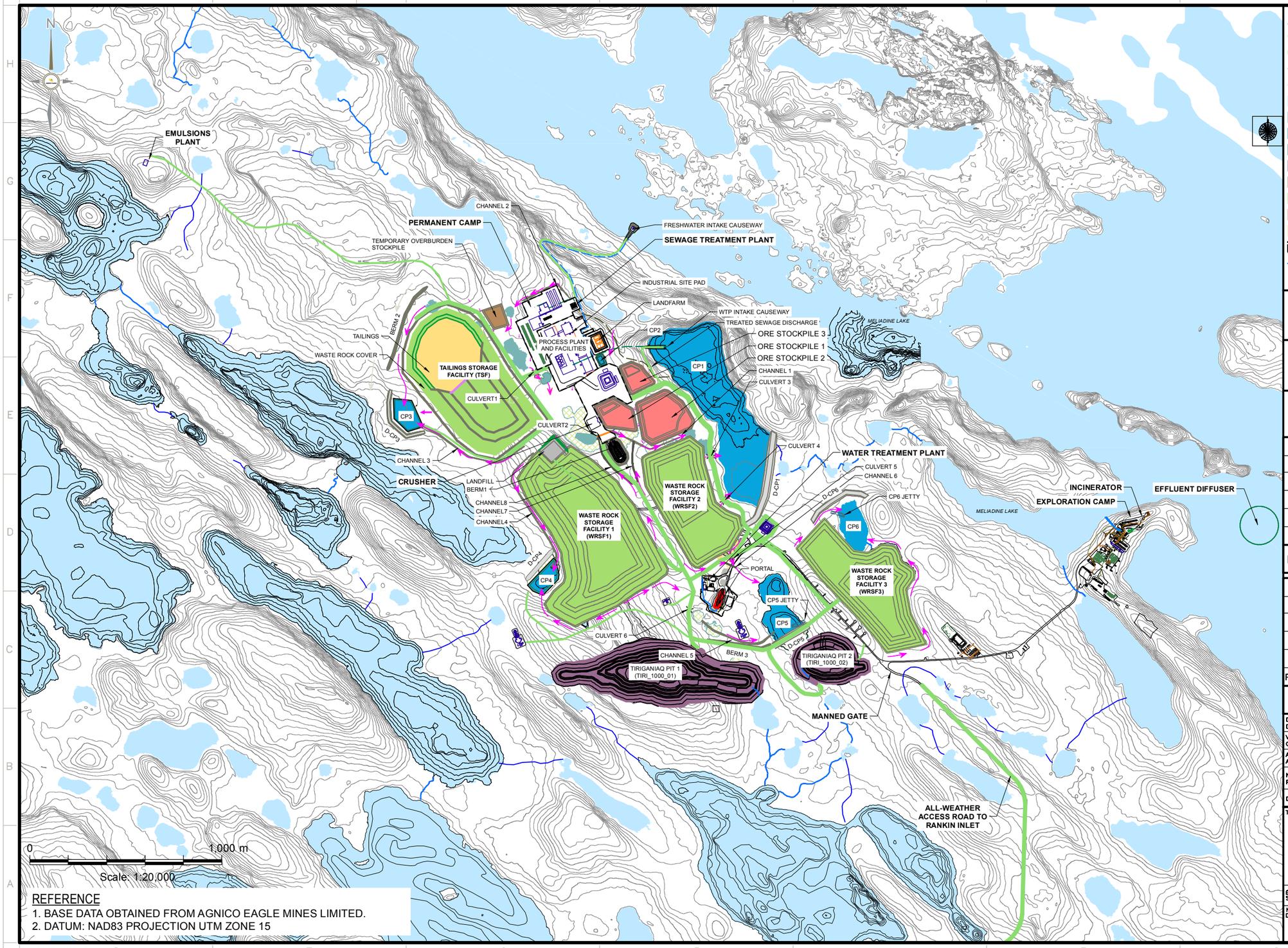
ECHELLE/ SCALE	1:125,000	FICHIER FILE	.DWG
No. DESSIN/ DRAWING NO.	–	REVISION 0	FEUILLE/SHT 1 / 1

AE–CART–ANSI B

N:\Client\Agnico_Eagle_Mines_Ltd\Meliadine_Gold_Project\99_PROJECTS\1405283_Meliadine_Water_License\02_PRODUCTION\3000_Application_Preparation\MXD\3200\Report\Project_Screening_Report\1405283_Figure_1–1_General_Project_Site_Layout_Location_Plan.mxd

NO. DESSIN
DRAWING NO.

FORMAT ANSI B – 11x17



LEGEND

- SERVICE ROAD
- HAUL ROAD
- TOPOGRAPHIC CONTOUR (5 m INTERVAL)
- TOPOGRAPHIC CONTOUR (1 m INTERVAL)
- NON CONTACT WATERBODY
- CONTACT WATERBODY
- WATER COLLECTION POND
- DRAINED POND AREA
- OPEN PIT
- OVERBURDEN
- WASTE ROCK
- ORE
- TAILINGS
- INDUSTRIAL SITE PAD
- STREAM

AGNICO EAGLE

Golder Associates

–	–
–	–
–	–
–	–
–	–
TITRE / TITLE	# DWG

DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–

REV	DESCRIPTION	DATE	PAR BY

REVISIONS

DESSINÉ PAR DRAWN BY	CDB	DATE	12-02-2015
VÉRIFIÉ PAR CHECKED BY	LY		15-03-2015
APPROUVÉ PAR APPROVED BY	DRW		15-03-2015
No. PROJET PROJECT NO.	1405283		
DATE	–		

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
FIGURE 1-2 PROJECT INFRASTRUCTURE

ÉCHELLE/ SCALE	1:12500	FICHIER FILE	.DWG

No. DESSIN/ DRAWING NO.	REVISION	FEUILLE/SHT
–	0	1 / 1

REFERENCE
1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

AE-CART-ANSI B

N:\Client\Agnico_Eagle_Mines_Ltd\Meliadine_Gold_Project\99_PROJECTS\1405283_Meliadine_Water_License\02_PRODUCTION\3000_Application_Preparation\MXD\3200\Report\Project_Screening_Report\1405283_Figure_1-2_Project_Infrastructure.mxd

2.0 REGULATORY CONSIDERATIONS

On January 27, 2015 the NIRB received notification from the Honourable Bernard Valcourt, Minister of Aboriginal Affairs and Northern Development Canada, that the Final Hearing Report for the review of Agnico Eagle's Meliadine Gold Mine Project (NIRB File No. 11MN034) had been accepted pursuant to section 12.5.7(a) of the Nunavut Land Claim Agreement. In the Final Hearing Report NIRB recommended 127 Terms and Conditions for the Project consistent with the objectives set out in Section 12.2.5 of the Nunavut Land Claim Agreement (NIRB 2014). A Project Certificate Workshop was held on February 23 and 24, 2015 with the proponent and all relevant regulatory authorities to review the implementation of the terms and conditions presented in the Final Hearing Report and assist the NIRB with the finalization of the draft Project Certificate.

Agnico Eagle is applying for a Type A Water Licence from the Nunavut Water Board (NWB) for Phase 1 of the Project. The Main Application Document and the Mine Plan, submitted as part of the Water Licence Application, provide a complete overview of the Phase 1 mine plan. A summary of the Phase 1 Project elements is provided in Section 3. The NIRB Terms and Conditions relevant to the proposed Project refinements are provided below.

- **Term and Condition No. 13:** The Proponent shall undertake additional geotechnical investigations as required to identify sensitive landforms, modify engineering design for Project infrastructure (i.e., dikes, TSF, waste rock pile, and landfill), and develop and implement preventative and/or mitigation and monitoring measures to minimize the impacts of the Project's activities and infrastructure on sensitive landforms. Plans for the investigations, mitigative, and monitoring measures are to be included within an updated Environmental Protection Plan.
- **Term and Condition No. 14:** The Proponent is encouraged to conduct more detailed thermal analysis to support detailed design of the dikes and the TSF, including seepage and stability analysis, and shall incorporate the results of the analysis into Project design. Details of the thermal analyses undertaken are to be provided to the NIRB.
- **Term and Condition No. 15:** The Proponent shall assess the potential environmental effects of a post-closure failure of the geomembrane of the TSF while tailings are in a thawed state. This assessment shall include, at a minimum:

  a) A description of the potential environmental effects of such a failure;

  b) Identification of the monitoring measures employed to detect environmental changes that could result;

  c) Identification of proposed mitigation measures to address any changes identified during monitoring; and

  d) Updated Risk Management Plan and Closure and Reclamation Plan reflecting changes which result from the post-closure failure assessment.

  A summary of the results from this assessment and implications to Project infrastructure and operational plans shall be provided to the NIRB.

- **Term and Condition No. 19:** The Proponent shall develop and implement a monitoring program for its Tailings Storage Facility and Waste Rock Storage Facility (including dikes). The monitoring program is to include, but shall not be limited to:

  a) Plans for monitoring the thermal condition and stability of storage facilities (including deformation of the cover) and dikes, including the use of thermistor cables, temperature loggers, and core sampling technology as required to monitor dike stability and tailings freeze back efficiency, including for example, factors such as ice content and stability; and,

  b) Measures proposed to ensure the safe containment and structural integrity of Project infrastructure, and to prevent contamination of waterbodies.

  Details of the monitoring program shall be provided to the NIRB.

- **Term and Condition No. 35:** The Proponent shall ensure that Project components and activities are planned and conducted in such a way as to minimize the Project footprint; this should include input from potentially affected communities where applicable.

- **Term and Condition No. 87:** The Proponent is strongly encouraged to participate in the work of the Kivalliq Socio-Economic Monitoring Committee along with other agencies and the communities of the Kivalliq region, and to identify areas of mutual interest and priority for inclusion into a collaborative monitoring framework that includes socio-economic priorities related to the Project, communities, and the Kivalliq region as a whole.

- **Term and Condition No. 88:** The Proponent is encouraged to work in collaboration with other socioeconomic stakeholders including for example, the KIA, GN, AANDC, and communities of the Kivalliq region, to establish a socio-economic working group for the Project to develop and oversee the Meliadine Socio-economic Monitoring Program. The working group should develop a Terms of Reference which outlines each member's roles and responsibilities with regards to, where applicable, project-specific socio-economic monitoring throughout the life of the Project. The Terms of Reference are to be provided to the NIRB upon completion, and within one year of issuance of the Project Certificate.

- **Term and Condition No. 89:** The Proponent shall develop the Meliadine Socio-economic Monitoring Program to monitor the predicted impacts outlined in the FEIS as well as regional concerns identified by the Kivalliq Socio-economic Monitoring Committee (SEMC). Where possible, the Proponent is encouraged to work in collaboration with all other socio-economic stakeholders such as the KIA, GN, AANDC and the communities of the Kivalliq region in developing this program, which should include a process for adaptive management and mitigation in the event unanticipated impacts are identified. Details of the Meliadine Socio-economic Monitoring Program are to be provided to the NIRB upon finalization, and within one year of issuance of the Project Certificate.

- **Term and Condition No 90:** Prior to the commencement of operations, the Proponent is required to undertake an analysis of the risk of temporary mine closure, giving consideration to how communities in the Kivalliq region may be affected by temporary and permanent closure of the mine, including economic, social and cultural effects. The results of this analysis are to be provided to the NIRB upon completion.

- **Term and Condition No. 91:** Within 3 months of the NIRB's acceptance of the Proponent's analysis of the risk of temporary mine closure referenced above, the proponent is expected to update its Socio-Economic Management Plan or to include within a newly developed plan or framework, a description of its plan to collect and analyze Project-specific and regional data at closure and post-closure phases, as well as its defined measures to help mitigate impacts which may result from Project closure(s), both temporary and final.
- **Term and Condition No. 116:** The Proponent shall update the air quality monitoring aspect of its environmental and health risk monitoring program to include the following parameters for particulate matter:

  a) An analysis of the metals content of the dust collected in passive monitoring; and

  b) Discrete samples to be collected on a frequency to be determined in collaboration with the Government of Nunvut, from the camp, and analyzed for acrolein and aldehyde.

  Results are to be incorporated into the Proponent's annual reporting for submission to the NIRB.

Agnico Eagle is committed to fulfilling these terms and conditions, and will work with the NIRB to determine if any changes must be made to meet the spirit and intent of the terms and conditions which where applied to the Phase 1.

3.0 SUMMARY OF PROJECT DESIGN REFINEMENTS

The environmental assessment conducted as part of the FEIS consisted of multiple gold deposits, mined concurrently (Agnico Eagle 2014). Phase 1 focusses on starting commercial production through the development of the Tiriganiaq deposit initially as an underground mine at a nominal mining rate of 3,000 TPD, expanding to 5,000 TPD in Year 4 of commercial production by introducing ore from two open pit mines also centered on the Tiriganiaq deposit. The other deposits (Wesmeg, F Zone, Pump, and Discovery) would be added as part of Phase 2 of the Project.

Phase 1 consists of a reduction in the number of deposits being mined, relocation of site infrastructure, a change in the ore processing and tailings management strategy, and associated revisions to water management at the site. These Project refinements were made to reduce potential environmental impacts and to improve the Project's economic performance. The design refinements are briefly summarized in Sections 3.1 to 3.3.

3.1 Mining Plan, Infrastructure, and Project Footprint

In the FEIS, five deposits were proposed (Tiriganiaq, Wesmeg, F Zone, Pump, and Discovery) for mining activities. All of the deposits were to be mined via open pits, with an estimated total of 27 million tonnes (Mt) of ore processed (approximately 15 Mt from Tiriganiaq open pits) at a production rate of 6,000 TPD. The Tiriganiaq deposit also included mining a total of 11 Mt of ore from underground operations at a production rate of 2,500 TPD. The Project estimated up to 3.1 Mt of ore processed per year, at a production rate of up to 8,500 TPD for a total of 13 years. Approximately 376 Mt of waste rock (161 Mt from Tiriganiaq), 57 Mt of overburden waste (20 Mt from Tiriganiaq), and 38 Mt of tailings (26 Mt from Tiriganiaq) was estimated to be produced over the life of mine.

Phase 1 proposes mining the Tiriganiaq deposit using both open pit and underground operations. The mine production rate will be 3,000 TPD in Year 1 to Year 3 and 5,000 TPD Year 4 to Year 8. Approximately 12.1 Mt of ore will be mined; this will comprise approximately 3.6 Mt from the open pits and approximately 8.5 Mt from underground operations over a mine life of eight years. The operation will produce approximately 31.8 Mt of waste rock, 7.4 Mt of overburden waste, and 12.1 Mt of tailings.

The majority of the site infrastructure, including the accommodation complex, process and power plants, maintenance shop, offices, and warehouse has been relocated. In the FEIS, the site infrastructure was located south/southeast of Lake H17. This area was identified as a caribou migration corridor through IQ, and the hydrological conditions were wet. Consequently, the site infrastructure has been moved northwest of Lake H17 to reduce the environmental effects to caribou and to an area within the footprint that has dryer hydrological conditions. Figure 1-2 illustrates the location of site infrastructure for Phase 1.

Due to the relocation of the other site infrastructure, the emulsion plant (identified as the explosives plant in the FEIS) was also relocated. In the FEIS, the plant was located northwest of Lake H17, with water supplied from the mine's freshwater tank using a heat-traced pipeline. For Phase 1, the emulsion plant is proposed to be relocated to a site that is 1.45 km northwest of the TSF, near Lake E3. Freshwater for the plant would be trucked in from the mine's freshwater tank.

Phase 1 results in a reduction in the mine's overall footprint from the 1,681 hectares (ha) assessed in the FEIS to 453 ha. This reduced footprint is most notable at the TSF, waste rock and ore storage facilities, and the landfill due to the lower volume of ore being mined. This reduction in footprint also results in a reduced number of

waterbodies impacted during Phase 1. Dependent on economic conditions, it is expected the full Project as presented (and assessed) in the FEIS will be built over time (Phase 2) and therefore the reduction in footprint is primarily a temporal delay.

3.2 Ore Processing and Tailings

In the tailings disposal alternative studies conducted as part of the environmental and socio-economic impact assessment process (as presented within the FEIS – Volume 2), Agnico Eagle considered both conventional thickened slurry tailings and filtered tailings as tailings process alternatives. The assessment rated both alternatives as being good viable alternatives but Agnico Eagle initially chose the thickened slurry alternative based on a number of perceived operational risk factors, mostly dealing with handling filtered tailings under winter conditions. Since completion of the alternatives assessment, Agnico Eagle has continued to investigate the two tailings process alternatives, including assessing other northern mining sites where the filtered tailings process is being successfully used (i.e., Raglan and Fort Knox). Based on these investigations Agnico Eagle subsequently decided to change its preferred tailings disposal process from thickened tailings slurry to filtered tailings for Phase 1. Consequently the Phase 1 Type A Water Licence Application presents a much smaller (in area of the TSF footprint) TSF design based on use of the filtered tailings process. This filtered tailings TSF is referred to as the dry stack alternative and is now proposed by Agnico Eagle as the preferred method of ore processing and tailings management for the Project.

The dry stack TSF approach has a number of benefits in comparison to the originally proposed thickened tailings alternative:

- the area required to store tailings is much smaller in size. This allows Agnico Eagle to avoid having to utilize Lake B7 for tailings disposal during Phase 1 of the mine;
- it allows water to be recovered within the process plant for immediate recycle, thus reducing the amount of water that is used to transport tailings, the amount of water that must be stored with the TSF, and the amount of water entrained within the stored tailings; and
- it reduces the amount of TSF containment that must be constructed in the form of dams. It arguably also reduces the risk factors associated with storing water and tailings together (consistent with the recent recommendations made by the independent review panel commissioned by the Province of British Columbia to review the Mount Polley tailings dam failure) (Independent Expert Engineering Investigation and Review Panel 2015).

In its investigations, Agnico Eagle looked at the increased costs of generating filtered tailings (increased power required to filter the tailings within the process plant) and the offsetting reduction in the costs of dam building, and has satisfied itself of the economic viability of the dry stack TSF application for Phase 1. Similarly, Agnico Eagle has satisfied itself that the operating risks of handling the filtered tailings under winter conditions can be addressed through looking at the operating experience gained at the Raglan Mine in Nunavik.

In the FEIS, Agnico Eagle proposed that tailings generated from the process plant be in the form of a thickened tailings slurry (approximately 55% solids by weight). These tailings would have been pumped to the diked TSF located 1.5 km northwest of the process plant; the TSF was to be located in the Lake B7 watershed. The TSF would have included a Reclaim Pond for the storage of tailings bleed and runoff water, as well as water pumped

from the open pits. Reclaim Pond water would have been recycled to the mill for re-use in the milling process. The TSF was anticipated to store 34.5 Mt of tailings over the life of mine.

For Phase 1, Agnico Eagle is proposing that tailings produced as part of the ore processing methodology be filtered to approximately 86% solids by weight. These tailings will be trucked (using heated truck boxes) to the TSF (still to be located within the Lake B7 watershed but now to be located on land east of Lake B7, 500 metres [m] from the process plant) and dry stacked on land within the TSF facility. This dry stack method reduces the amount of dikes required to contain the filtered tailings, simplifies water management for the TSF site, and reduces the environmental effects of Phase 1 associated with dewatering Lake B7, which can now be eliminated from Phase 1 of the mine. Approximately 12.1 Mt of dry tailings will be produced over the life of mine; of this 2.4 Mt will be backfilled to the underground mine as cemented paste backfill while the other 9.7 Mt would be disposed of in the dry stack TSF.

The use of a dry stack tailings process decreases the overall footprint of the Phase 1 TSF and simplifies the water management requirements, as the tailings are now filtered in the process plant before being transported to the TSF. The use of the dry stack method will increase the volume of traffic on the road between the process plant and the TSF; however, this will be offset by the lower volume of haul truck traffic associated with hauling ore to the process plant from open pits and waste rock to WRSFs resulting from the decrease in planned open pit mining during Phase 1. Mitigation methods that will be used by Agnico Eagle to manage dust generated during the truck hauling of filtered tailings to the TSF will be similar to those outlined in the FEIS for all other site roads; specifically:

- Site roads are designed to be as narrow and short as possible while maintaining safe construction and operation practices. This reduces the surface area of roads and the potential to generate dust.
- Coarse sized rock will be used as much as possible in building roads, pads, and laydown areas to minimize the potential to generate dust from traffic.
- Roads will be regularly graded to mix excessive silt found on the road surface with the coarser materials located deeper in the roadbed. This will reduce the percentage of silt in the road surface with the benefit of reducing related dust.
- As needed, roads and travel areas will be topped with aggregate and stabilized, which will minimize erosion and dust emissions.
- Where appropriate, larger sized aggregate will be used on the road surface to replace material lost due to wind and water erosion.
- Water and/or approved chemical dust suppressants will be applied as needed to reduce the potential for the generation of airborne dust from vehicle traffic on the site roads.

Additional mitigations are provided in the Mine Waste Management Plan, submitted as part of the Type A Water Licence Application, to manage dust production at the TSF. These mitigations include:

- place a waste rock cover over the final perimeter tailings slope surface as soon as possible;
- divide the TSF into three cells, fill with tailings consecutively, and progressively cover; and

- adopt a relatively flat interim side slope of 4(H):1(V) between the cells to reduce surface erosion and dust generation.

3.3 Water Management

The water management plans for Phase 1 have been refined from that presented in the FEIS with the objective of minimizing freshwater use. A complete overview of the water management strategy is provided in the Main Application Document and Water Management Plan, submitted as part of the Type A Water Licence Application. The following is a brief summary of some of the key design refinements.

- **Freshwater Intake Pumping Station and Pipeline:**

  In the FEIS, the freshwater intake pumping station was located in Meliadine Lake, east of the accommodation complex at the south end of Lake H17. The pump had a maximum intake rate of 247.5 cubic metres per hour (m^3/hr) or 2.1 Mm^3/year. For Phase 1, the proposed freshwater intake pumping station has been relocated (still within Meliadine Lake) to the east of the south end of Lake G2. The pump capacity has also been reduced to a maximum intake rate of 41.9 m^3/hr. The Phase 1 freshwater intake pump station location is shown on Figure 1-2.

- **Contact Water:**

  In the FEIS, contact water was to be directed to Attenuation Pond 01 (AP01) for temporary storage prior to recycle, re-use, treatment if necessary, and release to the environment. The pond collected the runoff and seepage from the WRSF, plant site, and treated water from the TSF. The sewage treatment plant discharge water was also directed to AP01. The process plant used three water sources to meet the process demand; reclaim water from the TSF, contact water from AP01, and freshwater from Meliadine Lake.

