AGNICO EAGLE

MELIADINE GOLD MINE

Meliadine Extension
Final Fish Offsetting Plan

JANUARY 2023

ᐊᐅᓚᑦᑎᔨᓂᙳᕐᑐᑦ ᓇᐃᓈᕐᓯᐊᑦ

ᐊᒡᓃᑯᒃᑯᑦ ᐅᐃᒍᒋᐊᕐᓯᔪᒪᔪᑦ (ᑕᐃᔭᐅᖃᑦᑕᕐᑐᒥᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᕐᓯᓂᕐ) ᓈᒻᒪᒋᔭᐅᓯᒪᔪᒧᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕋᒃᑕᕆᐊᕐᒧᑦ ᐅᖓᓯᒃᑎᒋᔪᕐ 25 ᑭᓛᒥᑕᓪᓗᐊᓂᒃ ᐅᐊᖕᓇᖓᓂᑦ ᑲᖏᕐᓱᓂᐅᑉ, ᐊᒻᒪᓗ 80 ᑭᓛᒥᑕᓂᒃ ᐅᖓᓯᒃᑎᒋᔪᕐ ᓂᒋᕐᐸᓯᐊᓂᑦ ᐱᖓᖕᓇᕐᐸᓯᐊᓂᑦ ᐃᒡᓗᓕᙵᕐᔪᖕᒥᑦ ᑭᕙᓪᓕᕐᒥᑦ ᓄᓇᕗᒻᒥᑦ. ᓄᓇᕗᒻᒥ ᐊᒃᑐᕐᓯᓂᕐᒥᑦ ᕿᒥᕐᕈᔨᒃᑯᑦ (ᐊᕙᑎᓕᕆᔨᒃᑯᑦ) ᐱᓕᕆᐊᕐᒧᑦ ᓇᓗᓇᐃᒃᑯᑕᕐ ᓈᓴᐅᑎ 006 ᑐᓂᔭᐅᓚᐅᕐᑐᕐ 2015-ᒥᑦ ᐊᒻᒪᓗ ᐊᕙᑎᒥᒃ ᖃᐅᔨᓴᐃᓂᕐ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕋᒃᑕᕆᐊᕐᒧᑦ, ᑐᓂᔭᐅᔾᔪᑎᖃᕈᑎᖓ ᐱᓕᕆᐊᕐᒧᑦ ᓇᓗᓇᐃᒃᑯᑕᕐᒥᑦ ᓈᓴᐅᑎ 006-ᒥᑦ 2015-ᒥᑦ, ᐃᓚᐅᔪᑦ ᓈᒻᒪᒋᔭᐅᓂᖏᑦ ᐊᕕᒃᓯᒪᐸᓗᒋᑦ ᐱᕙᓪᓕᐊᓂᕆᔭᖓᑦ, ᐃᓚᐅᑉᓗᑎᒃ ᐅᔭᕋᒃᑕᕐᑕᐅᓂᖓ ᑎᕆᓕᓂᐊᕐᒥᑦ ᐱᑕᓕᒃ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔫᒃᑯᑦ ᐊᒻᒪᓗ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᒃᑕᕐᓂᒃᑯᑦ ᐊᒻᒪᓗ ᐅᔭᕋᒃᑕᕐᑕᐅᓂᖏᑦ ᐸᒻᐸ (Pump), F ᐃᓂᐅᔪᕐ (F zone), ᑎᒃᑲᕗᕆ (Discovery) ᐊᒻᒪᓗ ᐅᐊᔅᒥᐊᒡ (Wesmeg) ᐱᑕᑏᑦ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔫᒃᑯᑦ ᐊᑐᕐᓗᑎᒃ. Type A ᐃᒪᕐᒧᑦ ᓚᐃᓴᓐᓯ 2AM-MEL1631 ᑐᓂᔭᐅᓚᐅᕐᑐᕐ 2016-ᒥᑦ ᑎᕆᓕᓂᐊᕐᒥᑦ ᐱᑕᓕᖕᒍᓗᐊᖑᓚᐅᕐᑐᕐ ᐊᒻᒪᓗ ᐱᕐᑯᑎᖏᓐᓄᑦ ᐃᓚᐅᑉᓗᑎᒃ ᐱᓕᐅᕆᕚᒃ, ᓄᓇᓕᐊᓛᕐ, ᕿᒪᒃᑎᑦᑐᓄᑦ ᑐᕐᕐᑯᕐᓯᓯᒪᕚᒃ ᐊᒻᒪᓗ ᐊᒃᑕᒂᕐᑕᐅᔪᑦ ᐅᔭᕐᖃᓄᑦ ᑐᕐᕐᑯᕐᓯᓯᒪᕚᑦ.

ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᕐᓯᓂᕐ ᐃᓚᐅᓇᔭᕐᑐᑦ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᒃᑕᕐᓂᕐ ᐊᒻᒪᓗ ᑕᕆᐅᓕᒃ ᐃᒪᕐᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐱᕐᑰᑦ ᐸᒻᐸ-ᒥᑦ (Pump), F ᐃᓂᐅᔪᒥᑦ (F zone), ᑎᒃᑲᕗᕆᒥᑦ (Discovery) ᐱᑕᓕᖕᓂᑦ, ᐱᕙᓪᓕᐊᓗᑎᒃ ᓄᓇᐅᑉ ᐃᓗᐊᓄᐊᕐᕕᖕᒥᑦ ᐊᒻᒪᓗ ᐃᓚᒋᔭᐅᔪᑦ ᐱᕐᑰᑦ ᑎᕆᓕᓂᐊᕐᒥᑦ-Wolf ᖃᓂᖓᓂᑦ, ᓴᓇᕙᓪᓕᐊᓂᕐ ᐊᒻᒪᓗ ᐊᐅᐦᕐᑎᑦᑎᓂᕐ ᐊᓄᕆᒥᑦ ᐆᒻᕐᑯᑎᓕᐅᕈᑎᒥᑦ ᐊᒻᒪᓗ ᐊᑐᕐᓗᑎᒃ ᐃᓗᑦᑎᕐᓯᒪᔪᓂᒃ ᐊᒻᒪᓗ ᓄᓇᐃᔭᐃᓂᕐᓂᑦ. ᓈᒻᒪᒋᔭᐅᔪᑦ ᐱᕐᑰᑦ, ᐋᕐᓗ ᓄᓇᓕᐊᓛᕐ, ᓯᖃᓪᓕᑎᕆᕚᒃ, ᐃᒪᕐᒥᒃ ᐊᐅᓚᑦᑎᔾᔪᑏᑦ, ᐆᒻᕐᕐᑯᑎᓕᐅᕆᕚᒃ, ᕿᒪᒃᑎᑦᑐᓄᑦ ᑐᕐᕐᑯᕐᓯᓯᒪᕚᒃ, ᐅᑭᐅᓗᒃᑖᕐ ᐊᐸᕐᑯᑎ, ᐃᒪᑦᑎᐊᕙᖕᒥᑦ ᐱᖃᑦᑕᕐᑐᑦ ᐊᒻᒪᓗ ᐃᒪᓕᕆᕚᑦ ᐊᑐᕐᑕᐅᖏᓐᓇᕐᓂᐊᕐᑐᑦ. ᐊᓯᐊᙳᕐᑐᖃᙱᑦᑐᕐ ᑐᒃᓯᕋᐅᑕᐅᔪᒥᑦ ᑲᖏᕐᓱᓂᕐᒥᑦ ᐱᕐᑯᑎᓄᑦ. ᐊᐅᓛᕐᓂᖓ ᐅᔭᕋᒃᑕᕆᐊᕐ ᐃᓚᓯᒃᑲᓐᓂᕐᓂᖃᕋᔭᕐᑐᕐ 11 ᐅᑭᐅᓂᑦ ᑎᑭᓪᓗᒍ 2043-ᒧᑦ, ᐅᒃᑯᐊᕐᐸᓪᓕᐊᓗᑎᒃ 2044-ᒥᑦ 2050-ᒧᑦ, ᐊᒻᒪᓗ ᐅᒃᑯᐊᕐᓯᒪᓕᕐᑎᓪᓗᒍ 2051-ᒥᑦ 2060-ᒧᑦ.

ᐊᑐᕐᑕᐅᖔᕈᖕᓇᕐᑐᒥᒃ ᐱᔪᒪᔪᑦ ᐃᓚᒋᔭᐅᓗᓂ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᕐᓯᓂᕐᒧᑦ ᐃᓚᐅᔪᑦ ᐊᑐᕐᑕᐅᓗᓂ ᐅᔭᕋᒃᑕᕐᑕᐅᕌᓂᒃᓯᒪᔪᑦ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᑦ ᑐᕐᕐᑯᕐᑐᐃᕚᐅᓗᓂ ᕿᒪᒃᑎᑦᑐᓄᑦ ᐊᒻᒪᓗ ᐊᒃᑕᒂᕐᑕᐅᔪᑦ ᐅᔭᕐᖃᓄᑦ.

ᐅᐃᒍᒋᐊᕐᓯᓂᕐ ᐋᓐᓂᕐᓯᙵᓐᓂᕐᑕᖃᙱᑦᑐᒥᒃ ᐊᓯᐊᙳᕐᓯᓂᐊᕐᑐᕐ, ᐃᓱᐃᓵᓗᓂ, ᐅᕝᕙᔫᓐᓃᑦ ᓱᖃᐃᓗᓂ ᐃᖃᓗᐃᑦ ᐃᓂᖏᓐᓂᒃ ᐃᓂᒋᔭᐅᔪᒥᒃ ᐊᓯᐅᔨᓂᕐᓂᑦ ᐱᕐᑰᑦ ᐃᓂᖃᕐᑎᑕᐅᓂᖏᓐᓄᑦ, ᐊᓯᐊᙳᕐᓂᖏᓐᓄᑦ ᑯᕕᓂᖏᑦ, ᐊᒻᒪᓗ ᐃᓕᔭᐅᓂᖏᑦ ᐅᔭᕋᒃᑕᕆᐊᕐᒥᑦ ᐊᒃᑕᒂᕐᑕᐅᔪᑦ ᐊᒻᒪᓗ ᐃᓚᒋᔭᐅᔪᑦ ᐊᐅᓚᑦᑎᔾᔪᑏᑦ ᐊᒃᑐᕐᑕᐅᓯᒪᔪᕐ ᐃᒪᕐᒥᑦ ᐊᒻᒪᓗ ᑕᕆᐅᓕᒃ ᐃᒪᕐᒥᑦ. ᐅᐃᒍᒋᐊᕐᓯᓂᕐ ᓂᕆᐅᒋᔭᐅᔪᕐ ᐃᖃᓗᐃᑦ ᐃᓂᖏᓐᓂᒃ ᐊᓯᐅᔨᑎᑦᑎᓂᐊᕐᓂᖓᓄᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕋᒃᑕᕆᐊᒦᑦᑐᓂᒃ. ᓂᕆᐅᒋᔭᐅᔪᕐ ᐊᐅᓪᓛᕐᑎᑦᑎᓂᖃᕐᑎᓪᓗᒋᑦ ᐊᒻᒪᓗ ᐅᒃᑯᐊᕐᐸᓪᓕᐊᓂᒦᑎᓪᓗᒋᑦ, ᐊᓯᐅᔨᓂᖃᕐᓂᐊᕐᓂᖓ 437.18 ᐃᓂᐅᔪᕐ ᐊᒻᒪᓗ 154.68 ᐃᓂᒋᔭᖃᕐᕕᐅᔪᑦ ᐃᒪᖃᕐᑐᑦ ᐃᖃᓗᖃᕐᓗᑎᒃ ᐊᒻᒪᓗ 11.55 ᐃᓂᐅᔪᑦ ᐊᒻᒪᓗ 4.28 ᐃᓂᒋᔭᐅᔪᑦ ᐃᒪᖃᕐᑐᑦ ᐃᓂᐅᔪᓂᒃ ᐊᕕᒃᓯᒪᔪᓂᒃ ᐋᕐᕿᒃᓯᓂᖃᕆᐊᖃᕐᓂᐊᕐᓱᓂ ᐃᓚᒋᔭᐅᔪᓂᒃ 35-ᒥᑦ ᐊᒻᒪᓗ 36-ᒥᑦ ᐃᖃᓗᓕᕆᔨᒃᑯᑦ ᐱᕐᑯᔭᖏᓐᓂᑦ.

ᑕᐃᒪᙵᓂᑦ 2015-ᒥᑦ, ᐊᒡᓃᑯᒃᑯᑦ ᑲᑎᑦᑎᖃᑦᑕᕐᑐᑦ ᑭᒡᓕᒋᔭᐅᔪᓂᒃ ᐊᒻᒪᓗ ᑕᐃᒪᐅᔪᓂᒃ ᖃᓄᐃᖓᓂᐅᔪᓄᑦ ᓈᓴᐅᑎᓂᒃ/ᑎᑎᕐᖃᓂᒃ, ᐃᓚᓕᐅᑎᔭᐅᓯᒪᔪᑦ ᓄᑖᙳᕐᑎᕐᓯᒪᔪᒧᑦ ᐃᕙᑎᒥᒃ ᖃᐅᔨᓴᐃᓂᕐᒧᑦ ᖃᐅᔨᓂᐊᕐᓗᑎᒃ ᐊᒻᒪᓗ ᖃᐅᔨᓴᕐᓗᒋᑦ ᐊᕙᑎᒧᑦ ᐊᒻᒪᓗ ᐃᓅᖃᑎᒌᓄᑦ ᖃᓄᖓᓕᕐᑎᑦᑎᓂᐅᔭᖕᓇᕐᑐᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᕐᓯᓂᕐᒧᑦ

ᐱᓕᕆᓂᕐᓂᑦ ᐱᔪᓂᒃ. ᓈᓴᐅᑎᓂᒃ/ᑎᑎᖅᑲᓂᒃ ᑲᑎᖅᓱᐃᓂᕐᒥᑦ ᐃᓚᐅᔪᑦ ᐊᕙᑎᕗᑦ (ᓱᕐᓗ, ᓄᓇ ᐊᒻᒪ ᐃᑉᔪᐃᑦ, ᖁᐊᖑᐃᓐᓇᐅᔭᖅᑐᖅ, ᓄᓇᐅᑉ ᖃᓄᐃᓕᐅᕐᓂᖓ, ᓂᐱᖃᕐᓂᖅ, ᐊᒻᒪ ᐃᒪᖅ ᐊᖏᑎᒋᓂᖓ ᐊᒻᒪ ᖃᓄᐃᓐᓂᖓ, ᑕᕆᐅᑉ ᐃᒪᐅᑉ ᖃᓄᐃᓐᓂᖓ), ᐆᒪᔪᑦ ᐊᕙᑎᖏᑦ (ᓱᕐᓗ, ᐱᕈᖅᑐᐃᑦ, ᓄᓇᒥᐅᑕᐃᑦ ᓂᕐᔪᑏᑦ, ᑎᖕᒥᐊᑦ ᐊᒻᒪ ᑎᖕᒥᐊᑦ ᐃᓂᒋᔭᖏᑦ, ᐊᒻᒪ ᐃᖃᓗᐃᑦ ᐊᓯᖏᓪᓗ ᐃᒪᕐᒥᐅᑕᐃᑦ ᐆᒪᔪᕋᓛᑦ, ᐊᒻᒪ ᐃᒪᕐᒥᐅᑕᐃᑦ ᓂᕐᔪᑏᑦ), ᐊᒻᒪ ᐃᓄᐃᑦ-ᐱᕈᖅᐸᓪᓕᐊᓂᖏᑦ (ᓱᕐᓗ, ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᑦ, ᐃᑦᑕᕐᓂᑕᓕᕆᓂᖅ, ᐊᒻᒪ ᐃᓄᐃᑦ-ᐱᕈᖅᐸᓪᓕᐊᓂᖏᑦ). ᖃᓄᐃᖕᒐᓂᐅᔪᑦ ᐊᕙᑎᒥᒃ ᖃᐅᔨᓴᐃᓂᕐᒧᑦ ᖃᐅᔨᓚᐅᖅᑐᑦ ᐊᖏᓗᐊᖏᕐᕕᐊᖅᑎᑦᑎᓂᖅ, ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᕆᐊᖅᓯᓂᖅ ᐊᑯᓂᐅᔪᒥᑦ ᐊᖏᔪᒥᒃ ᐱᑦᑕᐅᖏᑦᑐᒥᒃ ᖃᓄᐃᖕᒐᓕᖅᑎᑦᑎᓂᖃᕐᓂᐊᖏᓐᓂᖕᒐᓄᑦ ᓴᓇᕗᓪᓕᐊᑎᓪᓗᒋᑦ, ᐊᐅᓚᖅᑎᑦᑎᓂᕐᓂᑦ, ᐅᒃᑯᐊᖅᐸᓪᓕᐊᓂᕐᒥᓪᓗ ᐱᔪᓂᑦ.