  For Phase 1, site contact water from the major mine infrastructure, including seepage and surface runoff from the TSF and WRSF is directed to one of six collection ponds. Runoff water to the open pits will be collected by sumps and then pumped to designated water collection ponds. Five dikes, three berms, eight water diversion channels and a water treatment plant will be constructed to manage surface water. The Phase 1 water management features are illustrated on Figure 1-2.

  Contact Pond (CP) 1 (FEIS AP01) is the main storage pond; the water in the five additional smaller contact ponds will be redirected to CP1. Contact water in CP1 is stored temporarily prior to treatment (in the site water treatment plant) if necessary, then re-used in the process plant and/or released to the environment. Annually in the fall, the water level in CP1 will be drawn down to the lowest level possible to allow for the storage of spring freshet flows the following year. This is similar to what was presented in the FEIS and assessed during the EA process.

  With the dry stack alternative chosen for tailings management, the process plant water will be managed in a closed loop circuit within the process plant. Treated contact water from the water treatment plant will be used as make-up water to meet the process demand, with freshwater sourced from Meliadine Lake when treated contact water is not available.

  Contact water in the underground mine will be collected in sumps, treated to reduce total suspended solids (TSS), and re-used for underground operations (i.e., as drilling water). Any excess mine water will be pumped to the surface for management. If saline groundwater is encountered (expected once mining goes

below the permafrost), excess underground water will be stored in impervious bladders with secondary containment on surface. Sufficient secondary containment has been planned for up to the first two years of mine operation. Hydrogeological studies are planned for 2015 and 2016 to increase the accuracy in both groundwater flows and salinity estimates to allow Agnico Eagle and its consultants to better refine its predictions as to how much groundwater will be generated and what the salinity of that groundwater will be. Current information on expected underground mine water flows is limited because all current mine openings are located in permafrost. Initially, most of the Phase 1 active mine workings will also be in permafrost, and thus the amount of groundwater encountered will be small. Groundwater inflows are expected to increase over time as more mine openings are excavated below the permafrost. Following completion of the planned hydrogeological studies, an updated groundwater management plan will be submitted to the NWB for approval. The Water Management Plan provides an assessment of alternatives for groundwater management beyond Year 2 of operations.

- **Dewatering and Pit Re-Filling:**

  In the Project assessed in the FEIS, a total of eight lakes required dewatering to allow for the construction of the site infrastructure and mining of the five gold deposits. The number of lakes requiring dewatering for Phase 1 has been reduced to four (A54, H17, H19, H20).

  For the FEIS Project, pit refilling was estimated to take place over a 10 year period, with the total flooding volume estimated at 184 Mm^3. Phase 1 has less open pit mining and consequently pit refilling will now take place over a three year period, with a total flooding volume of 9.4 Mm^3 for Tiriganiaq Pit 1, and 2.4 Mm^3 for Tiriganiaq Pit 2.

- **Effluent Discharge:**

  The proposed location of the diffuser in Meliadine Lake is off the Peninsula on which the exploration camp is located. In the FEIS, the predicted annual flow was 1.05 Mm^3 per year. The maximum discharge volume is reduced to an estimated 729,501 m^3 per year for Phase 1. The end-of-pipe effluent concentrations are predicted to be lower than the Metal Mining Effluent Regulations (MMER) guidelines and lower than the water quality predictions as presented in the FEIS (Agnico Eagle 2014). Concentrations at the edge of the mixing zone are predicted to meet or be lower than Canadian Council of Ministers of the Environment (CCME) aquatic life and Health Canada drinking water guidelines. Further details on predicted water quality concentrations are provided in Section 6.10.

4.0 EXISTING ENVIRONMENT

Phase 1 is located within the local and/or regional boundaries previously studied during the FEIS (Agnico Eagle 2014). The existing environment has not changed from that presented in the FEIS. A list of the available baseline information is provided in Section 4.1 below.

Two Project infrastructure components were moved to locations that were assessed in the FEIS as part of the regional study area (RSA) and/or local study area (LSA), but were not part of the FEIS Project footprint. These components are the water intake pipe (and associated jetty) and the emulsion plant. The existing aquatic and terrestrial environments in these areas are provided in Sections 4.2 and 4.3 below.

4.1 Available Baseline Information

Baseline information for the Project was provided in the FEIS (Agnico Eagle 2014). A list of the sections in Volume 1 of the FEIS that summarize the various existing environments is provided below.

Atmospheric Environment:

- Section 5.2.1: Air Quality Baseline Environment
- Section 5.3.1: Climate and Meteorology Baseline Environment
- Section 5.4.1: Climate Change Baseline Environment
- Section 5.5.1: Noise Baseline Environment

Terrestrial Environment:

- Section 6.2.1: Geology and Geochemistry Baseline Environment
- Section 6.3.1: Permafrost Baseline Environment
- Section 6.4.1: Soil and Terrain Baseline Environment
- Section 6.5.1: Vegetation Soil Environment
- Section 6.6.1: Terrestrial Wildlife and Wildlife Habitat Baseline Environment
- Section 6.7.1: Birds and Bird Habitat Baseline Environment

Freshwater Environment:

- Section 7.2.1: Hydrogeology and Groundwater Quality Baseline Environment
- Section 7.3.1: Hydrology and Water Quantity Baseline Environment
- Section 7.4.1: Surface Water and Sediment Quality Baseline Environment
- Section 7.5.1: Fish Habitat and Fish Baseline Environment

Marine Environment:

- Section 8.1: Baseline Environment

Social Environment:

- Section 9.2.1: Population Demographics Baseline Environment
- Section 9.3.1: Traditional Activities and Knowledge Baseline Environment
- Section 9.4.1: Economic Development and Opportunities Baseline Environment
- Section 9.5.1: Education and Training Baseline Environment
- Section 9.6.1: Individual and Community Wellness Baseline Environment
- Section 9.7.1: Community Infrastructure and Public Services Baseline Environment
- Section 9.8.1: Governance and Leadership Baseline Environment
- Section 9.9.1: Non-Traditional Land Use and Resource Use Baseline Environment
- Section 9.10.1: Public and Worker Health and Safety Baseline Environment
- Section 9.11.1: Cultural, Archaeological and Paleontological Resources Baseline Environment

Risk Assessment:

- Section 10.2.2: Environmental Baseline Environment
- Section 10.3.2: Human Health Baseline Environment

Further details of the existing environments are available in Volumes 5 through 9 in the FEIS (Agnico Eagle 2014). In addition, a number of baseline supporting documents were prepared and submitted with the FEIS. These include:

- Permafrost Baseline Report (SD 6-1);
- Terrestrial Synthesis Baseline (SD 6-2);
- Geochemistry Baseline Report (SD 6-3);
- Aquatics Synthesis Baseline (SD 7-1); and
- Aquatics Baseline (SD 7-2).

Additional baseline data was also collected in support of the Aquatic Effects Monitoring Program Design Plan of which water quality was presented in the FEIS (Agnico Eagle 2014).

4.2 Aquatic Environment

Water Intake Jetty

The water intake jetty, to be constructed near the west end of the east basin of Meliadine Lake, will affect 0.355 ha of nearshore habitat, directly under the above-water footprint of the jetty and the associated rock apron

(Figure 1-2). The jetty will cover predominantly coarse substrates located in the 0 to 2 m depth zone (0.062 ha), silt and mixed substrates in the 2 to 4 m depth zone (0.064 ha), and predominantly silt substrate in the 4 to 10 m depth zone (0.229 ha).

Meliadine Lake is inhabited by nine fish species (Arctic char, lake trout, Arctic grayling, round whitefish, cisco, burbot, slimy sculpin, ninespine stickleback, and threespine stickleback). The area under the jetty footprint could potentially be used as rearing and foraging habitat for most of the above species, as well as spawning habitat for lake trout in the 2 to 4 m depth zone. The intake screens on the jetty and associated water velocities will be designed to minimize potential impingement or entrainment of juvenile fish (i.e., will follow DFO Freshwater End-of-pipe Fish Screen Guidelines; DFO 1995).

4.3 Terrestrial Environment

Emulsion Plant

The proposed emulsion plant for Phase 1 has been moved to maintain safe operating distance between the relocated process plant, truck shop, and accommodation facilities and from the proposed dry stack TSF. The revised location of the emulsion plant falls just outside of the defined LSA that was used for the FEIS (but still falls within the FEIS RSA); therefore, the LSA boundary was extended to include this Project component, herein referred to as the extended LSA.

The vegetation in the extended LSA was mapped using the RSA Ecological Land Classification (ELC) classification and imagery as a basis for interpreting plant community types and results are provided in Table 6.5-1. The LSA surrounding the emulsion plant and associated access road primarily traverse the Heath Tundra plant community type, which is the most common plant community type in the LSA as described in the FEIS, with a small portion crossing the Sedge Community. The remainder of the extended LSA is comprised of water and a few small patches of the Lichen-Heath (*Cetraria Lichen*), Lichen-Heath (*Hair Lichen*), and Birch Seep plant community types.

The soil types in the extended LSA were mapped using the RSA ELC classification and imagery. The LSA surrounding the emulsion plant and associated access road primarily traverse the Static and Turbic Cryosols soil type, which is a common soil type in the LSA as described in the FEIS, with a small portion crossing the Organic and Turbic Cryosols soils. The remainder of the extended LSA is comprised of water and a few small patches of the Static Cryosols and Organic and Bedrock types.

Water Intake Pipe

The location of the water intake pipe for Phase 1 falls within the defined LSA for the FEIS. The majority of the water intake pipe traverses both the Lichen-Heath (*Hair Lichen*) and Heath Tundra plant community types, with a small portion of the pipe crossing the Sedge Community and Lichen-Heath (*Cetraria Lichen*) plant community types. As described in the FEIS, the Lichen-Heath (*Hair Lichen*) plant community type is relatively uncommon in the LSA as it almost exclusively occurs on the higher ridges of slopes and on drumlin and esker crests, while the Heath Tundra community is the most dominant plant community on the landscape.

The majority of the water intake pipe traverses both the Static Cryosols, and Static and Turbic Cryosols soil types. A small portion of the pipe crosses Organic and Turbic Cryosols soil types. As described in the FEIS, the Static Cryosols, Static and Turbic Cryosols, and Organic and Turbic Cryosols are relatively common in the LSA.

5.0 SCREENING APPROACH

The FEIS assessed the Project under a scenario that was considered worst case or greatest environmental impact. Since the submission of the FEIS, Agnico Eagle has refined the Project based on IQ, consultation, and concerns raised during the environmental assessment process with the aim of improving the Project economics. The goal of this Project Screening report is to provide transparent documentation that environmental effects from the Project assessed in the FEIS are equally relevant and applicable to the Phase 1. To achieve this goal, the following approach was used:

- identify the Valued Ecosystem Components (VECs) and Valued Socio-Economic Components (VSECs) from the FEIS that may be impacted by the refinements to the Project design (Section 5.1); and
- identify the specific effects pathways that are relevant based on the refinements to the Project design (Section 5.2). All primary and minor pathways examined in the FEIS are considered.

The screening approach is consistent with the methods used in the FEIS (Agnico Eagle 2014).

5.1 Relevant Valued Ecosystem Components and Valued Socio-Economic Components

Valued ecosystem components and VSECs represent physical, biological, cultural, social, and economic properties of the environment that are either legally, politically, publically, or professionally recognized as important to a particular region, community, or by society as a whole. General factors considered when selecting VECs and VSECs included:

- biophysical components identified by NIRB during Project scoping and Agnico Eagle community and stakeholder consultation, and as outlined in the Project Guidelines (NIRB 2012);
- whether potential VECs/VSECs represent important ecosystem processes or socio-economic factors;
- whether potential VECs are territorially and federal listed species (COSEWIC 2012; SARA 2012; CESCC 2001), as well as internationally listed by the IUCN (www.IUCNredlist.org);
- whether there is value placed on the VECs or VSECs by IQ holders;
- whether potential VECs are communities or species that reflect the interests of regulatory agencies, traditional use, and communities;
- whether potential VECs can be measured or described with measurement endpoints;
- whether potential VECs allow cumulative effects to be considered; and
- current experience with environmental assessments and effects monitoring programs in Nunavut and the Northwest Territories.

Assessment and measurement endpoints were defined for each valued component. Assessment endpoints represent the key properties of the VECs or VSECs that should be protected for their use by future human generations. Assessment endpoints are general statements about what is being protected. Measurement endpoints are defined as quantifiable (i.e., measurable) expressions of changes to assessment endpoints as compared to baseline and reference conditions (e.g., changes to chemical concentrations, rates, habitat quantity

and quality, and number and distribution of organisms). Measurement endpoints also provide the primary factors for discussions concerning the uncertainty of impacts to VECs and VSECs, and subsequently, are the key variables for study in monitoring and follow-up programs.

The overall determination of significance of impacts from the Project on VECs and VSECs is then predicted by linking residual effects on measurement endpoints to the associated assessment endpoint. Valued components, assessment endpoints, and measurement endpoints used in the FEIS and this screening assessment are presented in Table 5-1. All VECs/VSECs assessed in the FEIS were carried forward in this Project Screening Report for further consideration.

Table 5-1: Assessment and Measurement Endpoints Associated with Valued Components (VECs or VSECS)

Valued Component (VEC or VSEC)	Assessment Endpoints	Measurement Endpoints
Atmospheric environment: ■ Air quality ■ Noise	■ Compliance with applicable ambient air quality criteria ■ Compliance with applicable noise standards ■ Contribution of greenhouse gas to climate change	■ Total suspended particulates ■ Carbon, sulphur, and nitrogen oxides ■ Particulate matter (e.g., dust) ■ Equivalent noise level ■ Greenhouse Gas emissions
Groundwater quality and quantity	■ Maintenance of groundwater quality and quantity	■ Groundwater flows and groundwater levels ■ Groundwater quality
Hydrology	■ Maintenance of hydrological regime	■ Flow rate and the spatial and temporal distribution of water ■ Surface topography, drainage boundaries, waterbodies, and water pathways
Surface water quality and Sediment quality	■ Changes in existing water and sediment quality	■ Physical analytes (e.g., pH, conductivity, turbidity) ■ Major ions and nutrients ■ Total and dissolved metals ■ Organic compounds
Freshwater Aquatic Ecology: ■ Fish habitat ■ Arctic char ■ lake trout ■ Arctic grayling ■ benthic invertebrates	■ Habitat Units (as part of Offsetting plan) ■ Abundance and distribution ■ Continued opportunity for traditional and non-traditional use of fish	■ Habitat units ■ Habitat quantity and fragmentation ■ Habitat quality, lower trophic levels ■ Fish health, including survival and reproduction ■ Access to fish

Table 5-1: Assessment and Measurement Endpoints Associated with Valued Components (VECs or VSECS) (continued)

Valued Component (VEC or VSEC)	Assessment Endpoints	Measurement Endpoints
Marine Environment: ■ water quality ■ fish ■ habitat ■ mammals ■ marine birds	■ Maintenance and population abundance and distribution of marine biota, fish and wildlife ■ Maintenance and population abundance and distribution of Species at Risk ■ Continued opportunity for use of marine biota, fish and wildlife	■ Habitat quantity ■ Habitat quality ■ Relative abundance and distribution of fish species ■ Survival and reproduction of marine wildlife ■ Availability of marine biota, fish, and wildlife ■ Access to marine biota, fish, and wildlife
Soil	■ Assessed through other components (i.e., maintenance of plant populations)	■ Soil quality ■ Soil quantity and distribution ■ Reclamation suitability
Vegetation: ■ plant populations and communities ■ Listed rare plants ■ Traditional plant use	■ Maintenance of population abundance and distribution of plant populations and communities ■ Continued opportunity for use of traditional plants ■ Maintenance of population abundance and distribution of plant species at risk	■ Relative abundance and distribution of plant species ■ Presence of invasive species ■ Availability of plants for traditional use
Wildlife: ■ waterbirds ■ upland birds ■ migratory birds ■ raptors ■ caribou, caribou habitat and behaviour ■ wolves	■ Maintenance of population abundance and distribution of the abundance and distribution of wildlife populations ■ Continued opportunity for traditional and non-traditional use of wildlife	■ Habitat quantity and fragmentation ■ Habitat quality ■ Relative abundance and distribution of wildlife species ■ Survival and reproduction ■ Access to wildlife ■ Availability of wildlife
Species health: ■ Caribou, Arctic fox, key prey species for carnivores, raptors, migratory birds, waterbirds, fish, benthic invertebrates, plankton	■ Changes to health of species	■ Chemicals of potential concern ■ Exposure ■ Toxicity
Heritage Resources	■ Protection of archaeological and paleontological resources	■ Archaeological and sacred sites ■ Paleontological sites

Table 5-1: Assessment and Measurement Endpoints Associated with Valued Components (VECs or VSECS) (continued)

Valued Component (VEC or VSEC)	Assessment Endpoints	Measurement Endpoints
Employment and Business Opportunities	■ Maintenance of long-term economic properties	■ Employment ■ Gross Domestic Product and economic growth ■ Inflation and Consumer Price Index ■ Trade balance ■ Investment ■ Employment by industry ■ Economic infrastructure ■ Government fiscal situation ■ Business opportunities and contracting ■ Economic development ■ Income ■ Traditional economic activities
■ Population demographics ■ Education and training ■ Individual, family and community wellbeing ■ Community infrastructure and Public Services ■ Worker and Public Health and Safety ■ Governance and Leadership	■ Maintenance of long-term social systems	■ Demographic Changes ■ Migration ■ Education achievement and capacities ■ Family and community cohesion and function ■ Crime incidents ■ Physical and mental health ■ Addiction ■ Safety ■ Security ■ Community infrastructure ■ Public Service ■ Performance and capacity of governments
Traditional activity and knowledge	■ Maintenance of traditional activity and knowledge	■ Traditional and Commercial Harvesting ■ Land Use and Mobility ■ Food Security ■ Language

Table 5-1: Assessment and Measurement Endpoints Associated with Valued Components (VECs or VSECS) (continued)

Valued Component (VEC or VSEC)	Assessment Endpoints	Measurement Endpoints
Non-traditional land use and resource use	■ Maintenance of land use opportunities	■ Hunting ■ Fishing ■ Tourism ■ Recreation ■ Parks and protected Areas ■ Wilderness character
Human Health ■ Workers ■ Public (Inuit and non-Inuit)	■ Protection of air quality and noise with respect to human health ■ Continued opportunity for use of surface water, fish and country foods for traditional and non-traditional use	■ Air quality ■ Soil quality ■ Country food quality ■ Water quality ■ Sediment Quality ■ Fish Quality ■ Noise
Cultural Impacts	■ Maintenance of cultural resources	■ Changes to the Cultural, Archaeological and Paleontological Record

5.2 Relevant Effects Pathways

Pathway analysis identifies and assesses the linkages between Project components or activities, and the corresponding potential residual effects to VECs or VSECs (e.g., water quantity, soil, wildlife, and socio-economics) and is the first step in impact prediction. Potential pathways through which the refinements to the Project design could affect VECs or VSECs were identified from a number of sources including the following:

- Mine Plan and other management plans developed for the Type A Water Licence Application;
- scoping of potential effects by the environmental and engineering teams for the Project;
- scientific knowledge, existing information, and experience with other northern mines, including the Agnico Eagle Meadowbank Gold Mine;
- engagement with the communities, Inuit organizations, and government;
- traditional knowledge (IQ); and
- consideration of potential effects identified for this Project.

Project activities or components under Phase 1 that interact with environmental and socio-economic components are as follows:

- movement of infrastructure within the Project footprint and movement of the emulsion plant outside the assessed footprint;

- decrease of waste rock tonnage from the Tiriganiaq deposit and deposition over a smaller footprint;
- move to dry stack tailings and deposition over a smaller footprint on land; and
- temporal delay in the development of F Zone, Pump, Wesmeg, and Discovery deposits.

Pathway analysis is a screening step that is used to verify the existence of linkages from the initial list of potential effects pathways for the Project. This screening step is largely a qualitative assessment, and is intended to focus the effects analysis on pathways that require a more comprehensive assessment of effects on VECs or VSECs. This is in alignment with the statement in the "Guidelines for the Preparation of an Environmental Impact Statement for Agnico Eagle Mines Limited's Meliadine Project" (Guidelines) that state "In this assessment, more emphasis should be placed on significant impacts to VECs and VSECs, extending across all project phases if applicable" (NIRB 2012).

Pathway analysis was followed by the development of environmental design features (i.e., mitigations) that were incorporated into the Project to remove a pathway or limit (mitigate) the effects to VECs or VSECs. Environmental design features include Project design elements, environmental best practices, management policies and procedures, and social programs. Environmental design features were developed through an iterative process between the Project's engineering and environmental teams to avoid or mitigate effects.

Knowledge of the environmental design features was then applied to each of the pathways to determine the expected amount of Project-related changes to the environment and the associated residual effects (i.e., effects after mitigation) on VECs or VSECs. For an effect to occur there has to be a source (Project component or activity) that results in a measurable environmental change (pathway) and a corresponding effect on a VEC or VSEC.

Project activity ➡ **Change in Environment** ➡ **Effect on VEC or VSEC**

Within the FEIS, pathways were determined to be primary, minor, or as having no linkage using scientific knowledge and IQ (traditional knowledge), and experience with similar developments and environmental design features. Each potential pathway was assessed and described as follows:

- **no linkage –** pathway is removed by environmental design features so that the Project results in no detectable (measurable) environmental change and residual effects to a VEC or VSEC relative to baseline or guideline values;
- **minor –** pathway could result in a minor environmental change, but would have a negligible residual effect on a VEC or VSEC relative to baseline or guideline values; or
- **primary –** pathway is likely to result in a measurable environmental change that could contribute to residual effects on a VEC or VSEC relative to baseline or guideline values.

All pathways impacted by refinements to the Project design were considered. As the Project activities remain the same, in a similar environment, and for the same purpose as assessed in the FEIS, none of the 'no linkage' pathways became primary or minor pathways, and subsequently were not considered relevant to this Project Screening Report.

Each Project activity and related primary and minor effects pathways is provided in Appendix A. Environmental design features, mitigation measures, and a summary of the effects assessment for each pathway are also provided in Appendix A. Estimates of environmental effects were based on thorough baseline studies and experience from similar Projects, and conservative assumptions which over-estimated effects wherever there was uncertainty.

6.0 ENVIRONMENTAL SCREENING

An assessment of the potential Phase 1 effects for each identified pathway was completed (Appendix A) to:

- determine if the effects analysis and assessment provided in the FEIS is applicable to the predicted effects for Phase 1;
- if the effects assessment in the FEIS is not applicable to the Phase 1, then explain the differences to the environmental components, and any new mitigation that may be required to limit effects; and
- provide a conclusion on the impact predictions and determination of significance on the environment from the refinements to the Project design.

For some VECs/VSECs and associated pathways additional analyses were required to assess the potential effects from Phase 1 on the environment; a description of these assessments are provided in Sections 6.1 through 6.13 below.

ATMOSPHERIC ENVIRONMENT

6.1 Air Quality

The assessment of air quality for the FEIS Project focused on predicting changes in the concentrations of selected indicator compounds that are expected to be emitted from the Project, that are generally accepted as indicative in changing air quality, and for which relevant air quality criteria exist. The indicator compounds fall into the following two general categories:

- Particulate matter: total suspended particulate, particles nominally smaller than 10 µm in diameter (PM_{10}), and particles nominally smaller than 2.5 µm in diameter ($PM_{2.5}$); and
- Combustion gases: nitrogen dioxide, sulphur dioxide, and carbon monoxide.

The magnitude of residual air quality effects were determined by comparing the predicted concentrations to relevant air quality guidelines for Nunavut, and federal objectives where territorial guidelines were not available.

The direct effects on air quality from the activities at the proposed Mine Site focused on the operating phase, when emissions and activities will be at their highest. The FEIS identified that the predicted residual adverse on air quality were of a moderate magnitude within a distance of 200 m of the LSA. For Phase 1, the following changes have the potential to modify the previously assessed air impacts from the Site. The specific activities include:

- mining Tiriganiaq deposit only;
- relocation of the process plant and reduced processing rate; and
- tailings design modification from thickened slurry to dry stack.

In the FEIS, the air modelling was completed for processing and other ancillary activities, underground mining (Tiriganiaq), and open pit mining for each pit independently. The overall assessment was based on the combination of activities that resulted in the maximum predicted changes in air quality. Based on this approach, the scenario with processing and other ancillary activities, underground mining, and open pit mining at F Zone resulted in the highest off-site air concentrations. The scenario with processing and other ancillary activities,

underground mining, and open pit mining at Tiriganiaq resulted in the lowest predicted off-site concentrations. Since Phase 1 includes mining at Tiriganiaq only, the off-site air concentrations will be lower than those presented and assessed in the FEIS. In addition, the reduced open pit mining rate (from 6,000 TPD to 3,000 TPD) associated with Phase 1 will further reduce the predicted changes in air quality.

The site infrastructure, including the process plant, has been moved to northwest of Lake H17. The processing rate for the plant will be reduced from 8,500 TPD to 5,000 TPD, resulting in a proportional decrease in emissions from this activity. The reductions in the emissions are expected to result in proportional decreases in the contribution of the plant towards air quality effects. The relocation of the plant will not change the magnitude of the effect on air quality, just on the location in which the effects occur. The processing plant was not a significant contributor to modelled concentrations in the FEIS. Therefore, the relocation of the process plant and reduced processing rate is anticipated to slightly lessen, or have no effect, to the predicted residual impacts of the Project.

In the FEIS, the thickened tailings slurry (approximately 55% solids by weight) was considered as a negligible source of air emissions, as they were in slurry form and pumped to a diked TSF. There were no associated air emissions related to this activity. The TSF itself was to be managed through Best Management Practices for potential dust emissions; therefore, emissions from this source were also classified as negligible.

For Phase 1, tailings will be filtered to approximately 86% solids by weight, and then trucked to a TSF just east of the original planned location (Lake B7). The dry stack tailings design has the potential to increase emissions from the Project as a result of the activities associated with the haul trucks and haul roads, as well as windborn emissions from the TSF. However, the activities at the site are bound by the physical quantity of equipment at the site (e.g., the number of haul trucks). The total number of haul trucks will be equal to or less than modelled for in the FEIS; therefore, the potential increase in emissions from hauling tailings compared to the FEIS predictions will be negligible. The activities associated with the dry stacking will also be managed through Best Management Practices (as outlined in Section 3.2 of this report, as well as in the Mine Waste Management Plan submitted as part of the Water Licence application). As the tailings will remain below saturation point, and the TSF design allows for progressive closure, the potential for fugitive dust is reduced. Overall, the dry stack tailings design is not expected to materially change the emissions from the proposed Mine Site.

The maximum emissions associated with the revisions to the Project will result in emissions that are lower than those evaluated within the FEIS, and thus the potential residual effects on air quality of Project activities at the proposed Mine Site will remain unchanged, or be less than those presented in the FEIS. Therefore, the residual adverse effects on air quality from Phase 1 can still be considered not significant.

6.2 Noise

The noise assessment prepared in support of the FEIS Project considered the noise emissions associated with Project activities, and assessed the potential change in noise levels in the environment from existing conditions. The potential effects of noise associated with the Project were assessed with consideration of human nuisance effects, consistent with the approaches set out in applicable noise regulations or guidelines.

The potential effects focused on the operation and maintenance phase, as activities associated with the construction phase and closure phase were expected to be similar to, or less than those identified through the assessment of the operation and maintenance phase.

A conservative assessment was completed and presented in the FEIS, to fully assess the potential effects of Project activities on noise levels. The assessment considered five separate cases, which considered the extraction at the various deposits: F Zone, Pump, Wesmeg, Discovery, and Tiriganiaq. Modelling results from all five modelled cases were combined spatially to identify the highest predicted noise level at any given location from any given operation phase. As it was not expected that all five deposits would be mined concurrently at full capacity, the predicted noise levels carried forward in the assessment were expected to be conservative. As noted in the FEIS assessment, if activities were to occur at a lesser rate at multiple deposits, the individual effects would be less than those bounded by the modelled cases. The FEIS concluded that noise levels at Points of Receptors (PORs) within the Site Study Area were expected to be most affected while mining the Discovery deposit, while noise levels at PORs in the LSA had the highest predicted change with mining of the F Zone deposit.

As Phase 1 consists of limiting extraction to the Tiriganiaq deposit, excluding the F Zone and Discovery deposits at this time, the expected potential effects presented for PORs in the Site Study Area and RSA in the FEIS are expected to bound those associated with Phase 1.

The relocation of the process plant is expected to have minimal effect on infrastructure noise emissions to the receiving environment. The most substantial change with respect to the noise assessment is the relocation of the site infrastructure to the northwest of the location assessed in the FEIS. Although the noise levels directly associated with the site infrastructure, including the process and power plants, cooling system, and support services are not expected to be the major contributing noise sources, the infrastructure has been moved further away from the identified PORs, thereby reducing any potential effects on noise levels at the PORs with highest predicted change in noise levels in the Site Study Area and LSA.

The dry stack tailings design has the potential to affect noise levels in the environment. The proposed TSF is generally located in an area that includes WRSFs. The noise assessment, completed in support of the FEIS, considered noise emissions associated with WRSFs, including haul trucks and other mobile equipment. The haul truck traffic associated with the TSF is expected to be a fraction of that expected for WRSFs; therefore, the noise emissions associated with the TSF would be less than the noise levels associated with WRSFs, as presented in the FEIS.

Based on the screening assessment the potential effects on noise levels associated with the Project design refinements are expected to be lower than, or similar to those presented in the FEIS. Therefore, the residual adverse effects on noise levels from Phase 1 can still be considered not significant.

TERRESTRIAL ENVIRONMENT

6.3 Permafrost

In the FEIS, potential impacts on the terrain and permafrost were assessed from the construction of the Project and from the mining activities during the operation of the proposed mine. Some of these activities will result in physical gain of permafrost through permafrost growth into structural fills, as well as long-term growth of permafrost to encapsulate the TSF and the various WRSFs. Other activities will result in physical loss of permafrost and permafrost terrain (soil and rock) due to extraction of rock and soil material for use in construction, and due to the physical mining of the open pits to extract the ore.

The overall reduction of the Project's footprint with a more compact layout, from 1,681 ha to 453 ha, and the mining of the Tiriganiaq pit only, will substantially reduce the disturbance and loss of permafrost at the mine site. The new location of the emulsion plant will disturb a new, but relatively small area from that assessed in the FEIS. However, with the use of proper construction techniques, the disturbance to the new area is expected to be minimal. Thick fills using thaw-stable construction materials will be used to preserve the permafrost or promote permafrost growth, and appropriate drainage measures will be used to control and manage water adjacent to the facility to prevent ponding of water and minimize potential deepening of the active layer leading to instability.

The dry stack tailings design will lower the water content of the tailings. In addition, the TSF will be constructed on land, will have a reduced footprint, and will not require the dewatering and use of Lake B7, as was assessed in the FEIS. These Project refinements to the tailings design will reduce the impact to permafrost at the mine site. The reduced footprint for the TSF, and lower water content in the tailings, will result in a shorter time required to freeze the pad below the TSF and freeze the tailings, resulting in a gain of permafrost quicker than what was previously assessed in the FEIS.

Overall, the potential effects to permafrost from the Project refinements are expected to be lower than, or remain unchanged, from that presented in the FEIS. Any residual effects on permafrost for Phase 1 can still be considered negligible.

6.4 Soil

Site clearing and construction for the Project, particularly through the processes of soil stripping and storage, may result in changes to soil quantity, distribution and quality, and increase erosion potential. Soil removal will occur mainly during the construction phase of the Project, and to a much lesser extent during operation (i.e., as open pit blasting activities will occur primarily on bare bedrock). Changes to soil quality may influence the ability of soil to support natural plant communities following closure. Soil quality can be altered during salvage and construction operations through the following processes:

- physical, biological, and/or chemical changes during salvage, stockpiling, and transport; and
- admixing and compaction of soil through site clearing, contouring, excavation, and decommissioning and reclamation.

In the FEIS the soil discipline assessed a land disturbance larger than the actual Project footprint, to account for adjacent and/or fragmented lands that may have been potentially disturbed. An area of 2,950 ha was used for the assessment, instead of the Project footprint of 1,681 ha. The impacts of changes to soil and terrain are captured in the vegetation and wildlife; no impact predictions were made for soil directly.

As the footprint for Phase 1is substantially smaller, at 453 ha, the assessment in the FEIS can be considered the 'worst-case' scenario. Consequently, the potential effects to soil loss or alteration, soil quality, or residual ground disturbance from Phase 1 are expected to be lower than, or remain unchanged, from that presented in the FEIS. Impact predictions for vegetation and wildlife are presented in Sections 6.5 and 6.6, respectively.

6.5 Vegetation

In the FEIS, the effects of the Project on vegetation were assessed, including potential changes resulting from Project-related components and associated activities, and impacts from air quality, water quality and quantity, and terrain and soils. Effects pathways affected by the design refinements to the Project are re-assessed below.

Effects of Project Footprint

As described in the FEIS, residual effects to vegetation are analyzed using measurement endpoints and are expressed as effects statements, including the following:

- effects to plant populations and communities as expressed by changes in plant community types;
- effects to listed plant species and high rare plant habitat potential; and
- effects to traditional use plants.

Similar to the soil discipline, a land disturbance of 2,950 ha was assessed in the FEIS, instead of the Project footprint of 1,681 ha, to account for potentially disturbed lands. For the purposes of this screening assessment, vegetation comparisons are being made between the Project footprint assessed in the FEIS and the Phase 1 footprint.

Direct incremental changes to all plant community types in the LSA from baseline conditions for Phase 1 are expected to be 453 ha (4.5% of the LSA, which includes the site, mining of Tiriganiaq pits only, associated roads, Rankin Inlet infrastructure, and the quarries). All plant community types will be affected by Phase 1 development, resulting in incremental changes from baseline to the Phase 1 footprint of 7% or less for any one plant community type, with the exception of the Lichen-Rock Community type, which will experience the largest incremental change at 11.5%. Effects to listed plant species from Phase 1 includes the disturbance of 94 ha of plant community types associated with high listed (rare) habitat potential (as defined by the wetlands/riparian plant community types). The effect to traditional use plants includes the disturbance of 253 ha of plant community types with high traditional plant potential (e.g., the Lichen-Heath [*Hair Lichen*] and Heath Tundra Community types). Table 6.5-1 provides a full account of the changes to the plant communities for Phase 1. As these represent considerably smaller incremental effects than what were described in the FEIS, the magnitude of the impact from the Phase 1 footprint at the local scale, on plant communities and populations as defined by plant community types, and from residual ground disturbance on plant populations and communities, including listed plant species, and traditional use species, is low. Thus, predictions of effects on vegetation, including associated impacts to plant populations and communities, listed plant species and traditional use plants, from physical loss or alteration for Phase 1 remain unchanged or are lower than those presented in the FEIS.

Table 6.5-1: Direct Change (%) in Area of Plant Community Types from Development within the Local Study Area for the FEIS Project and Phase 1 Footprints

Plant Community Types	Reference Case		Baseline Case	FEIS Project Footprint	Percent (%) Incremental Change Baseline Case to FEIS Project Footprint	Phase 1 Project Footprint	Percent (%) Incremental Change Baseline Case to Phase 1 Project Footprint
	Area of Extended LSA (ha)	Proportion of Extended LSA (%)	Area (ha)	Area (ha)		Area (ha)	
Vegetated Heath							
Lichen-Rock Community	233	2	229	37	-16.33	26	-11.57
Lichen-Heath (*Cetraria Lichen*) Community	561	5	544	86	-15.80	23	-4.18
Lichen-Heath (*Hair Lichen*) Community	602	6	557	110	-19.82	39	-7.06
Heath Tundra Community	4,078	38	3,910	722	-18.47	214	-5.47
Vegetated Heath subtotal	*5,475*	*51*	*5,240*	*956*	*-18.24*	*302*	-5.77
Vegetated Wetlands/Riparian Units							
Sedge Community	2,461	23	2,379	351	-14.76	86	-3.62
Birch Seep Community	305	3	297	87	-29.38	8	-2.55
Riparian Willow or Birch Community	13	<1	13	1	-11.09	0	-1.99
Vegetated Wetlands/Riparian subtotal	*2,779*	*26*	*2,689*	*440*	*-16.36*	*94*	-3.49
Non-vegetated							
Un-vegetated (Sand)	182	2	150	8	-5.20	5	-3.54
Water	2,235	21	2,195	278	-12.66	51	-2.32
non-vegetated subtotal	*2,417*	*23*	*2,345*	*286*	*-12.19*	*56*	-2.40
Disturbance							
Disturbance	<1	<0.1	396	<0.1	-0.01	<0.1	-<0.1
disturbance subtotal	<1	<0.1	*396*	<0.1	-0.01	<0.1	-<0.1
Total	**10,671**[a]	**100**	**10,671**	***1,682***	***-15.76***	***453***	**-4.24**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.

[a] LSA area was increased by 75.5 ha from the FEIS to include the area for the revised emulsion plant location and associated access, plus a 500 m buffer.

Effects of Dust Deposition and Air Emissions

As indicated in the FEIS, accumulation of dust (i.e., particulate matter and total suspended particulate deposition) and concentrations of air emissions produced from the Project may result in a local indirect change on the quality of vegetation within the LSA. Based on the air quality modelling completed as part of the FEIS, changes in vegetation (including listed plant species) due to dust deposition and air emissions were anticipated to be minor relative to baseline conditions. Consequently, residual effects to plant population abundance and distribution of plant populations and communities, including listed plant species and the opportunity for traditional and non-traditional use of plant species from dust deposition and air emissions were predicted to be negligible.

The screening completed for air quality, presented in Section 6.1, concluded that maximum emissions from Phase 1 will result in emissions that are lower than those evaluated within the FEIS. Consequently, the residual effects on plant population abundance and distribution of plant populations and communities, including listed plant species, from dust deposition and air emissions will also be lower or remain unchanged from the FEIS.

Effects of Lake Dewatering and Water Diversions

The number of waterbodies requiring dewatering has been reduced from eight assessed in the FEIS to four. The Phase 1 footprint extends over the A, B, G, and H watersheds. There are no diversions required as part of water management activities (see Section 6.8 and the Water Management Plan, submitted as part of the Type A Water Licence Application, for further details). Consequently, the residual effects on vegetation from the dewatering of waterbodies and diversion of water will be lower or remain unchanged from the FEIS.

Effects of Loss or Alteration of Permafrost

Changes to the permafrost active layer can affect vegetation through soil displacement and by altering local hydrology, soil moisture, and nutrient availability conditions. As indicated in the FEIS, changes to permafrost from the Project are anticipated to be minor relative to baseline conditions. Therefore, the residual effects to plant populations and communities, and the maintenance of plant population abundance and distribution of plant populations and communities, including listed plant species and the opportunity for traditional and non-traditional use of plant species were predicted to be negligible in the FEIS.

Phase 1 is smaller in scale, reduced from 1,681 ha to 453 ha, and the overall effects to permafrost are anticipated to be negligible due to a smaller area being impacted (see Section 6.3). Consequently, the residual effects on plant population abundance and distribution of plant populations and communities, including listed plant species, from the physical loss or alteration of permafrost will be lower or remain unchanged from the FEIS.

Based on the screening assessment, the potential effects on vegetation associated with the Project design refinements are expected to be lower than, or similar to those presented in the FEIS. Therefore, the residual adverse effects on vegetation for Phase 1 can still be considered not significant.

6.6 Wildlife and Birds

The effects of the Project on terrestrial wildlife and birds, and their respective habitats, were assessed in the FEIS. Effects pathways affected by the design refinements to the Project are assessed below.

Effects of Project Footprint

Wildlife

Landscape metrics were determined for a reference case (no development), baseline case (previous and existing developments), FEIS Project case (Phase 1 All-weather Access Road [AWAR] and Project as described in the FEIS [Agnico Eagle 2014]), and Phase 1 Project case. The total footprint has been reduced from 1,681 ha to 453 ha and the direct incremental changes in habitat conditions in the RSA from baseline to the Phase 1 Project case are expected to be less than that described in the FEIS, and less than 1% for all habitat classes (Table 6.6-1). Similar to the FEIS, Lichen Heath – *Cetraria* is affected the most by the Phase 1 Project case with a predicted decrease in area of 0.6%.

Table 6.6-1: Direct Change (%) in Area of Habitat Types from Development within the Regional Study Area for Wildlife from Reference Conditions to Baseline, FEIS[a], and Phase 1 Project

Habitat	Reference Area (ha)	Area (ha) Removed from Reference to Baseline	% Change Reference to Baseline	Area (ha) Removed from Baseline to FEIS Project	% Change Baseline to FEIS Project	Area (ha) Removed from Baseline to Phase 1 Project	% Change Baseline to Phase 1 Project
Bare Ground	5,263.0	246.3	-4.7	32.4	-0.6	20.3	-0.4
Lichen Heath–*Cetraria Lichen*	1,733.1	35.2	-2.0	81.0	-4.8	9.9	-0.6
Lichen Heath-Hair Lichen	4,503.5	10.0	-0.2	22.0	-0.5	14.0	-0.3
Heath Boulder	26,499.5	82.2	-0.3	75.5	-0.3	44.4	-0.2
Heath Tundra	109,825.9	291.6	-0.3	1,622.3	-1.5	248.0	-0.2
Low Shrub	3,478.3	2.7	-0.1	14.3	-0.4	1.8	-0.1
Tussock Hummock	25,698.7	65.8	-0.3	191.5	-0.7	76.2	-0.3
Water	69,297.8	55.7	-0.1	514.7	-0.7	38.1	-0.1

[a] Includes Phase 1 AWAR and Project as described in Table 6.6-19 of the FEIS (Agnico Eagle 2014).

The incremental changes in landscape fragmentation metrics, which describe the configuration of habitat patches, were calculated for each habitat at the RSA scale and included number of patches, mean distance to the nearest patch of the same habitat type (i.e., nearest neighbour), and nearest neighbour index. The nearest neighbour index is the ratio of the observed nearest neighbour distance and the expected distance if patches were randomly distributed on the landscape. Nearest neighbour index values less than one indicate the habitat type is clumped across the landscape, while values greater than one indicate that patches of the habitat type are dispersed across the landscape. Whereas the number of patches of some habitat types is expected to increase as a result of the FEIS Project, the refinements to the Project in Phase 1 are expected to reduce the number of patches for all habitat types in the RSA by less than 1%, relative to the baseline case (Table 6.6-2). Nearest neighbor distance and the nearest neighbor index for all habitat types will also change by less than 1% for Phase 1, relative to the baseline case (Table 6.6-2).

Table 6.6-2: Direct Change (%) in the Number of Patches, Mean Nearest Neighbor Distance, and Nearest Neighbor Index of Habitat Types from Development within the Regional Study Area during Reference, Baseline, FEIS[a], and Refined Project

Habitat	Number of Patches	% Change Reference to Baseline	% Change Baseline to FEIS Project	% Change Baseline to Phase 1 Project	Mean Nearest Neighbor Distance (m)	% Change Reference to Baseline	% Change Baseline to FEIS Project	% Change Baseline to Phase 1 Project	Nearest Neighbor Index	% Change Reference to Baseline	% Change Baseline to FEIS Project	% Change Baseline to Phase 1 Project
	Reference				Reference				Reference			
Bare Ground	989	12.2	0.7	-0.18	553.4	-9.3	-0.2	0.57	0.7	-3.9	0.1	0.48
Heath Lichen – *Cetraria*	1094	2.4	0.8	-0.12	471.8	-0.8	0.3	0.12	1.0	-0.5	-0.2	0.06
Heath Lichen – *Hair Lichen*	2535	0.6	-0.9	-0.10	454.4	-2.6	-1.7	0.19	1.0	-1.3	-0.9	0.14
Heath Boulder	2855	2.8	1.7	-0.09	660.9	-2.8	-1.8	0.03	0.9	-1.6	-1.5	-0.02
Heath Tundra	4014	2.1	2.0	-0.15	323.3	-0.8	-1.5	0.02	0.8	0.2	-0.6	-0.06
Low Shrub	3353	0.1	-0.7	-0.03	356.3	-0.1	-0.1	-0.07	0.8	-0.1	-0.5	-0.08
Tussock Hummock	5144	1.1	-0.1	-0.08	361.8	-0.9	-0.6	0.01	1.0	-0.4	-0.6	-0.03
Water	4992	0.1	-0.1	-0.04	371.4	-0.1	-0.6	0.06	1.1	-0.1	-0.6	0.04

[a] Includes Phase 1 AWAR and Project as described in Table 6.6-19 of the FEIS (Agnico Eagle 2014).

Overall, the landscape metrics for Phase 1 indicate less habitat area loss and a decrease in fragmentation compared to the FEIS. Thus, Phase 1 residual effects on wildlife distribution and abundance from direct habitat loss and fragmentation are lower than those presented in the FEIS.