ᐊᓪᓃᑯᒃᑯᑦ ᐋᖅᑭᒃᓯᓚᐅᖅᑐᑦ ᖃᐅᔨᓴᐃᓂᕐᒧᑦ ᐊᒻᒪ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᑐᕌᖓᔪᓂᑦ ᐱᔭᕆᐊᖃᖅᑐᓂᒃ ᐊᖏᓗᐊᖏᕐᕕᐊᖅᑎᑦᑎᓂᕐᒧᑦ, ᖃᐅᔨᓴᐃᓂᕐᒧᑦ, ᐊᒻᒪ ᐅᓂᑉᑲᓕᐅᕆᓂᕐᒧᑦ ᐊᕙᑎᐅᑉ ᖃᓄᐃᓕᐅᕐᓂᖓᓄᑦ ᒪᓕᒐᓕᕆᓂᕐᒧᑦ ᐱᔭᕆᐊᓕᖕᓄᑦ ᐃᓗᐊᓃᑦᑐᓂᒃ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐊᐅᓚᖅᑎᑦᑎᓂᕐᒧᑦ ᐱᔪᓐᓇᖅᑎᑕᐅᓂᕐᓂᑦ, ᐱᔪᓐᓇᖅᑎᑦᑎᔾᔪᑎᓂᒃ ᐳᕐᒥᑦᓂᑦ, ᓚᐃᓴᓐᓯᓂᑦ, ᐊᒻᒪ ᐊᑐᖅᑐᐊᖅᑕᐅᔪᓂᒃ ᐊᔾᔨᒌᓗᒋᑦ ᒪᓕᒃᑯᑦ ᐱᔭᕆᐊᖃᖅᑐᓂᒃ ᐊᑐᖅᑐᑦ ᐱᕐᑯᔭᓂᑦ ᐊᒻᒪ ᒪᓕᒐᕋᓛᓂᑦ ᓄᓇᕗᒻᒥᑦ. ᓇᓚᐅᑦᑎᓂᖏᑦ ᐊᕙᑎᒥᒃ ᐊᒃᑐᖅᓯᓂᕐᒧᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᔪᑦ ᐊᒻᒪ ᐋᑐᑎᖃᕐᓂᖏᑦ ᐊᖏᓗᐊᖏᕐᕕᐊᖅᑎᑦᑎᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᔪᑦ ᓇᓗᓇᐃᖅᑕᐅᓂᐊᖅᑐᑦ ᖃᐅᔨᓴᐃᓂᒃᑯᑦ ᐊᒻᒪ ᐊᕐᕿᒍᑕᓖᖅ ᐅᓂᑉᑲᓕᐅᕆᓂᒃᑯᑦ. ᐃᓱᒪᓐᓇᙱᑦᑐᓂᒃ ᐅᕝᕙᓘᓐᓃᑦ ᓂᕆᐅᓇᙱᑦᑐᓂᒃ ᐊᖏᔪᒥᒃ ᐊᕙᑎᒥᒃ ᐊᒃᑐᖅᓯᓂᐅᔪᓂᒃ ᖃᐅᔨᔭᐅᒃᐸᑕ, ᐋᖅᑭᒋᐊᖅᓯᓂᕐᒧᑦ ᖃᓄᐃᓕᐅᕆᐊᕐᓂᕐᒧᑦ ᐋᖅᑭᒃᓯᓂᐊᖅᑐᑦ. ᐊᑐᖅᑕᐅᔪᓂᒃ ᐊᐅᓚᑦᑎᓂᕆᓂᒃᑯᑦ, ᑕᐃᒪᐅᔪᑦ ᐊᑐᖅᑕᐅᔪᓄᑦ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐸᕐᓇᐅᑎ, ᐊᒻᒪ ᑕᐃᒪᐅᔪᖅ ᐊᕙᑎᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐊᒻᒪ ᒥᐊᓂᖅᓯᓂᕐᒧᑦ ᐸᕐᓇᐅᑎ, ᑕᐃᒪᐅᔪᑦ ᐊᖏᓗᐊᖏᕐᕕᐊᖅᑎᑦᑎᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᔪᑦ ᐊᔪᙱᑦᑐᑦ ᑭᓯᐊᓂ ᐋᖅᑭᐊᖅᑕᐅᓂᐊᖅᑐᑦ ᐅᕝᕙᓘᓐᓃᑦ ᔪᑖᓂᒃ ᐊᖏᓗᐊᖏᕐᕕᐊᖅᑎᑦᑎᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᓂᐊᖅᑐᓂᒃ ᐊᑐᓕᖅᑎᑕᐅᓗᑎᒃ ᐱᔭᕆᐊᖅᐸᑕ.

ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᕆᐊᖅᓯᓂᖅ ᑲᔪᓯᑎᑦᑎᓂᐊᖅᑐᖅ ᐱᕈᖅᐸᓪᓕᐊᓂᕐᒧᑦ ᐃᑲᔫᑎᓂᒃ ᐊᒥᓱᓄᑦ ᐅᑭᐅᓄᑦ ᐃᓱᓕᓯᒪᓕᖅᑎᓪᓗᒍ ᐅᔭᕋᒃᑕᖅᑕᐅᓂᖓ ᑕᐃᒪᐅᔪᖅ ᒫᓐᓇ ᐊᐅᓚᕐᓂᖃᕐᓚᑕ ᐅᔭᕋᒃᑕᓕᐊᑉ. ᐱᕈᖅᐸᓪᓕᐊᓂᕐᒥᑦ ᖃᓄᐃᖕᒐᓕᖅᑎᑦᑎᓂᐅᔪᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᕆᐊᖅᓯᓂᕐᒥᑦ ᐱᔪᑦ ᐊᖏᔫᔪᑦ ᐊᒻᒪ ᓂᕆᐅᒋᔭᐅᔪᑦ ᐃᑲᔫᑎᑕᖃᑦᑎᐊᕐᓂᐊᕐᓂᖕᒐᓄᑦ ᓄᓇᕗᒻᒧᑦ. ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᕆᐊᖅᓯᓂᖅ ᓂᕆᐅᒋᔭᐅᔪᖅ 205-ᓂᑦ ᓄᑖᓂᒃ ᐱᓕᕆᐊᒃᓴᖅᑕᖃᕐᓂᐊᕐᓂᖕᒐᓄᑦ ᐊᐅᓚᖅᑎᑕᐅᓕᕐᓂᖕᒐᓂᑦ ᐃᓚᓯᓗᓂ ᓴᖅᑭᑕᐅᓯᒪᔪᑦ ᑕᐃᒪᐅᔪᖅ ᐊᐅᓚᕐᓂᓗᒃᑖᖕᒐᑕ ᐅᔭᕋᒃᑕᓕᐊᑉ ᐊᒻᒪ ᐱᓕᕆᐊᒃᓴᖅᑲᑎᑎᓗᓂ 2043-ᒧᑦ ᑎᑭᓪᓗᒍ. ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᕆᐊᖅᓯᓂᖅ ᐊᑯᓂᐅᔪᒧᑦ ᓄᓇᓕᖕᓂᑦ ᐱᑦᑕᐅᔪᒥᒃ ᖃᓄᐃᖕᒐᓕᖅᑎᑦᑎᓂᖃᐃᓐᓇᕐᓂᐊᕐᓂᖕᒐᑦ, ᐃᓪᓗᒥᐅᖃᑎᒌᑦ ᑮᓇᐅᔭᓕᐅᕐᓂᖏᓐᓄᑦ ᐊᒻᒪ ᐊᒃᑐᐊᓂᖃᖅᑐᑦ ᐱᔭᐅᔪᓐᓇᕐᓂᖏᓐᓄᑦ ᓂᕿᑦᑎᐊᕙᖅᓂᖅ, ᖁᕝᕙᐊᕆᔭᐅᔪᓕᕆᓂᕐᓄᑦ, ᐃᓕᓐᓂᐊᕐᓂᕐᒧᑦ, ᐊᒻᒪ ᐱᕙᐅᖃᖅᑲᖅᑐᓄᑦ ᐱᖅᑯᓯᑐᖃᐅᔪᒃᑯᑦ ᖃᓄᐃᓕᐅᕐᓂᐊᖅᑲᖅᑐᓂᒃ. ᐊᔾᔨᒋᖏᑦᑐᓂᒡᓗ, ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᕆᐊᖅᓯᓂᖅ ᐃᑲᔪᐃᓂᖃᕐᓂᐊᖅᑐᖅ ᓄᓇᓕᖕᒥᑦ ᑐᕌᖓᔪᓕᕆᓂᕐᓂᑦ ᐊᒻᒪ ᐃᓕᓐᓂᐊᕐᓂᕐᒧᑦ ᐱᔭᒃᓴᓂᒃ, ᐊᒻᒪ ᐃᓄᖕᓂᒃ ᐃᑲᔫᑎᓄᑦ ᐊᒻᒪ ᐊᒃᑐᖅᓯᓂᕐᓄᑦ ᐊᖏᖅᑲᑎᒌᒍᑎᒃᑯᑦ ᐃᑲᔫᑎᑦ ᐊᒻᒪ ᐱᓂᐊᕐᓂᕆᔭᐅᔪᓂᑦ.

ᐊᐅᓚᖅᑎᑕᐅᓕᕐᒪᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕋᒃᑕᓕᐊᖅ, ᐊᓪᓃᑯᒃᑯᑦ ᑭᑐᓗᒃᑖᓂᒃ ᐅᖃᖅᑎᖃᖅᑲᑦᑕᖅᓯᒪᔪᑦ ᐊᕐᕿᒍᑕᓖᖅ ᑲᑎᒪᑎᑦᑎᓂᒃᑯᑦ ᓄᓇᓕᖕᒥᑦ ᐊᒻᒪ ᓄᓇᓕᖕᒥᑦ ᐃᓚᒋᔭᐅᔪᓂᒃ ᑭᕙᓪᓕᕐᒥᑦ, ᒪᓕᒐᓕᕆᓂᕐᒧᑦ ᐱᔪᔾᔨᔾᔨᓂᒃ, ᐊᒻᒪ ᓄᓇᓕᖕᒥᑦ ᐱᓕᕆᔾᔨᒋᔭᐅᔪᓂᒃ. ᐊᔪᙱᑎᑦᑎᓯᒪᔪᖅ ᑐᑭᓯᐊᓂᖃᕐᓂᕐᒥᒃ ᐱᔪᓐᓇᐅᑎᒋᔭᐅᔪᓂᒃ, ᐱᔭᐅᔪᒪᔪᓂᒃ, ᐱᒻᒪᕆᐅᒋᔭᐅᔪᕐᒥᒃ, ᐱᔪᒪᓂᕆᔭᐅᔪᓂᒃ, ᐊᒻᒪ ᐃᓱᒪᒌᓚᑕᐅᔪᓂᒃ ᐊᒃᑐᖅᑕᐅᓯᒪᔪᖕᓇᖅᑐᓄᑦ ᐃᓚᒋᔭᐅᔪᓂᒃ, ᐱᓗᐊᖅᑐᒥᒃ ᐱᔪᑎᒋᑉᓗᒍ ᑲᖏᖅᖠᓂᖅ. ᐅᖃᖃᑎᖃᖃᑦᑕᕐᓂᒃᑯᑦ, ᐊᓪᓃᑯᒃᑯᑦ ᐋᖅᑭᒃᓯᓚᐅᖅᑐᑦ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐱᖅᑯᓯᑐᖃᐅᔪᕐᒥᒃ

ᐃᓕᑖᖅᓯᕙᖅ ᐊᒻᒪᓗ ᐃᒃᐱᒍᓱᒡᒐᖅᑳᖅᑐᓂ ᐱᕙᒪᓂᕆᔭᐅᕙᓂᒃ ᐸᕐᓇᐃᑎᓪᓗᒋᑦ ᐊᒻᒪᓗ ᐱᓕᕆᐊᖃᕆᐊᖅᑎᓪᓗᒋᑦ. ᐊᒡᓃᑯᒃᑯᑦ ᐅᖃᖃᑎᖃᖅᓯᒪᕙᑦ ᓄᓇᓕᖕᒥᑦ ᐃᓚᒋᔭᐅᕙᓂᒃ ᐊᒻᒪᓗ ᒪᓕᒐᓕᕆᓂᕐᒧᑦ ᐱᓕᕆᐊᓕᖕᓂᑦ ᐊᐅᓛᖅᑎᑕᐅᓂᖓᑕ ᑕᓯᕐᕙᐊᕐᒥᑦ ᐅᔭᕋᒃᑕᕆᐊᖅ, ᐊᒻᒪᓗ ᑐᒃᓯᕋᐅᑕᐅᕙᖅ ᑕᓯᕐᕙᐊᕐᒥᑦ ᐅᐃᒍᕆᐊᖅᓯᓂᖅ.