Birds

The type and amount of bird habitat directly lost and fragmented in the RSA as a result of the refinements to the Project are the same as that described for wildlife and presented in Tables 6.6-1 and 6.6-2.

For raptor nesting habitat, 2.33 ha of steep cliff nesting habitat was calculated in the LSA under baseline conditions, with approximately 0.44 ha (19% of nesting habitat in the LSA) of steep cliff nesting habitat predicted to be disturbed in the FEIS. For Phase 1, approximately 0.36 ha of steep cliff nesting habitat (16% of nesting habitat in the LSA) will be disturbed, including an additional 1 m^2 of newly disturbed area. Approximately 0.08 ha of raptor nesting habitat will no longer be disturbed by the Phase 1 Project.

Of the known raptor nest site locations described in the FEIS, Phase 1 is predicted to directly disturb one nest (AR-18c) and indirectly disturb five nests (AR-67, AR-110, AR-14, C09-01, A08-01). Three raptor nest locations previously predicted to be directly (C08-01, E08-01) or indirectly (AR-34) disturbed in the FEIS are no longer predicted to be disturbed.

Approximately 260 ha of high density prey habitat is present in the LSA under baseline conditions. It is predicted that Phase 1 will disturb approximately 128 ha of high density upland prey habitat, which includes an additional 7 ha of newly disturbed high quality habitat. Approximately 132 ha of high density habitat identified in the FEIS as being disturbed will no longer be disturbed. Two of the five raptor nests (AR-110 and AR-67) identified as indirectly disturbed by Phase 1 are located within or adjacent to areas of high upland breeding bird density under baseline conditions. A decrease in upland breeding bird density habitat may negatively affect nest occupancy and productivity; however, raptors are highly mobile and are expected to be able to access areas outside of the zone of influence that are not influenced by sensory disturbance (i.e., have a higher abundance of prey). Also, raptors do not prey exclusively on upland birds and waterbirds; they also consume small mammals, such as voles and mice.

Overall, Phase 1 residual effects on bird distribution and abundance from direct habitat loss and fragmentation are lower than that described in the FEIS.

Effects of Disruption or Alteration of Migration Routes

Caribou movement was assessed in the FEIS through IQ investigations, and also by mapping caribou GPS collar location data. Pathways developed from caribou collar data support information gained from IQ and indicate that caribou move through a shallow region of Meliadine Lake where the land on either side constricts east of the main mine site outlined in the FEIS and the Meliadine exploration camp (called the Narrows). This is a natural crossing area for caribou and is likely the route used by caribou that passed through the Meliadine mine and camp site in August 2011, July 2012, July 2013, and July 2014.

For Phase 1, the main mine camp, which was originally planned to be near the exploration camp, has been moved to avoid the caribou migration path through the Narrows, while the exploration camp will remain in place (see Figure 1-2). The relocation of the main mine camp is expected to reduce sensory disturbance and direct human-caribou interaction at the Narrows. Thus, the Phase 1 residual impact classification related to effects to caribou migration patterns remains unchanged, or is lower, than those presented in the FEIS.

Effects of Lake Dewatering and Water Diversions

The number of waterbodies requiring dewatering has been reduced from eight assessed in the FEIS to four. The Phase 1 footprint extends over the A, B, G, and H watersheds. There are no diversions required as part of water management activities (see Section 6.8 and the Water Management Plan, submitted as part of the Type A Water Licence Application, for further details). Consequently, the residual effects on wildlife habitat and bird populations from the dewatering of waterbodies and diversion of water will be lower or remain unchanged from the FEIS.

Effects of Dust Deposition and Air Emissions

The dry stack tailings design has the potential to increase dust deposition and air emissions from the Project as a result of emissions associated with the haul trucks and haul roads, as well as the windborn emissions from the TSF. However, the Phase 1 maximum emissions will be lower than those evaluated within the FEIS (see Section 6.1 for further details) and, thus, the potential residual effects on wildlife and bird populations remain unchanged, or will be less than those presented in the FEIS.

Based on the screening assessment, the potential effects on wildlife and birds associated with the Project design refinements are expected to be lower than, or similar to those presented in the FEIS. Therefore, the residual adverse effects on wildlife and bird distribution and abundance, and on caribou migration, for Phase 1 can still be considered not significant.

AQUATIC ENVIRONMENT

6.7 Groundwater

The assessment of groundwater quality and quantity for the FEIS Project focused on predicting changes to the deep groundwater regime. No primary effects pathways were identified in the FEIS, but a few minor pathways from the dewatering of lakes or exposure/impacts to open taliks were considered.

As elaborated further in Section 6.8 below, the number of lakes requiring dewatering for Phase 1 has been reduced to four (A54, H17, H19, H20). None of these lakes have open taliks; therefore, groundwater will not flow from these lakes to other lakes nearby. Consequently, dewatering of these lakes will not affect the deep groundwater regime.

The tailings management design has been refined from thickened tailings slurry with sub-aqueous storage in the TSF to concentrated tailings with an on-land dry stack TSF. As the TSF is no longer located in a dewatered headwater lake that has an open talik, and the lower water content of the tailings will result in a shorter time required to freeze the pad below the TSF and freeze the tailings (see Section 6.3), groundwater flow and quality will not be affected. Seepage and runoff from the TSF will be collected in water diversion channels and diverted to collection ponds. No water will be discharged directly to the environment. Refer to the Water Management Plan, submitted as part of the Type A Water Licence Application, for further details.

Movement of the site infrastructure to different locations on-land is not expected to affect deep groundwater quality. All runoff and the minimal amount of seepage expected to be generated will continue to be captured in site contact water ponds and be directed to CP1; this water will not infiltrate to the deep groundwater regime through open taliks.

The operating water level of CP1 (Lake H17) will vary from the current water level in Lake H17: it will be approximately 2 m higher during spring freshet. This has the potential to produce an open talik beneath CP1, potentially allowing contact water in the pond to seep into the deep groundwater regime. However, water levels will be drawn down to the lowest level possible each fall to allow for the storage of spring freshet flows the following year. This will result in CP1 being completely frozen during the winter. Therefore, an open talik will not form beneath CP1, and deep groundwater quality will be unaffected.

The potential effects on groundwater quality and quantity from the Project refinements will be lower or remain unchanged from the FEIS. As there were no primary pathways for groundwater quality identified in the FEIS, and no new primary pathways have been identified for the Phase 1, no residual impact predictions of significance were undertaken.

6.8 Hydrology and Water Quantity

In the FEIS, potential effects from lake dewatering, Project infrastructure, and water diversions to surface water flows and levels and channel and bank stability were assessed. Phase 1 design refinements relevant to these effects pathways are discussed further below.

Effects of Lake Dewatering

A comparison of waterbodies requiring dewatering during the construction phase of the FEIS Project and Phase 1 is presented in Table 6.8-1. In the FEIS, a total of eight waterbodies required dewatering to allow for the construction of the site infrastructure and mining of the five gold deposits, including Lakes A6, A8, A54, B4, B5, B7, E4, and H17. The FEIS presented resulting effects on flows, water levels, and channel and bank stability at receiving lakes and predicted an increase in flood and low flows, and corresponding water levels. When applicable, mitigation measures were recommended to prevent potential impacts on channel and bank stability. Other waterbodies required in-filling, including, but not limited to, Lakes H19 and H20.

The number of waterbodies requiring dewatering has been reduced to four (A54, H17, H19, H20) for Phase 1. Dewatering of Lake H17 to Meliadine Lake is common to both the FEIS Project and Phase 1. Dewatered volumes of Lakes A54, H19, and H20, will be discharged to CP1 (i.e., Lake H17 following its dewatering). Collection Pond 1 is a water management pond and the discharge to the surrounding environment will be controlled.

Dewatering of waterbodies is limited to the A and H watersheds for Phase 1. Consequently, the effects of dewatering on flows, water levels, and channel and bank stability will be lower or remain unchanged from the FEIS.

Table 6.8-1: Inventory of Waterbodies Requiring Dewatering

Lake	FEIS Project		Phase 1	
	Dewatering Volume (m^3)	Point of Discharge	Dewatering Volume (m^3)	Point of Discharge
A6	740,000	A1	-	-
A8	1,500,000	A7	-	-
A54	40,400	A39	34,545	CP1 (H17)
B4	942,000	Meliadine Lake	-	-
B5	1,170,200	D7	-	-
B7	464,600	B6	-	-
E4	118,500	E3	-	-
H17	195,000	Meliadine Lake	195,700	Meliadine Lake
H19	In-filled		16,431	CP1 (H17)
H20	In-filled		90,307	CP1 (H17)

In the FEIS, refilling of the Discovery, F Zone, Pump, Tiriganiaq, and Wesmeg pits during the closure phase was assessed based on active refilling from Meliadine Lake (in addition to natural runoff) to expedite refilling time. Pumping of water from Meliadine Lake for the FEIS Project was scheduled to take place at a constant rate from the start of June to the end of September each year, for a period of approximately 10 years (or an approximate annual volume of 17,000,000 m^3).

For Phase 1, refilling of the Tiriganiaq Pit will remain as active refilling from Meliadine Lake, in addition to natural runoff. Active pit refilling is based on reduced pumping rates over the months of June through September and an annual volume. Pumping of water from Meliadine Lake remains scheduled from the start of June to the end of September each year, for a reduced period of three years (or an approximate annual volume of 3,100,000 m^3). A comparison of the annual refilling volumes from June to September for the two Project designs is provided in Table 6.8-2.

Thus, conclusions of the FEIS present a worst-case scenario for potential effects of dewatering on flows, water levels, and channel and bank stability; Phase 1 effects will be lower or remain unchanged from the FEIS.

Table 6.8-2: Annual Refilling Schedule and Volumes

Schedule[a]	Annual Refilling Volume (m^3)	
	FEIS Project	Phase 1 Project
June	4,265,630	438,300
July	4,265,630	876,600
August	4,265,630	876,600
September	4,265,630	876,600
Total Annual Volume	**17,062,520**	**3,068,100**

[a] This schedule is based on a refilling period of 10 years for the full Project, and three years for the Phase 1 Project.

Effects of Project Infrastructure

Modifications to the Project footprint from the FEIS Project to Phase 1 are summarized in Section 3.1. An inventory of waterbodies directly impacted by the Phase 1 footprint is provided in Table 6.8-3.

Table 6.8-3 Inventory of Waterbodies Directly Impacted by Phase 1

Watershed	Waterbody	Notes
A	A10, A11	Removed to implement Tiriganiaq Pit 1
	A12, A13	Partially drained by Channel 5
	A17	Covered by WRSF 1
	A39	Removed to implement Tiriganiaq Pit 2
	A54	Dewatered to become Collection Pond (CP) 5
	A58	Covered by WRSF 2
B	B8	Incorporated into CP4 / Berm4
	B9	Covered by WRSF 1
	B10	Removed to implement Tiriganiaq Pit 1
	B28	Collection Pond 3 / Dike D-CP3
H	H6, H7	Incorporated into Collection Pond 1
	H8	Partially covered by WRSF 2 and haul road
	H9	Partially covered by OP2
	H10, H11, H12	Partially drained by Channel 1 and partially covered by OP2
	H13	Partially drained by Culvert 2 and covered by industrial pad area
	H14A	Industrial pad area
	H15D, H15G	Covered by tailings storage facility
	H17	Becomes Collection Pond 1
	H18	OP2
	H19, H20	Dewatered to become Collection Pond 6 (H19) and WRSF 3

OP = ore stockpile; WRSF = waste rock and overburden storage facility

In the FEIS, the Project footprint extended over the A, B, C, D, E, H, I, J, P, and CH watersheds, an area of 1,681 ha, resulting in residual effects to waterbodies located within these watersheds.

For Phase 1, the Project footprint has been reduced to 453 ha, and extends over the A, B, G, and H watersheds only. Similarly to the Project assessed in the FEIS, residual effects from changes in watershed characteristics are expected for waterbodies located downstream of the Project footprint. However, because of a reduction in the Project footprint in the A, B, and H watersheds, the magnitude of residual effects is expected to be reduced. In the G watershed, construction of the industrial site pad will result in a permanent reduction of 1.6 ha (or 3%) of land area in the Lake G2 watershed.

Potential effects from the reduction in the G2 watershed drainage area are presented in Table 6.8-4 based on a comparison of coarse mean annual water balance during baseline and construction conditions. Construction of the industrial site pad within 1.6 ha of land area of the Lake G2 watershed will result in a reduction in mean annual water yields of 1.3%, from 200 millimetres (mm) during baseline conditions, to 198 mm following construction. Effects diminish downstream from increases in drainage area, and potential effects of the industrial

pad on mean annual water yields are expected to be less than a 1.3% reduction at Lake G1. Corresponding effects on water levels in the G watershed are expected to be negligible.

Consequently, the potential Phase 1 effects of Project infrastructure on flows, water levels, and channel and bank stability for the A, B, and H watersheds will be lower or remain unchanged from the FEIS. Effects on water levels in the G watershed are expected to be negligible.

Table 6.8-4: Lake G2: Mean Annual Water Balance for Baseline and Construction Conditions

Component	Magnitude (mm)		Comment
	Baseline	Construction	
Total Precipitation	411.7	411.7	Mean annual value, adjusted for undercatch
Rainfall	207.1	207.1	Mean annual value, adjusted for undercatch
Snowfall as SWE	204.6	204.6	Mean annual value
Spring SWE	107.4	107.4	Mean annual value, accounting for 47.5% loss due to sublimation (97.2 mm)
Net Precipitation Input	314.5	314.5	Rainfall + spring SWE
Surface Runoff (at Lake G2)	200.0	197.5	Mean annual value
Lake Evaporation at 323 mm	87.9	90.8	27.2% (baseline) and 28.1% (construction) of G2 Watershed is lake surface
Evapotranspiration at 36.5 mm	26.6	26.2	72.8% (baseline) and 71.9% (construction) of G2 Watershed is land surface
Net Watershed Output	314.5	314.5	Surface runoff + lake evaporation + evapotranspiration

SWE = snow water equivalent

Effects of Watershed Diversion

There are no diversions required as part of water management activities for Phase 1. Thus, conclusions in the FEIS present a worst-case scenario for potential effects of watershed diversion on flows, water levels, and channel and bank stability.

Based on the screening assessment, the potential effects on water flows, levels and channel and bank stability associated with Phase 1 are expected to be lower than, or similar to those presented in the FEIS. Impact predictions for fisheries and aquatic habitat are presented below in Section 6.10.

6.9 Water and Sediment Quality

In the FEIS, the primary pathways carried forward into the residual effects analysis were grouped into two effects statements: effects due to physical alterations of watersheds (due to the Project footprint) and air emissions (including dust) during construction, operations, and closure, and effects due to water emissions during operations and closure. Phase 1 project refinements relevant to these effects pathways are discussed further below.

Effects of Project Footprint and Air Emissions

Physical alterations of watersheds from Project facilities may result in a change in water and sediment quality in waterbodies and streams. The changes will be largely driven by changes in the hydrologic balance

(i.e., flow rates and water volume in the small lakes of the Peninsula). As discussed in Section 6.8, the Phase 1 Project footprint has decreased in size (from 1,681 ha to 453 ha) and extends over fewer watersheds compared to the FEIS Project (Table 6.8-1). Due to the reduction in size of the Project footprint, changes to flows in these watersheds will be less than assessed in the FEIS. Consequently, the Phase 1 residual effects on water and sediment quality will be lower or remain unchanged from the FEIS.

The Phase 1 footprint extends into watershed G, which was not assessed in the FEIS. The effect of the new footprint in watershed G was assessed by hydrology (Section 6.8). A reduction of less than 1.3% in mean annual water yields in the G watershed is expected to have negligible effects on water levels. Consequently, effects to water and sediment quality are also expected to be negligible.

Deposition of windborne particulates from Project facilities and exposed lake beds, and air emissions (including blasting particulates and residuals) from Project facilities may also change water and sediment quality in the Peninsula lakes. The air quality assessment based on Phase 1 is presented in Section 6.1. Due to the reduction in ore processing rate and modification of the tailings management to dry stack tailings, the deposition of fugitive particulate matter and nutrients (from blasting activities), metals, and acidifying material will be equal to or less than assessed in the FEIS. The net effect of similar or lower deposition of aerial emissions (including dust) in Phase 1 will result in similar or better water and sediment quality than predicted in the FEIS.

Effects to Water Quality during Operations

Release of treated mine wastewater and effluent may cause a change in the surface water quality of Meliadine Lake. The overall objectives of the water management strategy are to reduce and/or optimize contact water, limit fresh water make-up, and divert non-contact water. This overall objective has not changed.

For Phase 1, water quality in all ponds will be measured against MMER limits (Government of Canada 2012), although only water from CP1 will be discharged in a controlled manner (via a diffuser) to the receiving environment (i.e., Meliadine Lake) during construction, operations, and active closure. Water in all other collection ponds will be pumped to CP1 and not discharged directly to the receiving environment. Based on the predicted water quality in CP1, contact water will be treated for TSS to meet the MMER monthly average limit of 15 milligrams per litre. Water in CP1 will be monitored and, if required, additional treatment will be used to meet discharge limits. During closure, the diffuser will be decommissioned and removed once Agnico Eagle demonstrates that the release of contact water through the diffuser is no longer required.

The volume of effluent predicted to be released through the diffuser as presented in the FEIS, and the effluent volume predictions for Phase 1 are summarized in Table 6.9-1. Less effluent will be released each year (on average) for Phase 1, and less effluent in total will be released, as compared to the Project assessed in the FEIS.

Table 6.9-1: Predicted Volume of Effluent Release to Meliadine Lake through the Diffuser

Phase	Mine Year	Annual Volume (m^3)	
		FEIS Project[a]	Phase 1[b]
Pre-development	-5	0	0
Construction	-4	0	457,780
	-3	392,540	479,208
	-2	872,262	498,688
	-1	828,589	485,167
Operations	1	244,038	590,687
	2	650,785	640,501
	3	740,219	729,501
	4	1,431,258	679,143
	5	947,615	668,451
	6	1,632,978	676,141
	7	2,088,803	675,141
	8	1,706,539	587,971
	9	2,088,803	674,523
	10	2,061,153	673,034
	11	1,987,959	672,060
	12	2,006,071	-
	13	1,877,332	-
Average per year (to Year 11)		1,048,693	612,533
Total		**11,535,627**	**9,187,996**

[a] Water Management Plan, SD2-6, Appendix C, Table B.2 in FEIS (Agnico Eagle 2014).

[b] Water Management Plan, Appendix B and D, submitted as part of the Water Licence application.

The summary and interpretation of quantitative water quality predictions requires the use of assumptions due to the uncertainty related to determining the physical and geochemical characteristics of a complex system. The data (e.g., baseline water quality and geochemical characterization) and approaches used to estimate effluent and water quality provide a reasonable approximation of the system as currently understood, within the context of the assumptions used in the model. Monitoring programs will be conducted during all phases of the life of mine (i.e., pre-development, construction, operations, closure, and post-closure) to verify predictions, to validate the performance of mitigation measures, and to provide rationale for implementation of adaptive management.

Predicted end-of-pipe effluent concentrations are compared to MMER, and to average background concentrations in Meliadine Lake (Table 6.9-2); predictions from the FEIS Project and Phase 1 are provided. Predicted concentrations of all constituents are higher in the effluent than background concentrations in Meliadine Lake except for fluoride, total phosphorus, cadmium, chromium, iron, silver, and thallium. For these seven constituents, predicted end-of-pipe effluent concentrations are lower than mean measured concentrations

in Meliadine Lake. End-of-pipe concentrations for all modelled parameters for Phase 1 are predicted to be lower than MMER guidelines (Government of Canada 2012) and lower than the water quality predictions in the FEIS.

For the FEIS Project, predicted concentrations at the edge of the mixing zone were equal to or lower than CCME aquatic life (CCME 1999) and Health Canada drinking water guidelines (Health Canada 2012); see Table 6.9-2 for details. A Cornell Expert Mixing System (CORMIX) model was used to predict minimum dilution that could be achieved in Meliadine Lake to meet the edge of mixing zone objectives (Appendix E to the Water Management Plan). Maximum effluent discharge quality was calculated based on the diffuser design criteria, minimum dilution, and the edge of mixing zone objectives. These maximum values helped to refine and focus the development of effluent quality criteria (see Appendix H of the Water Management Plan submitted as part of the Water Licence application for further details). Given that end-of-pipe concentrations will be lower for Phase 1, concentrations at the edge of the mixing zone will be less than predicted in the FEIS. Thus, there are no constituents of concern in the effluent or at the edge of the mixing zone for Phase 1. The effluent releases associated with refinements to the Project will result in discharge loads that are lower than those evaluated in the FEIS.

Effects to Water Quality at Post-Closure

Post-closure water quality is compared against water quality objectives including guidelines for aquatic life (CCME 1999), drinking water quality guidelines (Health Canada 2012), and the Meliadine Site-Specific Water Quality Objectives developed for arsenic, fluoride, and iron (Golder 2013).

At the end of mining, Tiriganiaq Pits will be actively flooded with water from Meliadine Lake. Predictions of pit lake water quality have been made assuming fully mixed conditions (Table 6.9-3). The long-term, post-closure water quality in the collection ponds and flooded open pit lakes will meet the water quality objectives. Consequently, long-term water quality in the ponds and Tiriganiaq Pit Lakes is predicted to be suitable for aquatic life and human use. Monitoring will be conducted to confirm these predictions.

Based on the screening assessment, the potential effects on water and sediment quality associated with the Project design refinements are expected to be lower than, or similar to those presented in the FEIS. Therefore, the Phase 1 residual adverse effects can still be considered not significant.

Table 6.9-2: Predicted End-of-Pipe Effluent and Edge of Mixing Zone Water Quality in Meliadine Lake

Constituent	Objective – End of Pipe		End-of-Pipe Predictions		Objective – Edge of Mixing Zone			Meliadine Lake[h]			Edge of Mixing Zone Predictions
	MMER Monthly Mean[a]	MMER Maximum Grab[a]	FEIS[b]	Phase 1 Project[c]	SSWQO[d]	Aquatic Life[e]	Drinking Water[f]	Minimum	Median	Maximum	FEIS[b]
Conventional Constituents											
Total Dissolved Solids	-	-	4,685	425	-	-	500	21	35	91	68
Total Suspended Solids	15	30	0	15	-	8	-	1	1.5	8	3.1
pH	6 to 9.5	6 - 9.5	-	-	-	6.5 to 9.0	6.5 to 8.5	6.7	7.4	8.0	-
Major Ions											
Chloride	-	-	1,142	33	-	120	250	2.7	6.4	25.2	14
Fluoride	-	-	1.2	0.0005	2.8	0.12	1.5	0.03	0.03	0.03	0.0084
Sodium	-	-	295	9.5	-	-	200	1.7	3.2	7.5	5.3
Sulphate	-	-	4,974	87		-	500	1.5	2.9	8.9	38
Nutrients											
Total Ammonia as Nitrogen	-	-	70	7.8	-	7	-	0.002	0.025	0.052	0.54
Nitrate Ion	-	-	29	9.7	-	13	45	0.013	0.11	0.22	0.25
Phosphorus (total)	-	-	0.06	1.0	-	0.03	-	0.0028	0.0055	0.033	0.0049/0.03[i]
Cyanides											
Total cyanide	1	2	1	0.11	-	-	0.2	0.000001	0.001	0.003	0.009
Free cyanide	-	-	0.05	-	-	0.005	-	-	-	-	0.00035
Metals											
Aluminum	-	-	0.98	1.2	-	0.1	0.1	0.00015	0.0025	0.1	0.0091/0.1[i]
Antimony	-	-	0.059	0.0076	-	-	0.006	0.00002	0.0001	0.0003	0.00051
Arsenic	0.5	1	0.5	0.45	0.025	0.005	0.01	0.0001	0.0003	0.0009	0.0038
Barium	-	-	9.9	0.033	-	-	1	0.00003	0.0071	0.0177	0.077

Table 6.9-2: Predicted End-of-Pipe Effluent and Edge of Mixing Zone Water Quality in Meliadine Lake (continued)

Constituent	Objective – End of Pipe		End-of-Pipe Predictions		Objective – Edge of Mixing Zone			Meliadine Lake[h]			Edge of Mixing Zone Predictions
	MMER Monthly Mean[a]	MMER Maximum Grab[a]	FEIS[b]	Phase 1 Project[c]	SSWQO[d]	Aquatic Life[e]	Drinking Water[f]	Minimum	Median	Maximum	FEIS[b]
Cadmium	-	-	0.0001	0.000019	-	0.00005[g]	0.005	0.00001	0.00003	0.0048	**0.00005**
Chromium	-	-	0.1	0.003	-	0.0089	0.05	0.00003	0.0002	0.00215	0.0011
Copper	0.3	0.6	0.13	0.0047	-	0.002	1	0.0005	0.00111	0.0031	0.002
Iron	-	-	2.8	1.7	1.06	0.3	0.3	0.0005	0.0235	0.085	0.042
Lead	0.2	0.4	0.0092	0.0055	-	0.001	0.01	0.00003	0.00003	0.00071	0.00015
Manganese	-	-	0.48	0.25	-	-	0.05	0.00005	0.00283	0.00769	0.0055
Mercury	-	-	0.00008	0.0000015	-	0.000026	0.001	0.00001	0.00001	0.00003	0.00002
Molybdenum	-	-	0.73	0.011	-	0.073	-	0.00003	0.00011	0.0015	0.0052
Nickel	0.5	1	0.29	0.0043	-	0.029	-	0.00005	0.0006	0.01	0.0027
Selenium	-	-	0.0091	0.00053	-	0.001	0.01	0.00005	0.00005	0.0005	0.00016
Silver	-	-	0.0001	0.00012	-	0.0001	-	0.00001	0.00005	0.00055	0.0001
Thallium	-	-	0.0076	0.000011	-	0.0008	-	0.00001	0.00002	0.0001	0.0001
Uranium	-	-	0.15	0.0013	-	0.015	0.02	0.00002	0.00003	0.0001	0.0011
Zinc	0.5	1	0.26	0.017	-	0.03	5	0.0004	0.0015	0.0372	0.0067

Note: Units are mg/L.

"-" no value; EOP = end of pipe; MMER = Metal Mine Effluent Regulations; FEIS = final environmental impact statement; SSWQO = site-specific water quality objective.

[a] Government of Canada (2012).

[b] Table 7.4-20 from FEIS (Agnico Eagle 2014); maximum predicted values, dissolved constituent concentrations.

[c] Maximum predicted values, total parameter concentrations assuming 15 mg/L Suspended Solids of mine waste composition (Water Management Plan, Appendix G, Attachment C Table C-1 for major ions, nutrients and cyanides (no change in concentration with added TSS) and Attachment D Table D-3 for metals).

[d] Golder (2013).

[e] CCME (1999).

[f] Health Canada (2012).

[g] Hardness of 23 mg/L $CaCO_3$.

[h] Data from FEIS (Table 7.4-20; Agnico Eagle 2014) plus 2013 (Azimuth 2013).

[i] Appendix E of the Water Management Plan

Table 6.9-3: Predicted Long-term Water Quality in Tiriganiaq Pit Lakes

Location	Objectives			Tiriganiaq Pit Lakes		
	SSWQO[a]	Aquatic Life[b]	Drinking Water[c]	FEIS Project[d]	Phase 1 Project[e]	
					Pit 1	Pit 2
Total Dissolved Solids	-	-	500	32	11	31
Chloride	-	120	250	5.7	2.0	8.3
Fluoride	2.8	0.12	1.5	0.00058	-	-
Sulphate	-	-	500	3	3.0	4.4
Ammonia-N	-	-	-	1	0.98	0.84
Nitrate Ion	-	13	45	0.77	0.841	0.744
Total Kjeldahl Nitrogen	-	-	-	0.183	0.034	0.130
Total Phosphorus	-	0.004 to 0.01	-	-	0.001	0.002
Total Dissolved Phosphorus	-	-	-	0.00341	0.0004	0.002
Aluminum	-	0.1	0.1	0.00552	0.010	0.010
Arsenic	0.025	0.005	0.01	0.00292	0.007	0.007
Boron	-	1.5	5	0.00295	0.013	0.007
Cadmium	-	0.00005[f]	0.005	<0.00001	<0.00001	<0.00001
Copper	-	0.002	1	0.00284[f]	0.0002	0.0005
Iron	1.06	0.3	0.3	0.00642	0.01	0.01
Lead	-	0.001	0.01	0.00014	0.0002	0.0009
Manganese	-	-	0.05	0.00184	0.009	0.0176
Mercury	-	0.000026	0.001	<0.00001	<0.00001	<0.00001
Molybdenum	-	0.073	-	0.00028	0.0009	0.0002
Nickel	-	0.038	-	0.00045	0.0004	0.002
Selenium	-	0.001	0.01	0.00003	0.00007	0.0003
Uranium	-	0.015	0.02	0.00008	0.0001	0.0001
Zinc	-	0.03	5	0.00126	0.0015	0.0055

Note: Units are mg/L; "-" no value.

[a] Golder (2013)

[b] CCME (1999)

[c] Health Canada (2012)

[d] Table 7.4-22 from FEIS (Agnico Eagle 2014).

[e] Maximum Predicted Values; Water Management Plan submitted as part of the Water Licence application (Appendix G, Attachment C Table C-1 and Attachment D Table D-3)

[f] Hardness of 23 mg/L $CaCO_3$

6.10 Fish Habitat

The potential effects on aquatic habitat from the Project infrastructure of Phase 1 will occur in four main areas:

- small ponds and streams of the upper H watershed where most of the Project infrastructure and mine process activities will be located;
- small ponds and streams of the lower H watershed, due to reduction in flows downstream of dikes D-CP1 and D-CP6;
- small ponds and streams of the upper A and B watersheds; and
- Meliadine Lake due to changes in habitat from construction of the freshwater intake structure.

As described in Section 6.8, construction of the industrial site pad will result in a permanent reduction of 1.6 ha (or 3%) of land area in the G watershed. Corresponding reduction of mean annual water yields of only 1.3% is expected to have negligible effects on water levels. Consequently, effects to fish or fish habitat are expected to be negligible, and have not been assessed further.

As concluded in Sections 6.8 and 6.9, fewer lakes and streams will be impacted by Phase 1 than described in the FEIS and no measureable changes to downstream habitat quality (e.g., TSS) and habitat quantity (e.g., flows) are predicted. Consequently, the potential effects to the abundance and distribution of fish and fish habitat for Phase 1 are expected to be less than or similar to those presented in the FEIS. Further explanation of the potential effects to fish species based on Phase 1 are provided below.

Upper H Watershed

Most of the Project infrastructure and mine process activities for Phase 1 will be located in the upper H watershed. All affected ponds are shallow and freeze to the bottom for up to eight months of the year and do not provide overwintering habitat. It is suspected that ninespine stickleback present in these ponds during summer gain access during some years when spring freshet can establish shallow connections between ponds through snow melt inundating the tundra. The winter construction of dikes downstream of the collection ponds will eliminate any possibility of ninespine stickleback gaining access to collection ponds during the following spring and thus effectively create a non-fish bearing status for Pond H17 and other collection ponds the following summer.

Ninespine stickleback is not a Commercial, Recreational, or Aboriginal (CRA) fish species (Kenchington et al. 2013) and ninespine stickleback and its habitats in upper basins of the Peninsula do not provide functions essential for sustaining the downstream production of CRA species (including Arctic char, Arctic grayling, and lake trout).

Lower H Watershed

The lower part of the H watershed (downstream of dikes D-CP1 and D-CP6) will not be directly altered by the Phase 1 footprint; however, the aquatic habitat will be indirectly affected by a reduction in flows. The use of dikes D-CP1 and D-CP6 at upstream locations for the collection of contact water will divert flows away from downstream locations prior to entering Meliadine Lake. This will effectively reduce the area of the drainage basin, affecting downstream flows.

The ponds in the lower H watershed are shallow and freeze to the bottom in winter and do not provide overwintering habitat. However, two young-of-year Arctic grayling were captured in Pond H2 indicating the presence of spawning activities in the area, and that Pond H2 and H1 may provide functions for rearing fish. The predicted cumulative changes in water levels in ponds are not expected to affect pond functions for rearing or foraging fish.

The cumulative reduction in the drainage basin area of the upper H watershed will also affect the outlet streams in the lower H watershed. These streams are primarily seasonal, with flows relying heavily on snowmelt or large precipitation events. Two streams (H0-1 and H1-2) may provide small areas of habitat for spawning by Arctic grayling, but given the ephemeral characteristics of the streams, it is expected that use of the stream may be sporadic, relying on winters that provide for above-average snow melt. The low numbers of fish captured in the lower H basin suggests the suitability of existing habitat is marginal.

Given the low numbers of fish caught in the lower H basin, no changes to the productivity of the Arctic grayling fishery in Meliadine Lake are expected. Any residual changes to streams H0-1 and H1-2 would represent a very small proportion of available stream habitat in the Meliadine Lake region because the affected habitat types (e.g., small ephemeral streams) are widespread and abundantly available.

At the scale of the LSA, the total length of stream habitats on the Peninsula is approximately 32.2 km, of which at least 7.4 km of stream length provide habitat for Arctic grayling. Furthermore there is a total of 257 km of stream length at the broader scale of the Meliadine Lake watershed where population processes likely operate. Therefore, it is unlikely that Phase 1 will directly affect the on-going production of Arctic char, Arctic grayling, and lake trout fisheries; or indirectly through effects to fish that support such fisheries.

Upper A and B Watersheds

The upper A and B watersheds will be affected by Phase 1, affecting small ponds and streams that eventually drain into lakes inhabited by Arctic grayling (lakes A8 and B7). The affected area of the watersheds represents a small portion of the respective drainage basins to Meliadine Lake and includes only 13 headwater ponds with a total surface area of 12.7 ha (versus the 243 ponds and small lakes on the Meliadine Peninsula, representing 1,702.5 ha of standing water). Most affected ponds are less than 1 ha. The maximum depth of 1.4 m was recorded in Pond B9. As such, all waterbodies in the upper A and B watersheds freeze to the bottom during winter and do not provide overwintering habitat for fish.

As described for the upper H watershed, it is suspected that ninespine stickleback present in the small ponds of the upper A and B watersheds during summer gain access during years when spring freshet can establish shallow connections between ponds. It is also predicted that ninespine stickleback and their habitats in the upper basins of the Peninsula do not provide functions essential for sustaining the downstream production of Arctic grayling, Arctic char, and lake trout fisheries.

Meliadine Lake

The footprint of the freshwater intake structure in Meliadine Lake (0.354 ha) will cover an area that corresponds to 0.151 habitat units prior to construction. Although a small portion of the proposed jetty design will permanently remove habitat (0.129 ha in area), the placement of the underwater rock apron around the jetty will replace silt substrate habitats in the 2 to 10 m depth zone with rock substrate habitats that have a considerably higher habitat suitability index values. As such, the construction of the jetty will result in a slight increase in

habitat units relative to pre-construction conditions. The total underwater area of the rock apron will be approximately 0.225 ha, which corresponds to 0.156 habitat units.

Summary

Based on the screening assessment, Serious Harm to fish is not expected to occur in the upper H, lower H, and upper A and B watersheds. This is in large part due to the fact that no lakes bearing CRA fisheries are directly impacted by the Phase 1 footprint. Furthermore, Phase 1 will not Seriously Harm or affect the productivity of the Meliadine Lake CRA fishery, which includes Arctic grayling, Arctic char, and lake trout as the most important species.

No measureable changes to downstream habitat quality and habitat quantity are predicted. Consequently, the potential effects to the abundance and distribution of CRA fisheries and fish habitat for Phase 1 are expected to be less than or similar to those presented in the FEIS. Therefore, the potential adverse effects on the abundance and distribution of fish and fish habitat associated with Phase 1 can still be considered not significant.

SOCIO-ECONOMIC ENVIRONMENT

6.11 Traditional Land Use

The traditional land use study prepared in support of the Project assessed in the FEIS considered the potential effects on traditional activities, including potential changes in traditional and commercial harvesting (taking into account effects to vegetation, wildlife, and fish), and land use and mobility, from existing (pre-Project) conditions. Project refinements, based on Phase 1, relevant to these effects pathways are discussed further below.

The vegetation assessment (Section 6.5) determined that effects on plant population abundance and distribution, including the opportunity for the traditional use of plants, from the refinements to the Project design remain unchanged, or are lower, from that presented in the FEIS. The wildlife assessment (Section 6.6) determined that effects on wildlife and bird distribution and abundance from direct habitat loss and fragmentation are now lower than the effects described in the FEIS. However, for caribou migration, although the Project footprint has been revised to avoid a caribou migration path, caribou are distributed throughout the RSA. Therefore the predictions of effects to caribou migration patterns remain unchanged from that described in the FEIS. The fisheries assessment (Section 6.10) concluded that effects on fish and fish habitat, including traditionally harvested fish species (i.e., lake trout, Arctic char, and Arctic grayling) and traditionally important fishing areas (i.e., Meliadine Lake), as a result of Phase 1 are not expected. Consequently, Phase 1 is not expected to change the predictions of effects on traditional land use activities made in the FEIS; the traditional harvesting of wildlife, fish, and plants are expected to remain sustainable.

The traditional land use baseline study presented in the FEIS indicated that the proposed AWAR would improve access into the LSA to wildlife harvesting areas and berry harvesting areas for traditional land users. Although Phase 1 has reduced the overall Project footprint, the AWAR is still planned for construction. Therefore effects to access harvesting areas will remain unchanged from that described in the FEIS. However, traditional land use activities may improve since more land maybe available for traditional use due to the reduced footprint.

Similarly, access to traditional use areas, such as cabins and Meliadine Lake, will remain similar to that described in the FEIS. Land travel to the cabins located north of the LSA might be slightly affected if some additional travel around the Project footprint is required; however, with the minimized footprint, access to these

cabins may be facilitated. The Discovery access road will not be built as part of Phase 1; therefore additional access to Meliadine Lake by local residents will not occur. However, current access will still remain available. Residual impacts of Project activities on noise and visual effects to culturally important areas, such as cabins and sites in Iqalugaarjuup Nunanga Territorial Park, are expected to be lower than, or similar to those presented in the FEIS.

Based on the screening assessment, the potential effects on traditional land use associated with Phase 1 are expected to be similar to those presented in the FEIS. Residual adverse effects on traditional harvesting can still be considered not significant and residual effects on access to harvesting areas and use of culturally important areas remains low. The residual effects to traditional use areas are still considered to be moderately positive, as described in the FEIS.

6.12 Socio-Economics

Economic and population model results for Phase 1 were compared to the economic and population effects of the FEIS Project assessed in July 2012. The modelling focussed on effects relevant to the Project refinements, including demands for labour, public revenues, and population in-migration.

SJ Research Services was contracted to assess the economic and population impacts of Phase 1. To be comparable, SJ Research Services used the 2008 Nunavut Input-Output Model, the latest model available at the time of the initiation of the 2012 study. Assumptions used in the 2012 study were used for the Phase 1 Project.

Labour

Mine construction and operation of Phase 1will generate 3,965 fewer person years[1] of employment than the FEIS Project (Table 6.12-1). Person years are a function of workforce requirements and how many years the workforce will be needed (e.g., 700 people for three years, working a standard 260 days per year is 2,100 person years). As Phase 1 has a mine life of eight years, and the Project assessed in the FEIS 13 years, many of the person years of employment losses can be attributed to the shorter mine life. However, these job losses will be offset by the additional or extension of employment created during Phase 2 of the Project.

Table 6.12-1: Summary of Employment Impacts

Employment Impacts (Person Years of Employment)	Phase 1 Construction	FEIS Project Construction	Phase 1 Operations	FEIS Project Operations	Phase 1 Total	FEIS Project Total	Difference
Direct Employment	1,790	4,550	5,546	7,143	7,336	11,693	-4,357
Indirect Employment	1,615	725	928	1,159	2,543	1,884	659
Induced Employment	161	240	421	609	582	849	-267
Total Employment	**3,567**	**5,515**	**6,894**	**8,911**	**10,461**	**14,426**	**-3,965**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.

It is expected that the majority of the construction workforce will be from the south. The construction workforce for Phase will be smaller than for the FEIS Project as there will be less infrastructure built, specifically around

[1] A person year is the amount of work done by one person in a year consisting of a standard number of person days (260 days).

earthworks. The construction workforce is expected to average 200 persons over five years (four years of construction and one year of expansion). Note that one person year for construction employment is generally higher than the standard 260 days of work due to the long work hours and consecutive days at camp.

Northern (territorial) employment is affected primarily by the changes in the operations phase employment impacts. Phase 1 operations would result in 1,597 fewer person years of direct employment due to its shorter mine life. However, the average operational workforce for both Projects is similar at 700 people. Indirect and induced employment would be 420 fewer person years of employment, but these positions cannot be predicted to occur in Nunavut. In total, Phase 1 operations would result in 2,017 fewer person years of direct, indirect, and induced employment. The operations employees are expected to be sourced primarily from the Meadowbank Gold Mine as it enters its closure phase. Approximately 30% to 35% of Meadowbank's current workforce resides in the Kivalliq region (primarily Baker Lake and Rankin Inlet).

Despite the smaller construction workforce, and fewer years of employment during operations, Phase 1 is still considered to have a significant and positive impact on employment in the Kivalliq region.

Public Revenue

Phase 1 is expected to process 3,000 tonnes of ore per day in Years 1 to 3, and 5,000 tonnes of ore per day in Year 4 to 8. The average operational workforce will be 700 persons, with average operating costs of $195 million per year in Years 1 to 3, and $240 million per year in Year 4 to 8. Capital investment is estimated to be $1.5 billion. In comparison, the FEIS Project estimated a production rate of 8,500 tonnes of ore per day. The average operational workforce would still be 700 persons, but the average operating costs would be $230 million per year with a capital investment of $1.2 billion. The capital investment projection for Phase 1 is higher due to the increased precision of engineering designs completed, which were not available at the time of the FEIS.

The total difference in government revenue between Phase 1 Project and the FEIS Project is $287.2 million ($168.1 million at the federal level and $119.2 million at the territorial level) (Table 6.12-2). This difference will be offset by subsequent phases of the Meliadine Gold Mine Project. However, Phase 1 is still considered to have a significant and positive impact on public revenue.

Table 6.12-2: Summary of Fiscal Impacts

Fiscal Impacts ($M)	Phase 1 Project Construction	FEIS Project Construction	Phase 1 Project Operations	FEIS Project Operations	Phase 1 Project Total	FEIS Project Total	Difference
Federal	94.1	137.4	158.2	283.0	252.3	420.4	-$168.1
Territorial	20.3	26.9	94.4	207.0	114.7	233.9	-$119.2
Total	**114.4**	**164.2**	**252.6**	**490.0**	**367.0**	**654.2**	**-$287.2**

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.

Population

While the FEIS Project was expected to add 538 persons to the population of Rankin Inlet, construction and operation of Phase 1 is expected to generate 480 additional persons (Table 6.12-3). This difference is not expected to change the FEIS prediction made of no-significant effects on population as a result of the Project.

Table 6.12-3 Summary of Population Impacts

Population Impacts (# of persons)	Phase 1 Project Construction	FEIS Project Construction	Phase 1 Project Operations	FEIS Project Operations	Phase 1 Project Total	FEIS Project Total	Difference
	427	461	53	78	480	538	-58

As noted in the FEIS, direct employment (construction and operation) will have no impact on migration into the region. Workers will be located at the camp and will be rotated in and out as required. As such, only demand for indirect and induced labour is expected to impact migration. Decisions to move to a community are complex and not based on economic considerations alone. However, these decisions are extremely difficult to model within the input-output and cohort survival frameworks. As such, in the model, migration is in response to economic considerations alone and results should be interpreted with caution. Local hiring priorities, local contracting, promotion of recruitment procedures, and other mitigation measures for the Project is expected to be sufficient to mitigate effects on population demographics.

6.13 Archaeology

The cultural, archaeological, and paleontological heritage resources of Nunavut are unique and non-renewable resources that provide information about Nunavut's human and natural past. These resources are public property and held in trust for all Nunavummiut by the GN.

Fieldwork conducted in 2008 through 2012 (Blower 2008; Murphy 2011; Ross 2012, 2013) addressed the Project footprint as presented in the FEIS. No fieldwork was conducted in 2013. Fieldwork undertaken in July 2014 addressed areas that were identified as potentially being impacted under the Phase 1 footprint. These areas are the Emulsion Plant and access road near Lake E3, and the water intake and pipeline on Meliadine Lake, just northwest of Lake H17 (Figure 1-2).