ᐅᖃᖃᑎᖃᕐᓂᒃᑯᑦ, ᑎᑎᖅᑲᓂᒃ ᕿᒥᕐᕈᓂᒃᑯᑦ ᐊᒻᒪᓗ ᐱᓕᕆᐊᕝᕕᐅᕙᓂᒃ ᖃᐅᔨᓴᐃᓂᒃᑯᑦ, ᖃᓄᐃᑦᑑᓂᖏᑦ ᐊᒻᒪᓗ ᐃᓂᐅᕙᑦ ᐋᖅᕿᒃᓯᓂᕐᒧᑦ ᐱᓕᕆᐊᓂᒃ ᓯᕗᓪᓕᐅᖅᓯᒪᕙᑦ ᒪᓕᒃᑯᒋᑦ ᑐᓂᔭᐅᓯᒪᕙᑦ 2014 FEIS-ᒥᑦ ᐊᒻᒪᓗ ᑕᐅᑐᙵᐅᕙᒥᒃ ᐋᖅᕿᒃᓯᓂᕐᒧᑦ ᐸᕐᓇᐅᑎᒌᑦᑐᓂᑦ. ᒪᓕᒃᑯᒋᑦ ᑐᓴᖅᑕᐅᓯᒪᕙᑦ, ᓯᕗᓪᓕᖅᐸᐅᑎᔭᐅᕙᑦ ᐆᖅᕿᒃᓯᓂᕐᒧᑦ ᐱᓕᕆᐊᓂᑦ ᑕᓯᕐᕙᐊᕐᒥᑦ ᐅᐃᒍᕆᐊᖅᓯᓂᕐᒧᑦ ᐃᓚᐅᕙᑦ ᐅᑎᖅᑎᑎᕆᓂᖅ ᐅᔭᕋᒃᑕᖅᑕᐅᕙᑦ ᓄᓇᒥᑦ ᐃᓗᑦᑐᖅᓯᒪᕙᓂᒃ ᑕᓯᕐᒥᑦ ᐃᓂᒋᔭᐅᕙᓄᑦ. ᐊᑐᖅᑕᐅᕙᖅ ᐃᓂᓕᐅᕆᖃᑦᑕᖅᑐᖅ ᓴᖅᕿᑎᑉᓗᑎᒃ ᐃᒪᕐᒥᑦ ᐃᓂᒋᔭᐅᕙᓂᒃ, ᑎᑎᕋᖅᓯᒪᓂᖓᑐᑦ 2014 ᑕᐅᑐᙵᐅᕙᒥᑦ ᐋᖅᕿᒃᓯᓂᕐᒧᑦ ᐸᕐᓇᐅᑎᒥᑦ, ᑲᑎᑎᒃᑳᓂᖅᑯᒋᑦ ᐃᒪᖃᕐᓂᐅᕙᑦ ᓄᑖᒧᑦ ᓄᓇᒥᑦ ᐃᓗᑦᑐᖅᓯᒪᕙᖅ ᑕᓯᕐᒧᑦ ᐃᓂᒋᔭᐅᕙᒧᑦ ᐊᒻᒪᓗ ᐃᒪᐃᔭᖅᓯᒪᕙᓄᑦ, ᐊᒥᓱᙳᕆᐊᖅᑯᒋᑦ ᐃᖃᓗᐃᑦ ᐃᑳᕈᓐᓇᕐᓂᖏᑦ ᑐᓗᖅᑕᕈᑕᐅᕙᓂᒃᑯᑦ ᐱᔅᑐᓪ ᐸᐃ ᕝᕚᓪᔅᒥᑦ (Pistol Bay Falls).