The proposed access road to the emulsion plant is partly inside the footprint assessed in the FEIS. One site (KgJm-53) was recorded in 2011 adjacent to the proposed road. During the revisits in 2012, additional features were noted; however, no additional mitigation was undertaken as the site will not be impacted by the proposed road. Pedestrian inspection of the remainder of the road and the emulsion plant area did not locate additional archaeological sites. One meat cache was noted to the southeast of the proposed emulsion plant and was marked with metal stakes to avoid inadvertent disturbance.

The proposed freshwater intake and associated pipeline to Meliadine Lake was subject to pedestrian inspection. Two previously recorded archaeological sites are known for the area (KgJm-6 and KgJm-43), but the intensive inspection in the reported site areas could not locate the site features.

Mitigation of four archaeological sites that will be impacted by proposed and existing Project components were completed in 2014. These mitigations were focused on the northwest shore of Lake H17. Site KgJm-15 is comprised of two tent rings and a possible kayak stand. The rings and the stand were subject to detailed mapping and one ring was subject to subsurface excavation. Site KgJm-42 is a complex of stone features on the ridge between Lake H17 and Meliadine Lake. The features were detail mapped, but not excavated as they are located outside of the refined Project footprint. The site location was marked-off with metal stakes for avoidance during construction or other unplanned activities. Site KgJm-44 is another complex of stone features located in

the proposed industrial pad area northwest of Lake H17. This site was also mitigated with detailed mapping. Site features at KgJm-7 were mapped with the assistance of a surveyor. As the water level in H17 is predicted to rise during operation of the mine, the exact elevation of these features was needed for planning purposes.

Overall, fieldwork in 2014 determined that the Phase 1 footprint impacted only two significant archaeological sites, KgJm-15 and KgJm-44, both of which were mitigated with detail mapping and excavation. With this mitigation complete, the Phase 1 footprint is not expected to impact any intact, significant archaeological resources that have not been subject to mitigation.

7.0 CONCLUSIONS

The Project assessed in the FEIS is composed of five gold deposits: Tiriganiaq, F Zone, Pump, Wesmeg, and Discovery (Agnico Eagle 2014). Agnico Eagle proposes to develop these deposits in a phased approach to better manage the initial capital investment required and to allow production to commence while ongoing exploration continues to increase the known ore reserve. The initial phase of development (Phase 1) focuses on the development of the Tiriganiaq gold deposit using a traditional open-pit mining method and underground mining. Two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one underground mine (Tiriganiaq Underground) will be developed. Phase 1 encompasses an 8 year time period and starts commercial production as a nominal 3,000 TPD underground mine centered on the Tiriganiaq deposit, expanding to a nominal 5,000 TPD mine in operating Year 4 with the addition of the two Tiriganiaq open pits. Phase 2 will be defined and permitted during this 8 year Phase 1 period once the other deposits are better defined through ongoing exploration drilling. Both Phase 1 and 2 are envisioned to be within the larger Meliadine Gold Mine Project that was the subject of the environmental and socio-economic assessment conducted by the NIRB, culminating in the issuance of Project Certificate No. 006.

Phase 1 incorporates a smaller Project footprint (due to the focus on the Tiriganiaq deposit and deferral of the development of many of the other deposits until Phase 2, specifically F Zone, Pump, Wesmeg, and Discovery), relocation of some of the site infrastructure to reduce interference with an historic caribou migration corridor, a change in the tailings management strategy to reduce the TSF footprint, and associated revisions to water management at the site from the larger Project as presented in the FEIS. These Project revisions were made consideration of Inuit Qaujimajatuqangit (traditional knowledge), to address concerns that arose during consultation and the environmental assessment process, and to improve the overall economic feasibility of the Project by applying a phased development approach.

Subsequently, Agnico Eagle has not prepared detailed designs for mining the other deposits as required for a water licence application. It is Agnico Eagle's intent to develop the Project as described in the FEIS (Agnico Eagle 2014). As detailed designs for mining the additional deposits are developed and refined, subsequent Project stages will be advanced under future amendments to the water licence, if granted.

The FEIS prepared for the NIRB assessed the Project under a scenario that was considered worst case or greatest environmental impact (Agnico Eagle 2014). This Project Screening report provides transparent documentation that environmental and social effects from the Project assessed in the FEIS are equally relevant and applicable to the current mine plan. For all VECS and VSECs, it was concluded that effects associated with the Project refinements are consistent with the predictions of effects presented in the FEIS. Positive effects to traditional land use, local employment, economic activity and public revenue are still predicted for the Project.

As the Project assessed in the FEIS has the greatest environmental impact, the effects analysis and predictions provided in the FEIS are equally relevant and applicable to Phase 1. The conclusions regarding environmental and social effects from the Project assessed in the FEIS are applicable and sufficiently robust to accommodate the refinements to the Project, and therefore the conclusions presented in the FEIS are still valid for Phase 1.

8.0 REFERENCES

Agnico Eagle (Agnico Eagle Mines Limited). 2014. Final Environmental Impact Statement - Meliadine Gold Project, Nunavut. April 2014.

Blower, D. 2008. Archaeological Impact Assessment of the Comaplex Meliadine West Gold Project, Rankin Inlet, Nunavut (NU Permit 2008-003A). Ms on file, Department of Culture, Language, Elders and Youth, Nunavut.

CCME (Canadian Council of Ministers of the Environment). 1999. Canadian Environmental Quality Guidelines, with updates to 2014. Publication No. 1299. Winnipeg, MB, Canada. ISBN: 1-896997-34-1.

CESCC (Canadian Endangered Species Conservation Council). 2001. Wild Species 2000: The General Status of Species in Canada. Minister of Public Works and Government Services Canada, Ottawa: 48 pp.

COSEWIC (Committee on the Status of Endangered Wildlife in Canada). 2012. Status of Endangered Wildlife in Canada. Available at http://www.cosewic.gc.ca/eng/sct1/index_e.cfm. Accessed August 2012.

DFO (Department of Fisheries and Oceans). 1995. Freshwater Intake End-of-Pipe Fish Screen Guideline. Department of Fisheries and Oceans, Ottawa, Ontario. 26 p.

Golder (Golder Associates Ltd.). 2013. Reinstated Draft Site-Specific Water Quality Objective (SSWQO) Assessment, Meliadine Gold Project, Nunavut. Technical Memorandum. Submitted to Agnico Eagle Mines Ltd.

Government of Canada. 2012. Metal Mining Effluent Regulations. SOR/2002-222; current to November 18, 2012.

Independent Expert Engineering Investigation and Review Panel. 2015. Report on Mount Polley Tailings Storage Facility Breach. Accessed March 2015. https://www.mountpolleyreviewpanel.ca/final-report

Health Canada 2012. Summary of Guidelines for Canadian Drinking Water Quality (CDWQ). Prepared by the Federal-Provincial Subcommittee on Drinking Water of the Federal-Provincial-Territorial Committee on Environmental and Occupational Health. Ottawa, ON, Canada.

Kenchington, E., Duplisea, D.E., Curtis, J.M.R., Rice, J.C., Bundy, A., Koen-Alonso, M., and Doka, S.E. 2013. Identification of species and habitats that support commercial, recreational or aboriginal fisheries in Canada. DFO Can. Sci. Advis. Sec. Res. Doc. 2012/110. iv + 68 p.

Murphy, B. 2011. Archaeological Impact Assessment and Mitigation for the Agnico-Eagle Mines Limited Meliadine Gold Project, Rankin Inlet, Nunavut (NU Permit 2010-005A). Ms on file, Department of Culture, Language, Elders and Youth, Nunavut.

NIRB (Nunavut Impact Review Board). 2014. Final Hearing Report - Meliadine Gold Project, Agnico Eagle Mines Limited. NIRB File No. 11MN034, October 2014.

NIRB. 2012. Guidelines for the Preparation of an Environmental Impact Statement for Agnico Eagle Mines Limited's Meliadine Project. NIRB File No. 11MN034.

Ross, J.M. 2013. Archaeological Impact Assessment and Mitigation for the Agnico Eagle Mines Limited Meliadine Gold Project, Rankin Inlet, Nunavut (NU Permit 2012-024A). Ms on file, Department of Culture and Heritage, Nunavut.

Ross, J.M. 2012. Archaeological Impact Assessment and Mitigation for the Agnico Eagle Mines Limited Meliadine Gold Project, Rankin Inlet, Nunavut (NU Permit 2011-026A). Ms on file, Department of Culture, Language, Elders and Youth, Nunavut.

SARA (*Species at Risk Act*). 2012. Species at Risk Public Registry website. Available at http://www.sararegistry.ga.ca. Accessed August 2012.

Report Signature Page

GOLDER ASSOCIATES LTD.

Rachel Lee Gould
Senior Environmental Project Manager

Lasha Young
Associate, Project Manager

https://capws.golder.com/sites/capws2/1114280011meliadine/type a water license/project screening report/doc 462-1405283 0808_14 rpt screening - mel ver c2.docx

APPENDIX A

Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Atmospheric Environment						
Air Quality	Mine Site (construction)	Construction activities result in air emissions, which may cause short-term changes in air concentrations. Fuel combustion will result in air emissions, which may contribute to territorial and national greenhouse gas emissions.	Best management practices to control fugitive particulate emissions. Exhaust emissions from non-road vehicles will be managed through purchasing equipment that meets Tier 3 emission standards. Exhaust emissions from non-road vehicles will be managed through regular and routine maintenance of vehicles. SO_2 emissions from non-road vehicles and stationary equipment will be reduced through the use of diesel fuel with less than 15 ppm of sulphur.	Minor (bounded by operation effects)	Emissions during construction are bounded by operations.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and the determination of no significant effects to air quality.
Air Quality	Mine Site (operations)	Project activities will result in air emissions, which may cause changes in air concentrations and atmospheric deposition rates. Fuel combustion will result in air emissions, which may contribute to territorial and national greenhouse gas emissions.	Best management practices to control fugitive particulate emissions from haul roads and material handling. Sources of particulate emissions at the processing facility are controlled through the use of baghouses. Enclosures are used to reduce fugitive emissions at the processing facility. Place waste rock cover over the final perimeter of the TSF slope as soon as possible. Adopt a flat side slope between cells at the TSF and progressively close and cover cells. Exhaust emissions from non-road vehicles will be managed through purchasing equipment that meets Tier 3 emission standards. Exhaust emissions from non-road vehicles will be managed through regular and routine maintenance of vehicles. SO_2 emissions from non-road vehicles and stationary equipment will be reduced through the use of diesel fuel with less than 15 ppm of sulphur.	Primary	The maximum emissions associated with Phase 1 will result in emissions that are lower than those evaluated within the original FEIS, and thus the potential residual effects on air quality of Project activities at the Mine Site will remain unchanged, or be less than those presented in the FEIS. See Section 6.1 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore, conclusions are consistent with the FEIS and the determination of no significant effects to air quality.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Air Quality	Mine Site (decommissioning and reclamation)	Decommissioning activities result in air emissions, which may cause short-term changes in air concentrations. Fuel combustion will result in air emissions, which may contribute to territorial and national greenhouse gas emissions.	Best management practices to control fugitive particulate emissions. Adopt a flat side slope between cells at the Tailings Storage Facility and progressively close and cover cells. Exhaust emissions from non-road vehicles will be managed through purchasing equipment that meets Tier 3 emission standards. Exhaust emissions from non-road vehicles will be managed through regular and routine maintenance of vehicles. SO_2 emissions from non-road vehicles and stationary equipment will be reduced through the use of diesel fuel with less than 15 ppm of sulphur.	Minor (bounded by operation effects)	Emissions during decommissioning and reclamation are bounded by operations.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and the determination of no significant effects to air quality.
Noise	Mine Site (construction)	Construction activities will result in noise emissions, which may cause short-term changes in noise levels.	Best management practices to control noise emissions as described in the Noise Abatement and Monitoring Plan (NAMP). Equipment noise control systems will be maintained.	Minor (bounded by operation effects)	Noise levels during construction are bounded by operations.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and the determination of no significant effects to noise levels.
Noise	Mine Site (operations)	Project activities will result in noise emissions, which may cause changes in noise levels	Best management practices to control noise emissions from haul roads as described in the NAMP. Noise controls will be designed inherent in the Project, which may include selection of quieter equipment, enclosures, silencers, etc. Equipment noise control systems will be maintained. No regular or scheduled flights to the mine site. Blasting will be intermittent and of short duration. Down-hole delays to minimize vibration levels.	Primary	The potential effects on noise levels, associated with Phase 1 are expected to be lower than, or similar to those presented in the FEIS. See Section 6.2 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to noise levels.
Noise	Mine Site (decommissioning and reclamation)	Decommissioning activities will result in noise emissions, which may cause short-term changes in noise.	Best management practices to control noise emissions as described in the NAMP. Equipment noise control systems will be maintained.	Minor (bounded by operation effects)	Noise levels during decommissioning and reclamation are bounded by operations.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and the determination of no significant effects to noise levels.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Terrestrial Environment						
Permafrost	Construction: Stripping, grubbing, removal and management of overburden from mine site footprint area and open pit footprint areas.	Degradation of permafrost and terrain (soil and rock) through removal of material and ground disturbance. Physical changes to the permafrost in the area of the mine site footprint.	Minimize footprint areas for stripping and removal of material. Minimize ground disturbance by limiting vehicle circulation and by establishing appropriately designed site access roads.	Minor	Overall Project footprint is substantially smaller, thereby reducing the disturbance and loss of permafrost. The effects to permafrost at the new location of the emulsion plant will be minimal. See Section 6.3 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of negligible effects to permafrost.
Permafrost	Construction: Mine site facilities, including power plant, paste plant, mill/process plant, ore stockpile pads, crushers, concrete plant, assay plant, sewage treatment plant, mine maintenance shops, and accommodation complex.	Physical alteration of terrain, soils, and permafrost due to earthworks, facilities construction, and ground disturbance. Gain of permafrost into structural fills used for foundations. Physical removal of permafrost soils and rock where stripping is required.	Uses of appropriate engineering design for structural fills and fill thickness to promote permafrost growth. Minimize footprint areas of facilities and infrastructure. Minimize footprint areas and excavation depth of any quarrying for construction materials to limit permafrost degradation. Minimize ground disturbance.	Primary	Overall Project footprint is substantially smaller, thereby reducing the disturbance and loss of permafrost. The effects to permafrost at the new location of the emulsion plant will be minimal. The change to a dry stack TSF will reduce the disturbance area for the facility and will not require the dewatering and use of Lake D7. See Section 6.3 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of negligible effects to permafrost.
Permafrost	Operation: Tailings area storage facility	Physical gain of permafrost within the tailings storage facility. Permanent alteration of terrain, soils, and permafrost beneath the tailings storage facility.	Use appropriate design of facility to promote the growth of permafrost into the base of the facility and into the tailings. Use appropriate facilities management methods to reduce the amount of ice trapped within the facility. Use appropriate tailings deposition plan.	Primary	The change to a dry stack TSF will reduce the disturbance area for the facility and will not require the dewatering and use of Lake B7. New tailings management strategy will reduce the time to freeze the pad under the TSF and freeze the tailings. See Section 6.3 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of negligible effects to permafrost.
Soil	Mine infrastructure footprint (e.g., open pit, site roads)	Physical loss or alteration of terrain and soil from the Project footprint.	Compact infrastructure arrangement is designed to reduce the overall project footprint. Roads are designed as narrow as possible, while maintaining safe construction and operation practices, and meeting legislated requirements. Minimum haul road widths are defined under the Mine's Act.	Primary	Effects from site clearing and construction of the Project will be reduced due to the smaller Project footprint. See Section 6.4 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS. No residual impact predictions were made as these impacts are captured in the vegetation and wildlife sections.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Soil	Mine infrastructure footprint (e.g., open pit, site roads)	Loss or alteration of local flows, drainage patterns (distribution), and drainage areas from the Project footprint can cause changes to soils, vegetation, and wetlands	Use of design features (i.e. dams, drainages, dykes and diversions) that reduce changes to local flows, drainage patterns, and drainage areas. Mitigation measures will be based on results from the 2012 shoreline erosion baseline surveys, mitigation measures based on adaptive management, or a combination of both. Where practical, natural drainage patterns will be used to reduce the use of ditches or diversion berms.	Minor	The refined Project has a smaller footprint with fewer alterations of local flows. With the use of the design features and mitigation measures, effects to soils are expected to be lower than predicted in the FEIS.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS. No residual impact predictions were made as these impacts are captured in the vegetation and wildlife sections.
Soil	Water Management (dams, drainage, diversion, intake, discharge and dewatering)	Dewatering of lakes, Project footprint, and diversion of water, may change downstream flows, water levels, and affect soils, vegetation, and wildlife habitat.	Pumped discharge to receiving lake will only occur while water quality discharge criteria are met. Pumped discharge will be directed to the lake environment, and not directly to outlets, to attenuate flow changes. Mitigation measures will be based on results from the 2012 shoreline erosion baseline surveys, mitigation measures based on adaptive management, or a combination of both. Where practical, natural drainage patterns will be used to reduce the use of ditches or diversion berms	Minor	The refined Project has fewer lakes that require dewatering. With the use of the design features and mitigation measures, effects to soils are expected to be lower than predicted in the FEIS.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS. No residual impact predictions were made as these impacts are captured in the vegetation and wildlife sections.
Soil	General construction and operation of mine and supporting infrastructure	Air emissions and dust deposition can cause changes to chemical properties of surface water, soils, vegetation, and wetlands	Dust will be actively suppressed from roads (water and/or other dust suppressants). Potential use of chemical dust suppressants in accordance with the Environmental Guidance for Dust Suppression published by the Government of Nunavut Department of Environment. Enforcing speed limits will assist in reducing dust. Road surfaces will be maintained through grading and the addition of granular material. Equipment and vehicles will comply with relevant non-road emission criteria at that time of purchase. Regular maintenance of equipment and vehicles will be conducted to meet emission standards Place waste rock cover over the final perimeter of the TSF slope as soon as possible. Adopt a flat side slope between cells at the TSF and progressively close and cover cells.	Minor	As the maximum air emissions associated with Phase 1 will result in emissions that are lower than those evaluated within the original FEIS, the potential effects to soils will remain unchanged or be less than those presented in the FEIS.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS. No residual impact predictions were made as these impacts are captured in the vegetation and wildlife sections.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Soil	Post-closure	Residual ground disturbance can cause permanent loss and alteration of terrain and soil	Limited Project footprint size. Implement a Closure and Reclamation Plan.	Primary	Effects from site clearing and construction of the Project will be reduced due to the smaller Project footprint. With appropriate reclamation techniques at closure, terrain can be contoured, to the extent practical, to blend the residual footprint with the surrounding landscape. See Section 6.4 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS. No residual impact predictions were made as these impacts are captured in the vegetation and wildlife sections.
Soil	Post-closure	Long-term seepage from the facilities can change groundwater and surface water quality, which can affect soils and vegetation	Sewage treatment plant will remain active during the first 2 years of decommissioning. Landfill will be covered with waste rock pile.	Minor	Monitoring of all runoff and seepage from any facility will continue through the post closure phase of the Project until the water is deemed acceptable for release directly into the environment. As predicted in the FEIS, seepage is not expected to result in detectable changes to soils relative to baseline conditions.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS. No residual impact predictions were made as these impacts are captured in the vegetation and wildlife sections.
Vegetation	Mine infrastructure footprint (e.g., open pit, site roads)	Physical loss or alteration of vegetation from the Project footprint	Compact infrastructure arrangement is designed to reduce the overall Project footprint. Design roads as narrow as possible, while maintaining safe construction and operation practices, and meeting legislated requirements. For example, minimum haul road widths are defined under the *Mine Health and Safety Act*.	Primary	The movement of infrastructure and change in tailings management strategy results in a smaller Project footprint, reducing impacts to vegetation from direct loss or alteration from construction of the Project. See Section 6.5 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to vegetation.
Vegetation	Mine infrastructure footprint (e.g., open pit, site roads	Loss or alteration of local flows, drainage patterns (distribution), and drainage areas from the Project footprint can cause changes to soils, vegetation, and wetlands	Use of design features (i.e. dams, drainages, dykes and diversions) that reduce changes to local flows, drainage patterns, and drainage areas. Shoreline areas susceptible to extensive erosion will be addressed by appropriate erosion protection measures, mitigation measures based on adaptive management, or a combination of both, to reduce erosion and associated re-suspension of fine sediment. Where practical, natural drainage patterns will be used to reduce the use of ditches or diversion berms.	Minor	There are no planned diversions of water with potential impacts on downstream waterbodies related to the movement of infrastructure and change in tailings management strategy. Potential effects to vegetation will remain unchanged or be less than those presented in the FEIS. See Section 6.5 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to vegetation.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Vegetation	Water Management (dams, drainage, diversion, intake, discharge, and dewatering)	Dewatering of lakes and alteration of flow paths may change flows, water levels, channel/bank stability in receiving and downstream waterbodies, affect water quality and quantity, and can cause changes to soils, vegetation, and wetlands	Pumped discharge to receiving lake will only occur while water quality discharge criteria are met. Pumped discharge will be directed to the lake environment, and not directly to outlets, to attenuate flow changes. Shoreline areas susceptible to extensive erosion will be addressed by appropriate erosion protection measures, mitigation measures based on adaptive management, or a combination of both, to reduce erosion and associated re-suspension of fine sediment. Where practical, natural drainage patterns will be used to reduce the use of ditches or diversion berms.	Minor	The movement of infrastructure and change in tailings management strategy results in dewatering of fewer waterbodies in the A, B, H and G watersheds than assessed in the FEIS. Potential effects to vegetation will remain unchanged or be less than those presented in the FEIS. See Section 6.5 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to vegetation.
Vegetation	General construction and operation of mine and supporting infrastructure	Air emissions and dust deposition can cause changes to chemical properties of surface water, soils, vegetation, and wetlands	Dust will be actively suppressed from roads (water and/or other dust suppressants). Potential use of chemical dust suppressants in accordance with the Environmental Guidance for Dust Suppression published by the Government of Nunavut Department of Environment. Enforcing speed limits will assist in reducing dust. Road surfaces will be maintained through grading and the addition of granular material. Equipment and vehicles will comply with relevant non-road emission criteria at that time of purchase. Regular maintenance of equipment and vehicles to meet emission standards. Place waste rock cover over the final perimeter of the TSF slope as soon as possible. Adopt a flat side slope between cells at the TSF and progressively close and cover cells.	Minor	The movement of infrastructure and change in tailings management strategy does not change the air quality assessment and thus any impacts to vegetation. Potential effects to vegetation will remain unchanged or be less than those presented in the FEIS. See Section 6.5 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to vegetation.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Vegetation	General construction and operation of mine and supporting infrastructure	Dust deposition may cover vegetation and lead to physical and/or physiological damage	Dust will be actively suppressed from roads (water and/or other dust suppressants). Potential use of chemical dust suppressants in accordance with the Environmental Guidance for Dust Suppression published by the Government of Nunavut Department of Environment. Enforcing speed limits will assist in reducing dust. Road surfaces will be maintained through grading and the addition of granular material. Equipment and vehicles will comply with relevant non-road emission criteria at that time of purchase. Regular maintenance of equipment and vehicles to meet emission standards. Place waste rock cover over the final perimeter of the TSF slope as soon as possible. Adopt a flat side slope between cells at the TSF and progressively close and cover cells.	Minor	The movement of infrastructure and change in tailings management strategy does not change the air quality assessment and thus any impacts to vegetation. Potential effects to vegetation will remain unchanged or be less than those presented in the FEIS. See Section 6.5 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to vegetation.
Vegetation	Mine infrastructure footprint (e.g., open pit, site roads), Project Access Road, Rankin Inlet Infrastructure	Physical loss or alteration of permafrost from the Project footprint can lead to changes in vegetation ecosystem structure and composition.	Compact infrastructure arrangement is designed to reduce the overall project footprint. Mine site infrastructure (buildings) foundations will be built on bedrock or pillars to minimize Project induced thawing of permafrost. Design roads as narrow as possible, while maintaining safe construction and operation practices and meeting legislated requirements. For example, minimum haul road widths are defined under the *Mine Health and Safety Act.* Design and construct roads using thaw-stable construction fills to minimize frost effects.	Minor	Movement of infrastructure and change in tailings management strategy results in a smaller Project footprint, reducing impacts to permafrost and thus to soils and vegetation. See Section 6.5 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to vegetation.
Caribou Wolf	Mine infrastructure footprint (e.g., open pit, site roads)	Direct loss and fragmentation of wildlife habitat from the Project footprint	Compact plant arrangement is designed to reduce the overall project footprint. Design roads as narrow as possible, while maintaining safe construction and operation practices, and meeting legislated requirements. For example, minimum haul road widths are defined under the *Mine Health and Safety Act, SNWT (Nu)*.	Primary	Movement of infrastructure and change in tailings management strategy results in a smaller Project footprint, and a reduced number of habitat patches. Potential effects to habitat will remain unchanged or be less than those presented in the FEIS. See Section 6.6 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to wildlife habitat.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Polar Bear	Mine infrastructure footprint (e.g., open pit, site roads)	Direct loss and fragmentation of terrestrial wildlife habitat	Compact plant arrangement is designed to reduce the overall project footprint. Design roads as narrow as possible, while maintaining safe construction and operation practices, and meeting legislated requirements. For example, minimum haul road widths are defined under the *Mine Health and Safety Act, SNWT (Nu)*.	Minor	Movement of infrastructure and change in tailings management strategy results in a smaller Project footprint, and a reduced number of habitat patches. Potential effects to habitat will remain unchanged or be less than those presented in the FEIS. See Section 6.6 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to wildlife habitat.
Caribou Wolf Polar Bear	Water Management (dams, drainage, diversion, intake, discharge and dewatering)	Dewatering of waterbodies, Project footprint, and diversion of water, may change downstream flows, water levels, and affect wildlife habitat.	Shoreline areas susceptible to extensive erosion will be addressed by appropriate erosion protection measures to reduce erosion and associated re-suspension of fine sediment. Develop and implement a Site Water Management Plan. Discharge from dewatering of waterbodies will be sampled regularly to monitor for compliance with discharge criteria, and any water not meeting the criteria will be treated or stored within the controlled Attenuation Ponds until it meets criteria.	Minor	The movement of infrastructure and change in tailings management strategy results in dewatering of fewer waterbodies in the A, B, G and H watersheds than assessed in the FEIS. Potential effects to wildlife habitat will remain unchanged or be less than those presented in the FEIS. See Section 6.6 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to wildlife habitat.
Caribou Wolf Polar Bear	General construction and operation of mine and supporting infrastructure	Dust deposition may cover vegetation, change the amount of different quality habitats, and alter movement and avoidance behaviour of wildlife.	Dust will be actively suppressed from roads (water and/or other dust suppressants). Potential use of chemical dust suppressants in accordance with the Environmental Guidance for Dust Suppression published by the Government of Nunavut Department of Environment. Watering of roads will suppress dust production. Enforcing speed limits will assist in reducing dust. Road surfaces will be maintained through grading and the addition of granular material. Place waste rock cover over the final perimeter of the TSF slope as soon as possible. Adopt a flat side slope between cells at the TSF and progressively close and cover cells.	Minor	The movement of infrastructure and change in tailings management strategy does not change the air quality assessment and thus any impacts to wildlife behaviour and habitat. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.6 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to wildlife habitat.
Caribou Wolf Polar Bear	General construction and operation of mine and supporting infrastructure	Air emissions and deposition can cause changes to chemical properties of surface water, soils, vegetation, wetlands, and wildlife habitat	Equipment and vehicles will comply with relevant emission criteria at the time of purchase. Regular maintenance of equipment and vehicles to meet emission standards.	Minor	The movement of infrastructure and change in tailings management strategy does not change the air quality assessment and thus any impacts to wildlife habitat. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.6 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to wildlife habitat.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Caribou	Operation of Mine and supporting infrastructure	Disruption or alteration of migration routes from the presence of the mine or from mine-related activities	Compact layout of the surface facilities within local watersheds will limit the area that is disturbed by construction and operation. Project design will use conventional insulation, baffles and noise suppressors on equipment. Stationary equipment will be housed inside buildings. Regular maintenance of equipment to limit noise.	Primary	Movement of infrastructure from the caribou migration pathway will reduce sensory disturbance and direct human-caribou interaction at the Narrows. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.6 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to wildlife migration.
Waterbirds upland birds; migratory birds raptors (including short-eared owl and peregrine falcons)	Mine infrastructure footprint (e.g., open pits, site roads)	Direct loss and fragmentation of bird habitat from the Project footprint	Compact plant arrangement is designed to reduce the overall project footprint Design roads as narrow as possible, while maintaining safe construction and operation practices, and meeting legislated requirements. For example, minimum haul road widths are defined under the Nunavut *Mine Health and Safety Act*. Use previous monitoring data and ongoing research from the Arctic Raptor Group to determine the location of raptor nests in the RSA.	Primary	Movement of infrastructure and change in tailings management strategy results in a smaller Project footprint, and a reduced area of disturbed high density habitat. Potential effects to habitat will remain unchanged from those presented in the FEIS. See Section 6.6 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to bird habitat.
Waterbirds upland birds; migratory birds raptors (including short-eared owl and peregrine falcons)	General construction and operation of mine and supporting infrastructure	Dust deposition may cover vegetation, change the amount of different quality habitats, and alter movement and behaviour	Dust will be actively suppressed from roads (water and/or other dust suppressants). Potential use of chemical dust suppressants in accordance with the Environmental Guidance for Dust Suppression published by the Government of Nunavut Department of Environment. Watering of roads will suppress dust production. Enforcing speed limits will assist in reducing dust. Road surfaces will be maintained through grading and the addition of granular material Place waste rock cover over the final perimeter of the TSF slope as soon as possible. Adopt a flat side slope between cells at the TSF and progressively close and cover cells.	Minor	The movement of infrastructure and change in tailings management strategy does not change the air quality assessment and thus any impacts to bird behaviour and habitat. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.6 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to bird behaviour or habitat.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Waterbirds upland birds; migratory birds raptors (including short-eared owl and peregrine falcons)	General construction and operation of mine and supporting infrastructure	Air emissions and deposition can cause changes to chemical properties of surface water, soils, vegetation, and wetlands, affecting habitat quality	Equipment and vehicles will comply with relevant emission criteria at the time of purchase. Regular maintenance of equipment and vehicles to meet emission standards.	Minor	The movement of infrastructure and change in tailings management strategy does not change the air quality assessment and thus any impacts to bird habitat. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.6 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to bird habitat.
Waterbirds upland birds; migratory birds raptors (including short-eared owl and peregrine falcons)	General construction and operation of mine and supporting infrastructure	Dewatering of waterbodies, Project footprint, and diversion of water, may change downstream flows, water levels, and affect bird habitat quality	Develop and implement a Site Water Management Plan. Pumped discharge to receiving waterbody will only occur while water quality discharge criteria are met. Pumped discharge will be directed to the lake environment, and not directly to outlets, to attenuate flow changes. Shoreline areas susceptible to extensive erosion will be addressed using appropriate erosion protection measures, mitigation measures based on adaptive management, or a combination of both, to reduce erosion and associated re-suspension of fine sediment Where practical, natural drainage patterns will be used to reduce the use of ditches or diversion berms. Discharge from dewatering of waterbodies will be sampled regularly to monitor for compliance with discharge criteria, and any water not meeting the criteria will be treated or stored within the controlled Attenuation Ponds until it meets criteria	Minor	The movement of infrastructure and change in tailings management strategy results in dewatering of fewer waterbodies in the A, B, G and H watersheds than assessed in the FEIS. Potential effects to bird habitat will remain unchanged or be less than those presented in the FEIS. See Section 6.6 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to bird habitat.
Aquatic Environment						
Groundwater Quantity	Lake Dewatering	Groundwater flow from dewatered lakes may be reduced thereby reducing the flow to nearby un-dewatered lakes, thereby lowering water levels in those nearby lakes	With the exception of Lake B7, all lakes that will be dewatered do not have open taliks connected to the deep groundwater regime. Therefore, groundwater flow from these lakes to other nearby lakes does not currently occur. Lake B7, which is a headwater lake and is predicted to have an open talik, will be converted into the tailings storage facility (TSF). Lake B7 water levels will be temporarily lowered by approximately 1 m to facilitate TSF dike construction, which may reduce groundwater flow to Lake D7 and Meliadine Lake, thereby lowering water levels in these lakes. Once operational, the water level in the reclaim pond will be near to or above pre-mining levels.	Minor	All the lakes that will be dewatered do not have open taliks connected to the deep groundwater regime. See Section 6.7 for further analysis. With the Project refinements, there is now no effects pathway linkage.	Phase 1 results in no linkage between the Project and the pathway.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Groundwater Quantity and Quality	Tailings Storage Facility	Tailings storage facility (TSF) is located in a dewatered headwater lake that has an open talik; therefore, groundwater flow and quality may be affected	Only lakes B7 and D7 and Meliadine Lake have open taliks connected to the deep groundwater regime. Currently, groundwater outflow from Lake B7 to Lake D7 and Meliadine Lake is small. Lake B7 water levels will be temporarily lowered by approximately 1 m to facilitate TSF dike construction, which may reduce groundwater flow to Lake D7 and Meliadine Lake, thereby lowering water levels in these lakes. Once operational, the water level in the reclaim pond will be near to or above pre-mining levels. During operations, the groundwater reporting from the TSF will flow into the Underground mine and will be collected and treated. Geochemical testing indicates that the tailings are non- potentially acid generating. Kinetic tests completed on all waste rock types and at various scales show that drainage water quality is expected to meet Canadian Council of Ministers of the Environment (CCME) limits, except for results for arsenic and cyanide. At closure, the reclaim pond will be drained and the tailings will be shaped and completed with a layer of non-acid generating mine rock to prevent erosion and water ponding on the surface of the tailings. Permafrost conditions are anticipated to establish in the tailings. Over time, the open talik beneath the TSF will become closed.	Minor	The TSF is now a dry stack facility on land and it is no longer located in a dewatered headwater lake that has an open talik. Therefore, groundwater flow and quality will not be affected. See Section 6.7 for further analysis. With the Project refinements, there is now no effects pathway linkage.	Phase 1 results in no linkage between the Project and the pathway.
Groundwater Quality	Underground water storage and Waste rock storage facility in Lake B4	Underground water from the Tiriganiaq mine is stored in the dewatered Lake B4 in Years 1 and 2 may affect the talik or permafrost beneath the basin either during its use for storage of underground water or subsequently when it is drained to develop the waste rock storage facility at B4	Saline water will be pumped from the underground and temporarily stored in the dewatered Lake B4 basin in Year 1 and 2. After Year 2, the basin is drained again and used as a waste rock storage facility (WRSF). Lake B4 is underlain by a closed talik. The temporary storage of saline water will not likely result in the development of an open talik beneath the basin. After year 2, the WRSF and the foundation beneath it, are anticipated to freeze thereby restricting the further infiltration of water.	Minor	Contact water in the underground mine will be collected in sumps, treated to reduce TSS, and excess water pumped to surface for management. At surface it will be stored in impervious bladders in a secondary containment facility. At closure the water will be used to flood the underground mine. There will be no effects to groundwater quality. With the Project refinements, there is now no effects pathway linkage.	Phase 1 results in no linkage between the Project and the pathway.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Groundwater Quality	Collection Pond (CP1)	Runoff from ore storage, waste rock and storage facilities are collected in CP1. At present, an open talik is not present beneath CP1; however, the water level is predicted to rise by about 2 m. This may produce an open talik beneath CP1. The water collected in CP1 may seep down through the open talik into the deep groundwater flow system thereby affecting groundwater quality.	NA	This pathway was not assessed in the FEIS; it is a new pathway as a result of the Project design changes.	The water level rise will occur largely during the spring freshet and the water level in CP1 will be drawn down to the lowest level possible in the fall to allow for the storage of spring freshet flows in the following year. Therefore, in the winter CP1 will be frozen to the bottom and an open talik will not form. See Section 6.7 for further analysis. There is no linkage for this effects pathway.	Phase 1 results in no linkage between the Project and the pathway.
Hydrology and Water Quantity	Project Footprint (e.g., dikes, mine pits, waste rock, access roads, mine plant)	Project footprint, which will physically alter watershed areas and drainage patterns, may change downstream flows, water levels, and channel/bank stability in streams, and affect water quality, fish habitat, and fish	Compact layout of the surface facilities within local watersheds will limit the area that is disturbed by construction and operation. Access roads will be as narrow as possible, while maintaining safe construction and operation practices. Best management practices for erosion and sedimentation control (e.g., ground cover, silt fences and curtains, runoff management), where needed.	Primary	Movement of infrastructure and change to tailings management strategy results in a smaller footprint in the A, B, and H watersheds. Potential effects will remain unchanged or be less than those presented in the FEIS. Effects on water levels are expected to be negligible in the G watershed. See Section 6.8 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS. No residual impact predictions were made as these impacts are captured in the fisheries section.
Hydrology and Water Quantity	Site Water Management: Dewatering of Project Footprint Waterbodies to Downstream Receiving Waterbodies (e.g., to Lake A7, A1, B6, B34, Meliadine Lake)	Dewatering of waterbodies may change flows, water levels, and channel/bank stability in receiving and downstream waterbodies, and affect water quality, fish habitat, and fish	Pumped discharge will be directed to the lake environment, and not directly to outlets, to attenuate flow changes.	Primary	Movement of infrastructure and change to tailings management strategy results in dewatering of fewer waterbodies. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.8 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS. No residual impact predictions were made as these impacts are captured in the fisheries section.
Hydrology and Water Quantity	Site Water Management: Dewatering of Project Footprint Waterbodies to Downstream Receiving Waterbodies (e.g., to Lake A7, A1, B6, B34, Meliadine Lake)	Dewatering of waterbodies may result in ice damming and alter flow path	Pumped discharge will cease during the winter.	Minor	Movement of infrastructure and change to tailings management strategy results in dewatering of fewer waterbodies. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.8 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS. No residual impact predictions were made as these impacts are captured in the fisheries section.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Hydrology and Water Quantity	Site Water Management: Watershed Modification by Diversion of Water (e.g., Lake A8 to Lake A31, Upper B to D Watershed, Lower B to P Watershed)	Alteration of watershed flow paths may change flows, water levels, and channel/bank stability in downstream waterbodies, and affect water quality, fish habitat and fish	Shoreline areas susceptible to extensive erosion will be addressed by appropriate erosion protection measures to reduce erosion and associated re-suspension of fine sediment. Where practical, natural drainage patterns will be used to reduce the use of ditches or diversion berms.	Primary	There are no planned diversion of water with potential impacts on downstream waterbodies related to the movement of infrastructure and change to tailings management strategy. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.8 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS. No residual impact predictions were made as these impacts are captured in the fisheries section.
Water and Sediment Quality	Mine Site Water Management: Seepage and Runoff during operations and closure	Runoff from the tailings storage facility may enter nearby water bodies and change water and sediment quality (i.e., metal concentrations).	A site Water Management Plan has been developed and describes the containment and management of contact water on-site. Seepage will be captured in sumps and containment ponds and pumped to CP1. All ponds collecting seepage will be designed to prevent release into the surrounding aquatic environment.	Minor	Seepage and runoff from the TSF will be directed to CP1 and then released to Meliadine Lake via the diffuser. The water will be treated, if necessary, to meet the MMER discharge limits. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.9 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to water and sediment quality.
Water and Sediment Quality	Mining activities and water management during construction, operations, and closure.	Release of mine wastewater (including sewage) may cause changes to surface water quality and sediment quality (i.e., nutrient and metal concentrations).	Treated sewage will be piped to the tailings storage facility. Mine wastewater will be treated and tested before release to Meliadine Lake. If water quality does not meet discharge limits, it will be circulated and re-treated. Water quality will meet CCME aquatic life objectives, site-specific water quality objectives, or water licence limits at the edge of the mixing zone in Meliadine Lake. Underground water will be collected, contained, monitored, re-used in the underground, or collected, contained, monitored, or treated, if required, to meet discharge limits for release to Meliadine Lake. A site Water Management Plan has been developed and describes containment of contact water through the use of diversions, attenuation ponds, and treatment facilities during construction, operations, and closure. Other applicable design features and mitigation, as identified in the project closure plan.	Primary	The end-of-pipe effluent releases associated with Phase 1 are predicted to be lower than the FEIS Project, and lower than MMER guidelines, and will result in discharge loads that are lower than those evaluated in the FEIS. See Section 6.9 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to water and sediment quality.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Water and Sediment Quality	Mine infrastructure footprint (e.g., open pits, dikes, mine pits, waste rock, mine plant, site roads, camps) during construction, operations, closure and post-closure	Project footprint, which will physically alter watershed areas and drainage patterns, rates and quantities of diverted non-contact water to new watersheds, may change downstream flows, water levels, channel/bank stability in streams and may affect water and sediment quality.	Compact layout of the surface facilities within local watersheds will limit the area that is disturbed by construction and operation. Access roads will be as narrow as possible, while maintaining safe construction and operation practices. Minimum haul road widths will follow that defined under the Mine Health and Safety Act. Best management practices for erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks, sloping of banks), where needed. Minimum setback distance of 31 m from the ordinary high water mark of waterbodies. Regular road inspections to check for ponding. Removal of snow at the culvert inlet prior to freshet. To reduce the potential for erosion in channels due to higher than normal water flows and levels, natural drainage courses will be surveyed to evaluate capacity and then modified if required. Where practical, natural drainage patterns will be used to reduce the use of ditches and diversion berms. A site water management plan has been developed and describes designs to reduce changes to local flows, drainage patterns, and drainage areas. Monitoring during activities and use of adaptive management where necessary.	Primary	Movement of infrastructure and change to tailings management strategy results in a smaller footprint in the A, B, and H watersheds. Potential effects on water flows in these watersheds will be less than those presented in the FEIS. Effects on water and sediment quality are expected to be negligible in the G watershed. See Section 6.9 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to water and sediment quality.
Water and Sediment Quality	Mine Site Water Management: Dewatering of Project Footprint Waterbodies to Downstream Receiving Waterbodies during construction and operations.	Dewatering of waterbodies may change flows, water levels, channel/bank stability, and water quality (e.g., suspended sediments, nutrients, metals) in receiving and downstream waterbodies.	During dewatering activities, TSS will be monitored, and if necessary, treated before release downstream. Pumped water from the dewatered waterbodies will be directed through properly designed structures to the lake environment, and not to lake outlets, to prevent erosion in the receiving waterbodies and to attenuate flows. Shoreline areas susceptible to extensive erosion will be addressed by appropriate erosion protection measures to reduce erosion and associated re-suspension of fine sediment. Where practical, natural drainage patterns will be used to reduce the use of ditches or diversion berms.	Primary	Movement of infrastructure and change to tailings management strategy results in a smaller footprint in the A, B, and H watersheds. Potential effects on water flows in these watersheds will be less than those presented in the FEIS. Effects on water and sediment quality are expected to be negligible in the G watershed. See Section 6.9 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to water and sediment quality.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Water and Sediment Quality	Mine and Supporting Infrastructure during construction and operations	Fugitive dust sources and deposition of dust (including from blasting during mining) can change water and sediment quality.	Best management practices to control fugitive particulate emissions from haul roads and material handling. Use of water or dust suppressants to manage dust. Use of chemical suppressants will be in accordance with the Environmental Guidance for Dust Suppression published by the Government of Nunavut Department of the Environment. Enforcing speed limits to suppress dust production. Design roads as narrow as possible while maintaining safe construction and operation practices. Crossings will be perpendicular to watercourse. The running surface of the road will be maintained thereby reducing the generation of dust. Enclosures and covers will be used in major ore handling areas and most crushing areas. For uncovered crushing areas, water or dust suppression will be used. Dust control systems will be used to limit dust emissions, for example, processing equipment with high efficiency bag houses will be used. Most personnel arriving at or leaving the site will be transported by bus, thereby reducing the amount of traffic (and dust). Operating procedures will be developed that reduce dust generation. For example, tailings deposition will be designed to limit dust generation. Place waste rock cover over the final perimeter of the TSF slope as soon as possible. Adopt a flat side slope between cells at the TSF and progressively close and cover cells.	Primary	The maximum air and dust emissions associated with Phase 1 will result in emissions that are lower than those evaluated in the FEIS, and thus the potential residual effects on water and sediment quality will remain unchanged, or be less than those presented in the FEIS. See Section 6.9 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to water and sediment quality.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Water and Sediment Quality	Mine and Supporting Infrastructure during construction and operations	Air emission of sulphur dioxide, nitrogen oxides and particulates may change water and sediment quality.	Construction equipment and trucks will be equipped with industry-standard emission control systems. Compliance with regulatory emission requirements will be met. Processing equipment will use dust collectors to limit emissions of particulate matter. Exhaust emissions from non-road vehicles will be managed through regular and routine maintenance of vehicles. SO_2 emissions from non-road vehicles and stationary equipment will be reduced through the use of diesel fuel with less than15 ppm of sulphur. Operating procedures will be developed that reduce dust generation. Generator efficiencies and equipment will be tuned for optimum fuel-energy efficiency.	Primary	The maximum air and dust emissions associated with Phase 1 will result in emissions that are lower than those evaluated in the FEIS, and thus the potential residual effects on water and sediment quality will remain unchanged, or be less than those presented in the FEIS. See Section 6.9 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to water and sediment quality.
Water and Sediment Quality	Mine Pits (post-closure)	Water quality in flooded pits may be higher than objectives and reconnection of drainages may affect downstream water and sediment quality.	A preliminary Closure and Reclamation Plan (SD 2-17) has been developed and describes measures for permanent closure. The pits are designed to have stable slopes during mining and post-closure. The pits will be progressively reclaimed as excavation is completed. The pits will be flooded, with water from Meliadine Lake, over a 3 year period following completion of pit operations. Water quality in the pits will be monitoring continuously during the flooding process. All diversion dikes will be kept intact as a barrier between open pits and surrounding waterbodies until the pit water meets acceptable concentrations for re lease to the environment. Water will be treated if it is unacceptable for discharge.	Primary	The long-term, post-closure water quality in the flooded open pit lakes will meet CCME aquatic life guidelines, drinking water quality guidelines, and the Site Specific Water Quality Objectives developed for the Project for arsenic, fluoride and iron. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.9 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and the determination of no significant effects to water and sediment quality.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Fish Habitat	General construction and operation of mine infrastructure	Project footprint will remove waterbodies and alter watershed areas and drainage patterns, change flows, and water levels and the road footprint will result in loss of fish habitat at road crossings, all of which may affect fish habitat quantity (including habitat units as defined by DFO) and the abundance and distribution of fish	Compact layout of the surface facilities within local watersheds will limit the area that is disturbed by construction and operation. Best management practices for erosion and sedimentation control (e.g., ground cover, silt fences and curtains, runoff management), where needed. Where practical, natural drainage patterns will be used to reduce the use of ditches and diversion berms. Use of design features to reduce changes to local flows, drainage patterns, and drainage areas. Roads aligned to cross streams of low quality habitat to the extent possible. Design roads as narrow as possible, while maintaining safe construction and operation practices, and meeting legislated requirements. For example, minimum haul road widths are defined under the *Mine Health and Safety Act, NWT (Nu)*.	Primary	The refined Project will potentially affect habitat in the A, B and H watersheds, and Meliadine Lake (water intake footprint), but is not expected to cause Serious Harm to fish and will not affect the productivity of fisheries in Meliadine Lake. See Section 6.10 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to the abundance and distribution of fish and fish habitat.
Fish Habitat	General construction and operation of mine infrastructure	Mine footprint will affect the connectivity of fish habitat within the Meliadine Lake Peninsula (e.g., Lake A6 in upper A basin), affecting abundance and distribution of fish	Compact layout of the surface facilities within local watersheds will limit the area that is disturbed by construction and operation. Diversion channels will be designed to provide fish habitat and conditions allowing for passage of Arctic char, lake trout, and Arctic grayling where necessary. Habitat fragmentation will occur during construction and operation, as hydrological conditions within affected basins of the LSA will be re-connected either during later stages of operation, or at closure, as described in the Surface Water Management Plan (SD 2-6).	Minor	The smaller Project footprint will maintain connectivity of fish habitat. Potential effects will be less than those presented in the FEIS.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to the abundance and distribution of fish.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Fish Habitat	General construction and operation of mine infrastructure	Crossing structures may alter stream hydraulics and geomorphology, potentially blocking or delaying fish movements on streams (e.g., roads).	Cross-drainage structures will be designed and constructed such that structures will not create a hydraulic barrier to fish passage and will convey peak flows corresponding to 1:25 year rainfall event Single span bridges at the Char and Meliadine rivers and at the M5.0 crossing will be used to minimize blockages to fish movement. Use of staggered culvert configuration, and removal of snow at the culvert inlet and outlet prior to the freshet to promote drainage during spring thaw and freshet. Regular inspection of the road to identify any areas where ponding of water along the road represents a risk, and installing additional culverts to alleviate the risk.	Minor	The smaller Project footprint will result in fewer crossing structures. Potential effects will remain unchanged or be less than those presented in the FEIS.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish habitat.
Fish Habitat	General construction and operation of mine infrastructure	Changes in flow paths, and diversion of non-contact water to newly modified watersheds, may affect turbidity and TSS concentrations at downstream locations, affecting fish habitat quality.	Construction runoff will be captured and discharged into an attenuation pond to settle out suspended sediments. Compact layout of the surface facilities within local watersheds will limit the area that is disturbed by construction and operation. A Surface Water Management Plan will be implemented. Best management practices will be used to control sediment releases during construction activities resulting in land disturbance (e.g., silt curtains). Shoreline areas susceptible to extensive erosion will be addressed by appropriate erosion protection measures to reduce erosion and associated re-suspension of fine sediment.	Minor	The smaller Project footprint will result in less land disturbance during construction. Potential effects will remain unchanged or be less than those presented in the FEIS.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish habitat.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Fish Habitat	General construction and operation of mine infrastructure	Sediment releases from land disturbance during construction and road construction, including watercourse crossings, can affect quality of nearby surface waters and fish habitat quality.	Best management practices will be used to control sediment releases during construction (e.g., silt curtains, runoff management). Construction runoff will be captured and discharged into an attenuation pond to settle out suspended sediments. Instream construction work will be avoided, or limited to the minimum extent possible. Where possible, in-stream works will be constructed in winter when watercourses are frozen; no in-stream works conducted between 1 May to 15 July to avoid critical periods for fish. Roads will be designed as narrow as possible, while maintaining safe construction and operation practices, and meeting legislated requirements. For example, minimum haul road widths are defined under the *Mine Health and Safety Act, SNWT (Nu)*. Bridge abutment installation will occur outside of the high-water mark, and construction will occur in winter. Disturbed areas along the streambanks will be stabilized and allowed to revegetated upon completion of work.	Minor	The smaller Project footprint will result in less land disturbance during construction. Potential effects will remain unchanged or be less than those presented in the FEIS.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish habitat.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Fish Habitat	General construction and operation of mine infrastructure	Fugitive dust sources and deposition of dust may change water and sediment quality, affecting fish health and fish habitat quality.	Dust will be actively suppressed from roads (water and/or other dust suppressants). Potential use of chemical dust suppressants in accordance with the Environmental Guidance for Dust Suppression published by the Government of Nunavut Department of Environment (SD 2-9 Roads Management Plan). Watering of roads will suppress dust production. Enforcing speed limits will assist in reducing dust. Road surfaces will be maintained through grading and the addition of granular material. Place waste rock cover over the final perimeter of the TSF slope as soon as possible. Adopt a flat side slope between cells at the TSF and progressively close and cover cells. Crossings will be perpendicular to watercourse. Sheds, enclosures and covers will be used in crushing and major ore handling areas Operating procedures will be developed that reduce dust generation. For example, tailings deposition will be designed to limit dust generation.	Primary	The maximum fugitive dust associated with Phase 1 will result in deposition that is lower than that evaluated within the FEIS, and thus the potential residual effects on aquatic habitat of Project activities at the Mine Site will remain unchanged, or be less than those presented in the FEIS. See Section 6.1 for further analysis of air and dust emissions.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish habitat.
Fish Habitat	General construction and operation of mine infrastructure including Project All-Weather Access Road (AWAR)	Air emission of sulphur dioxide, nitrogen oxides and particulates may change water and sediment quality, affecting fish habitat quality and fish health.	Equipment and vehicles will comply with relevant emission criteria at the time of purchase. Regular maintenance of equipment and vehicles to meet emission standards.	Primary	The maximum emissions associated Phase 1 will result in emissions that are lower than those evaluated within the FEIS, and thus the potential residual effects on aquatic habitat of Project activities at the Mine Site will remain unchanged, or be less than those presented in the FEIS. See Section 6.1 for further analysis of air and dust emissions.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish habitat and fish health.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Fish Habitat	General construction and operation of mine infrastructure including Project All-Weather Access Road (AWAR)	Release of mine wastewater and sewage may cause changes to surface water quality and sediment quality (i.e., nutrient and metal concentrations), affecting aquatic habitat and the survival and reproduction of fish in Meliadine Lake.	Develop a Surface Water Management Plan. Contact water will be monitored and managed through the Attenuation Ponds Surface runoff and groundwater seeping into the open pits will be collected in in-pit sumps. The collected water will be used for dust control or pumped to the TSF for use as process water. Underground water will be re-cycled for re-use underground, where possible. Excess underground water with high salinity will be treated Discharge quality will meet MMER at end of pipe and will meet CCME aquatic life standards within a 100 m wide mixing zone of the diffuser in Meliadine Lake. The rotary biological contactor sewage treatment plant for the camp facilities will be designed to meet the Nunavut effluent guidelines for wastewater discharge.	Primary	The end-of-pipe effluent releases associated Phase 1 will result in discharge loads to Meliadine Lake that are lower than those evaluated in the FEIS. See Section 6.9 for further analysis on water and sediment quality.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish habitat and the survival and reproduction of fish.
Fish Habitat	Site Water Management: Seepage and Runoff	Vertical and lateral seepage from the tailings storage facility may enter nearby waterbodies, affecting water and sediment quality (i.e., metal concentrations), as well as fish health and fish habitat quality.	Contact water will be managed on-site in accordance with the Surface Water Management Plan. Excess tailings supernatant water will be treated for parameters of potential concern prior to release to the attenuation pond and Meliadine Lake. At closure, the TSF will be covered with waste rock; any runoff will be collected and then treated until it is confirmed that water meets water quality criteria.	Minor	Seepage and runoff from the TSF will be directed to CP1. Predicted effluent concentrations at CP1 meet MMER monthly mean discharge limits, with the possible exception of TSS which may require attenuation. Potential effects will remain unchanged or be less than those presented in the FEIS. See Section 6.9 for further analysis on water and sediment quality.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish habitat and fish health.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Fish Habitat	Site Water Management: Seepage and Runoff	Seepage of pore water though, or underneath, incompletely frozen dikes to adjacent watersheds may change water quality in local watersheds, and affect fish health and fish habitat quality	Contact water will be managed on-site in accordance with the Surface Water Management Plan. Temporary and permanent dikes will be constructed with a liner keyed into competent frozen ground (saturated inorganic permafrost) or bedrock. Internal retention dikes will be constructed with a wide till core to control seepage. Permafrost will be preserved in foundation beneath dikes by constructing structures during the winter when the active layer is frozen where possible. Performance of the dikes will be monitored throughout their construction and operating life.	Minor	The smaller Project footprint will result in fewer dikes being constructed. Potential effects from seepage of pore water through or underneath dikes will remain unchanged or be less than those presented in the FEIS.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish habitat and fish health.
Fish Habitat	Site Water Management during Construction and Operations: Alteration of Flow Paths and Diversion of Project Footprint Lakes to Receiving Waterbodies	The active diversion of water from lakes to other locations either within or to adjacent sub-basins will increase flows to receiving downstream waterbodies and watercourses (in Basin D and P), potentially increasing available fish habitat	A Surface Water Management Plan will be implemented. Pumped discharge will be directed to the lake environment, and not directly to outlets, to attenuate flow changes.	Minor	These watersheds are not impacted by Phase 1.	There is no pathway linkage to fish habitat.
Fish Habitat	Site Water Management during Construction and Operations: Alteration of Flow Paths and Diversion of Project Footprint Lakes to Receiving Waterbodies	The active diversion of water from waterbodies to other locations either within or to adjacent sub-basins will decrease flows to downstream waterbodies and watercourses bypassed by the diversion, potentially affecting the availability of fish habitat (in Basin A and B)	A Surface Water Management Plan will be implemented. Where practical, natural drainage patterns will be used to reduce the use of ditches or diversion berms.	Primary	Phase 1 will potentially affect the A, B and H watersheds, but is not expected to cause Serious Harm to fish and will not affect downstream fisheries in Meliadine Lake. See Section 6.10 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish habitat.
Fish Habitat	Site Water Management during Construction and Operations: Alteration of Flow Paths and Diversion of Project Footprint Lakes to Receiving Waterbodies	Changes to the configuration of watersheds and flow paths from the Project footprint may affect downstream water quality (e.g., metals) in small lakes and streams, and affect aquatic health, and fish habitat quality.	A Surface Water Management Plan will be implemented.	Primary	All water in contact with site infrastructure will be directed to CP1 prior to treatment, if necessary, and release to Meliadine Lake. The end-of-pipe effluent releases associated with Phase 1 will result in discharge loads to Meliadine Lake that are lower than those evaluated in the FEIS. See Section 6.9 for further analysis on water and sediment quality.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish habitat and fish health.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Fish Habitat	Site Water Management during Construction and Operations: Alteration of Flow Paths and Diversion of Project Footprint Lakes to Receiving Waterbodies	Active diversion of water from footprint lakes to receiving locations may affect channel/bank stability, and water quality (e.g., suspended sediments, nutrients, metals) in receiving and downstream waterbodies, and therefore, affect water quality, fish habitat quality and the abundance and distribution of fish	Dewatering activities will be monitored so that corrective actions can be taken to minimize sedimentation, for example, maintain lake surface at a level that limits sediments in dewatered lakes becoming suspended due to wave action. Pumped discharge will be directed to the lake environment, and not directly to outlets, to attenuate flow changes. Lake dewatering discharge will be sampled regularly to monitor for compliance with discharge criteria, and any water not meeting the criteria will be treated or stored within the controlled Attenuation Ponds until it meets criteria Pumped water from the dewatered lakes will be directed through properly designed structures to prevent erosion in the receiving waterbodies.	Minor	Phase 1 will potentially affect the A, B and H watersheds, but is not expected to cause Serious Harm to fish or downstream fisheries in Meliadine Lake. See Section 6.10 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to the abundance and distribution of fish and fish habitat.
Fish Habitat	Site Water Management during Construction and Operations: Alteration of Flow Paths and Diversion of Project Footprint Lakes to Receiving Waterbodies	Alteration of watershed flow paths under the Project footprint may affect channel/bank stability and water quality (e.g., suspended sediments) in downstream waterbodies, and affect aquatic health, fish habitat quality and the abundance and distribution of fish.	Shoreline areas susceptible to extensive erosion will be addressed by appropriate erosion protection measures to reduce erosion and associated re-suspension of fine sediment. Where practical, natural drainage patterns will be used to reduce the use of ditches or diversion berms Water quality will be monitored regularly for turbidity, and intermittently for TSS, nutrients and metals.	Minor	There are no planned diversion of water with potential impacts on downstream waterbodies related to the movement of infrastructure and change to tailings management strategy. See Section 6.8 for further analysis of hydrological conditions.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to the abundance and distribution of fish and fish habitat.
Fish Habitat	Site Water Management during Construction and Operations: Alteration of Flow Paths and Diversion of Project Footprint Lakes to Receiving Waterbodies	The Waste Rock and tailings storage facility will physically alter the size and shape of watersheds, and alter existing flow paths within the LSA, which may decrease downstream flows, and water levels, affecting available fish habitat, and the abundance and distribution of fish	Compact layout of the surface facilities within local watersheds will limit the area that is disturbed by construction and operation. Use of design features to reduce changes to local flows, drainage patterns, and drainage areas.	Minor	Phase 1 will potentially affect the A, B, and H watersheds, but is not expected to cause Serious Harm to fish, or fisheries in Meliadine Lake. See Section 6.10 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to the abundance and distribution of fish and fish habitat.
Fish Habitat	Site Water Management during Construction and Operations: Alteration of Flow Paths and Diversion of Project Footprint Lakes to Receiving Waterbodies	The Project footprint will physically alter the size of watersheds, and alter existing flow paths within the LSA, which may decrease downstream flows and water levels, affecting fish habitat quantity and the abundance and distribution of fish (in Basin A, B, and H)	Compact layout of the surface facilities within local watersheds will limit the area that is disturbed by construction and operation. Use of design features to reduce changes to local flows, drainage patterns, and drainage areas.	Primary	Phase 1 will potentially affect the A, B, and H watersheds, but is not expected to cause Serious Harm to fish, or fisheries in Meliadine Lake. See Section 6.10 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to the abundance and distribution of fish and fish habitat.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Fish Habitat	Site Water Management during Construction and Operations: Alteration of Flow Paths and Diversion of Project Footprint Lakes to Receiving Waterbodies	The active diversion of water from waterbodies to other locations either within or to adjacent sub-basins during operation phases will increase flows to receiving downstream waterbodies and watercourses, potentially increasing habitat quantity (in Basin D and P).	A Surface Water Management Plan will be implemented	Minor	These watersheds are not impacted by Phase 1.	There is no pathway linkage to aquatic habitat.
Fish Habitat	Site Water Management during Construction and Operation: Dewatering of Project Footprint Lakes	Dewatering of Project Footprint Lakes may cause mortality and spoiling of fish	Fish salvage in Project footprint lakes will be conducted to remove fish before and during dewatering; the fish-out programs will be designed and implemented in consultation with DFO and local Inuit communities, and will follow Tyson et al. (2011).	Minor	The smaller Project footprint will result in fewer lakes requiring dewatering, thus fewer fish will be impacted. Potential effects will remain unchanged or be less than those presented in the FEIS.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to fish.
Fish Habitat	Site Water Management during Construction and Operation: Dewatering of Project Footprint Lakes	Impingement and entrainment of fish in intake pumps during dewatering may cause injury and mortality to fish, affecting abundance and distributions	Appropriately sized fish screens, which meet DFO guidelines, will be fitted to pumps to limit fish access and to limit fish entrained to the smaller species and life stages	Minor	The intake will be constructed in a similar manner to that described in the FEIS. See Section 6.10 for further analysis.	Phase 1 does not change predictions or predictions are lower than FEIS; therefore conclusions are consistent with the FEIS and determination of no significant effects to the abundance and distribution of fish.
Socio-Economic Environment						
Traditional and commercial harvesting	Construction, operations, final closure and post-closure	Project activities may affect availability of terrestrial and marine wildlife for harvesting. Project footprint may change access to traditional harvesting areas	Traditional pursuits of Aboriginal employees accommodated within work schedules and co-ordinated with the operational needs of the Project. Use minimal size footprint. Other mitigation measures related to terrestrial and marine wildlife, and vegetation components	Primary	Assessments on vegetation, wildlife and fisheries conclude that Phase 1 is not expected to change the predictions of effects on traditional harvesting made in the FEIS. Access to traditional harvesting areas remains similar to that described in the FEIS. See Section 6.11 for further analysis.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and determinations of no significant effects to traditional harvesting and low significant effects to access to traditional harvesting areas.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Land use and mobility	Construction, operations, final closure and post-closure	Project impacts on use of culturally important areas. Changes in access to traditional use areas.	Use minimal sized footprint	Primary	Residual impacts of Project activities on noise and visual effects to culturally important areas, such as cabins and sites in Iqalugaarjuup Nunanga Territorial Park, are expected to be lower than, or similar to those presented in the FEIS. Since the AWAR is still being constructed, access to traditional use areas will remain unchanged from that described in the FEIS. See Section 6.11 for further analysis.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and determinations of low significant effects to use of culturally important areas and moderately positive significant effects to access to traditional land use.
Employment	Construction and operations	Project would increase the demand for labour during construction and operational phases.	Maximize the employment of people in Kivalliq communities through training. Culturally sensitive workforce practices aimed to improve workplace and retention	Primary	Phase 1 would reduce the construction workforce; however this workforce would come mainly from the south. While the mine life will be shorter for Phase 1, the operations workforce per year is expected to remain similar to that presented in the FEIS. Phase 1 is still considered to have a significant and positive impact on employment in the Kivalliq region. See Section 6.12 for further analysis.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and determination of significant positive effects to local employment.
Population stability	Employment opportunities Contracting opportunities	Project induced in-migration to Rankin Inlet Project induced out-migration from other communities	Points of hire in all communities Fully contained accommodation camp, fly in/fly out. Local hiring and contracting priorities Clear communication on recruitment procedures	Primary	Phase 1 does not significantly change the numbers of people expected to in-migrate to Rankin Inlet. See Section 6.12 for further analysis.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and determination of no significant effects to population.
Gross Domestic Product and Economic Growth	Project spending on goods and services.	Project would temporarily expand the “size” of the economies of Nunavut and the Kivalliq region.	Economic development (new projects) would minimize the “bump” when the Project ramps down.	Primary	The capital investment estimate for Phase 1 has increased from that reported in the FEIS due to the increased precision of engineering designs. Consequently Phase 1 is still considered to have a significant and positive impact on the economic activity in the Kivalliq region. See Section 6.12 for further analysis.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and determination of significant positive effects to economic activity.