ᐱᓕᕆᐊᑦ ᑎᑯᓕᐅᖅᓯᒪᕙᑦ ᒪᓕᒃᑯᒋᑦ ᐃᖃᓗᓕᕆᔨᒃᑯᑦ ᐊᑐᐊᒐᖓᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ ᐱᓕᕆᐊᓄᑦ ᐋᖅᕿᒃᓯᓂᐊᕐᓗᓂ ᐊᖏᕙᒥᒃ ᖃᓄᐃᖖᓕᖅᑎᑦᑎᓂᐅᕙᓂᑦ ᐃᖃᓗᖕᓄᑦ ᐊᒻᒪᓗ ᐃᖃᓗᐃᑦ ᐃᓂᒋᔭᖏᓐᓄᑦ ᒪᓕᒃᑯᒍ ᐃᖃᓗᓕᕆᔨᒃᑯᑦ ᐱᕐᑯᔭᖖᒐᑦ (ᐃᖃᓗᓕᕆᔨᒃᑯᑦ 2019) ᖃᐅᔨᑎᑦᑎᕙᖅ ᐅᑯᓂᖔᒐᑦ ᓯᑕᒪᓂᑦ ᐃᓂᓕᐅᖅᓯᒪᕙᓂᒃ ᐱᓕᕆᐊᓂᑦ ᐋᖅᕿᒃᓯᓂᐊᕐᓗᓂ ᐃᖃᓗᖕᓂᑦ ᐊᒻᒪᓗ ᐃᖃᓗᐃᑦ ᐃᓂᖏᓐᓄᑦ ᐊᒃᑐᖅᓯᓂᐅᕙᓂᒃ; ᐃᓂᒋᔭᐅᕙᓂᒃ ᐅᑎᖅᑎᑦᑎᓂᖅ ᐊᒻᒪᓗ ᐱᐅᓯᕆᐊᖅᓯᓂᖅ, ᐃᓚᐅᑉᓗᑎᒃ ᓄᓇᒥᒃ ᐋᖅᕿᒃᓱᐃᓂᖅ ᑕᐃᒪᐅᕙᑦ ᐃᓂᒋᔭᐅᕙᓂᒃ ᐱᐅᓯᕆᐊᕐᓂᐊᕐᓗᒍ ᐃᓂᒋᔭᐅᕙᑦ ᐊᑑᑎᒃᑲᕐᓂᖓ ᐊᒻᒪᓗ ᐱᓕᐅᕆᔭᖕᓇᕐᓂᖓ, ᐃᓂᒋᔭᐅᕙᓕᐅᕐᓗᓂ ᐱᕙᓪᓕᐊᓗᓂ ᐅᕝᕙᓘᓐᓃᑦ ᐊᖏᓪᓕᒋᐊᕐᓗᒍ ᐃᒪᕐᒥᑦ ᐃᓂᒋᔭᐅᕙᖅ ᓄᓇᒥᑦ ᐃᓂᐅᕙᒥᑦ, ᖃᓄᐃᓕᐅᕐᓂᖏᓐᓄᑦ ᐅᕝᕙᓘᓐᓃᑦ ᐆᒪᓂᖃᖅᑐᓂᒃ ᐱᓕᕆᓗᓂ, ᐃᓚᐅᑉᓗᑎᒃ ᖃᓄᐃᓕᐅᕐᓂᖏᓐᓂᒃ ᐱᓕᕆᓗᓂ ᐃᒪᕐᓂᑦ, ᐊᒻᒪᓗ ᐃᖃᓗᓕᖅᑐᕐᓗᒍ ᐅᕝᕙᓘᓐᓃᑦ ᓯᑎᕙᒥᒃ ᖀᓕᖕᓂᑦ ᐅᕕᓗᖑᓗᖕᓂᑦ, ᐊᐅᓚᑦᑎᓂᖅ ᐃᒪᕐᒥᑦ ᑕᓖᓂᕐᒥᐅᑕᐅᖕᒋᑦᑐᓂᒃ ᐆᒪᔪᓂᒃ (ᓲᕐᓗ, ᒫᓂᓕᐅᕆᓃᑦ, ᐆᒪᔪᙳᖅᑐᓂᒃ), ᐊᒻᒪᓗ ᐃᑲᔪᖅᑐᓂᒃ ᐱᓕᕆᐊᓂᒃ, ᐱᑖᖅᑐᕐᓂᐅᕙᖅ ᓈᓴᐅᑎᓂᒃ/ᑎᑎᖅᑲᓂᒃ ᑲᑎᖅᓱᐃᓂᕐᒥᑦ ᐊᒻᒪᓗ ᖃᐅᔨᓇᓱᖕᓂᕐᒧᑦ ᖃᐅᔨᓴᐃᓂᕐᒥᑦ ᐱᔾᔪᑎᖃᖅᑐᓂᒃ ᐱᓕᕆᐊᖃᕐᓂᕐᒥᒃ ᐅᕝᕙᓘᓐᓃᑦ ᐱᐅᓯᕆᐊᖅᓯᓂᕐᒥᒃ ᐱᓕᐅᕆᔭᖕᓇᕐᓂᖏᑦ ᐃᖃᓗᒐᓗᐃᑦ.

EXECUTIVE SUMMARY

Agnico Eagle is proposing an extension (referred to as the Meliadine Extension) to the Approved Meliadine Mine located approximately 25 kilometers north of Rankin Inlet, and 80 kilometers southwest of Chesterfield Inlet in the Kivalliq region of Nunavut. Nunavut Impact Review Board (NIRB) Project Certificate No.006 was issued in 2015 and the environmental assessment of the Meliadine Mine, resulting in the issuance of Project Certificate No.006 in 2015, included approval of a multi-phase approach to development, including mining of Tiriganiaq deposit using open pit and underground mining methods and mining of the Pump, F zone, Discovery and Wesmeg deposits using open pit methods. Type A Water Licence 2AM-MEL1631 issued in 2016 was primarily for the Tiriganiaq deposit and associated infrastructure including, process plant, camp, tailings storage facility and waste rock storage facilities.

The Meliadine Extension proposes to include underground mining and associated saline water management infrastructures at the Pump, F zone, and Discovery deposits, development of a new portal and associated infrastructures in the Tiriganiaq-Wolf area, construction and operation of a windfarm and use of additional borrow pits and quarries. Approved infrastructure, such as the camp, mill, water management infrastructures, power plant, tailings storage facility, All-weather Access Road, freshwater intakes and treatment plants would continue to be used. No changes are proposed to the Rankin Inlet facilities. The life of the mine would be extended by an additional 11 years until 2043, closure will occur from 2044 to 2050, and post-closure from 2051 to 2060.

An alternative that is proposed as part of the Meliadine Extension includes the use of exhausted open pits to store tailings and waste rock.

The Extension will result in unavoidable harmful alteration, disruption, or destruction of fish habitat through direct habitat loss from infrastructure footprint, change in flows, as well as through the deposition of mine waste and associated management of contact water and saline water. The Extension is anticipated to result in fish habitat losses within the Meliadine Mine. It is estimated that during both the operations and post-closure phases, there will be a loss of 437.18 ha and 154.68 habitat units of waterbody fish habitat and 11.55 ha and 4.28 habitat units of watercourse habitat which will be required to be offset through Sections 35 and 36 of the *Fisheries Act*.