Table A1: Relevant Project Activities, Effects Pathways, and Associated Mitigation Measures (continued)

Valued Component	Project Activity / Location	Effects Pathways	Environmental Design Features and Mitigation Measures	Pathway Analysis from FEIS (Agnico Eagle 2014)	Analysis and Assessment of Effects Pathways for Phase 1	Conclusion
Investment	Capital expenditure	Expenditure would add to the economic activity in Nunavut, including investment.	Strategies that increase capacity of local businesses to supply the Project.	Primary	The capital investment estimate for Phase 1 has increased from that reported in the FEIS due to the increased precision of engineering designs. Consequently Phase 1 is still considered to have a significant and positive impact on the economic activity in the Kivalliq region. See Section 6.12 for further analysis.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and determination of significant positive effects to economic activity.
Government Fiscal Situation	Payment of taxes	Project would increase public revenue.	None required.	Primary	Phase 1 would reduce the payment of taxes to the government; however, Phase 1 is still considered to have a significant and positive impact on public revenues in the Kivalliq region. See Section 6.12 for further analysis.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and determination of significant positive effects to public revenue.
Archaeological Record	Mine Infrastructure (e.g., open pits, site roads, blasting, water management)	Construction activity leading to ground alteration that affects physical heritage resources	Complete heritage assessment for the Project footprint. Provide awareness training and a manual for recognizing heritage resources to all staff and contractors. Avoid previously recorded heritage resource sites. Complete additional heritage assessment for any changes to the Project footprint in areas considered to have moderate to high potential to contain heritage resources. Complete more in-depth mitigation strategies if an avoidance mitigation strategy cannot be implemented. Monitor condition of known heritage resource sites near the Project footprint.	Minor	With the mitigation completed in 2014, the revised Project footprint is not expected to impact any intact, significant archaeological resources that have not been subject to mitigation. See Section 6.13 for further analysis.	Phase 1 does not change predictions; therefore conclusions are consistent with the FEIS and determination of no expected effects to archaeological resources.