Since 2015, Agnico Eagle has continued to collect baseline and existing conditions data, which has been incorporated into the updated environmental assessment to identify and assess potential environmental and social effects resulting from the Meliadine Extension activities. Data collection included physical environment (e.g., terrain and soils, permafrost, geochemistry, noise, and surface water quantity and quality, marine water quality), biological environment (e.g., vegetation, terrestrial wildlife, birds and bird habitat, and fish and other aquatic organisms, and marine wildlife), and the socio-economic environment (e.g., IQ, archaeology, and socio-economics). The results of the environmental assessment found that with mitigation, the Meliadine Extension will not cause long-term significant negative effects resulting from proposed construction, operations, and closure.

Agnico Eagle has developed monitoring and management programs required to mitigate, monitor, and report on its environmental performance against the regulatory requirements contained within its Meliadine operating authorizations, permits, licenses, and leases consistent with the legal requirements of applicable Acts and Regulations in Nunavut. The accuracy of the environmental impact predictions and the effectiveness of the mitigation measures will be verified through monitoring and annual reporting. If unusual or unforeseen adverse environmental impacts are noticed, corrective action will be put in place. Through the adaptive management process, the existing Adaptive Management Plan, and the existing Environmental Management and Protection Plan, the existing mitigation measures are effective however will be adjusted or new mitigation measures implemented if necessary.

The Meliadine Extension represents the continuation of economic benefits into years beyond the end of mining of the Existing life of mine. The economic effects of the Meliadine Extension are substantial and are expected to be of significant benefit to the territory. The Meliadine Extension is expected to generate 205 new employment opportunities during the peak year of operation incremental to those created by the existing life of mine and extend employment and incomes until 2043. The Meliadine Extension will continue to have positive effects in communities for an extended period, in terms of household incomes and associated access to nutritious food, recreation, education, and resources with which to conduct traditional activities. Similarly, the Meliadine Extension will continue support for community programming and educational initiatives, as well as IIBAs royalties and commitments.

Since operations of the Meliadine Mine began, Agnico Eagle has continued public consultation by annually meeting with the community and local stakeholders within the Kivalliq region, regulatory agencies, and local employees. This has allowed a better general understanding of the rights, interests, values, aspirations, and concerns of the potentially affected stakeholders, with particular reference to Rankin Inlet. Through this continued consultation, Agnico Eagle has developed an operational culture that recognizes and respects these relevant interests in the planning and executing processes. Agnico Eagle has consulted with local stakeholders and regulators regarding ongoing operations of the Meliadine mine, as well as proposed Meliadine Extension.

Through consultation, literature reviews and field investigations, the types and locations of offsetting projects have been further advanced based on those presented in the 2014 FEIS and Conceptual Offsetting Plan. Based on feedback, the priority offsetting projects for the Meliadine Extension include restoration of mining pits into lake habitat. This option produces habitat gains by creating aquatic habitats, as outlined in the 2014 Conceptual Offsetting Plan, reconnecting watercourses to new pit lake habitat and dewatered lake basins, and increasing fish passage at the natural barrier at Pistol Bay Falls.

These projects align with guidance presented in DFO's Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat under the Fisheries Act (DFO 2019) which identifies the following four categories of measures to offset fish and fish habitat impacts; habitat restoration and enhancement, which includes physical manipulation of existing habitat to improve habitat function and productivity, habitat creation which is the development or expansion of aquatic habitat into a terrestrial area, chemical or biological manipulation, which includes chemical manipulation of water bodies, and stocking of fish or

shellfish, management or control of aquatic invasive species (e.g., fertilization, hatchery), and complementary measures, which are investments in data collection and scientific research related to maintaining or enhancing the productivity of fisheries.

TABLE OF CONTENTS

TABLES

FIGURES

SECTION 1 • INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is operating the Meliadine Mine, located approximately 25 km north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. Figure 1.1-1 presents the Meliadine Mine location.

On October 10, 2014, the Nunavut Impact Review Board (NIRB) provided the Minister with the Final Hearing Report and recommended Terms and Conditions for the Meliadine Project. The Minister accepted the NIRB's recommendation on January 27, 2015 and Project Certificate No.006 was issued on February 26, 2015. This included the approval of the Tiriganiaq deposit and the F Zone, Wesmeg, Pump, and Discovery deposits of the Meliadine Mine and the associated infrastructure.

On May 19, 2016, the Minister approved the Type A Water Licence 2AM-MEL1631 to begin construction and operation of the Meliadine Mine. At that time, Agnico Eagle only applied for the Type A Water Licence required to proceed with the Tiriganiaq deposit. As indicated at that time, amendments would be required to proceed with the other deposits.

At this time, Agnico Eagle is seeking approvals and permits required to proceed with mining of the deposits that were not included in the original Water Licence Application and associated infrastructure and activities.

The Meliadine Extension will potentially affect fish and fish habitat through mine infrastructure, expansion of approved facilities, as well as through the deposition of mine waste and associated management of contact and saline water. The Meliadine Extension is anticipated to result in additional fish habitat losses, with the majority of the area impacted within the 2014 NIRB approved Meliadine Mine footprint. Refer to Figure 1.1-2 for an overview of the site layout.

These additional fish habitat losses will arise from both footprint and deposition activities and require a *Fisheries Act* Authorization under Sections 35 and 36 of the *Fisheries Act.*

Subsection 35(1) of the *Fisheries Act* prohibits the harmful alteration, disruption or destruction (HADD) of fish habitat. Where proponents are unable to avoid or mitigate HADD of fish habitat, projects require authorization under subsection 35(2) of the *Fisheries Act* in order for the project to proceed without contravening the Act. As part of an Application for Authorization under Paragraph 35(2)(b), proponents develop an offsetting plan that counterbalances the unavoidable HADD of fish habitat. The habitat protection provisions of the *Fisheries Act* are administered by Fisheries and Oceans Canada (DFO).

Figure 1.1-1: Meladine Mine Extension – Project Overview

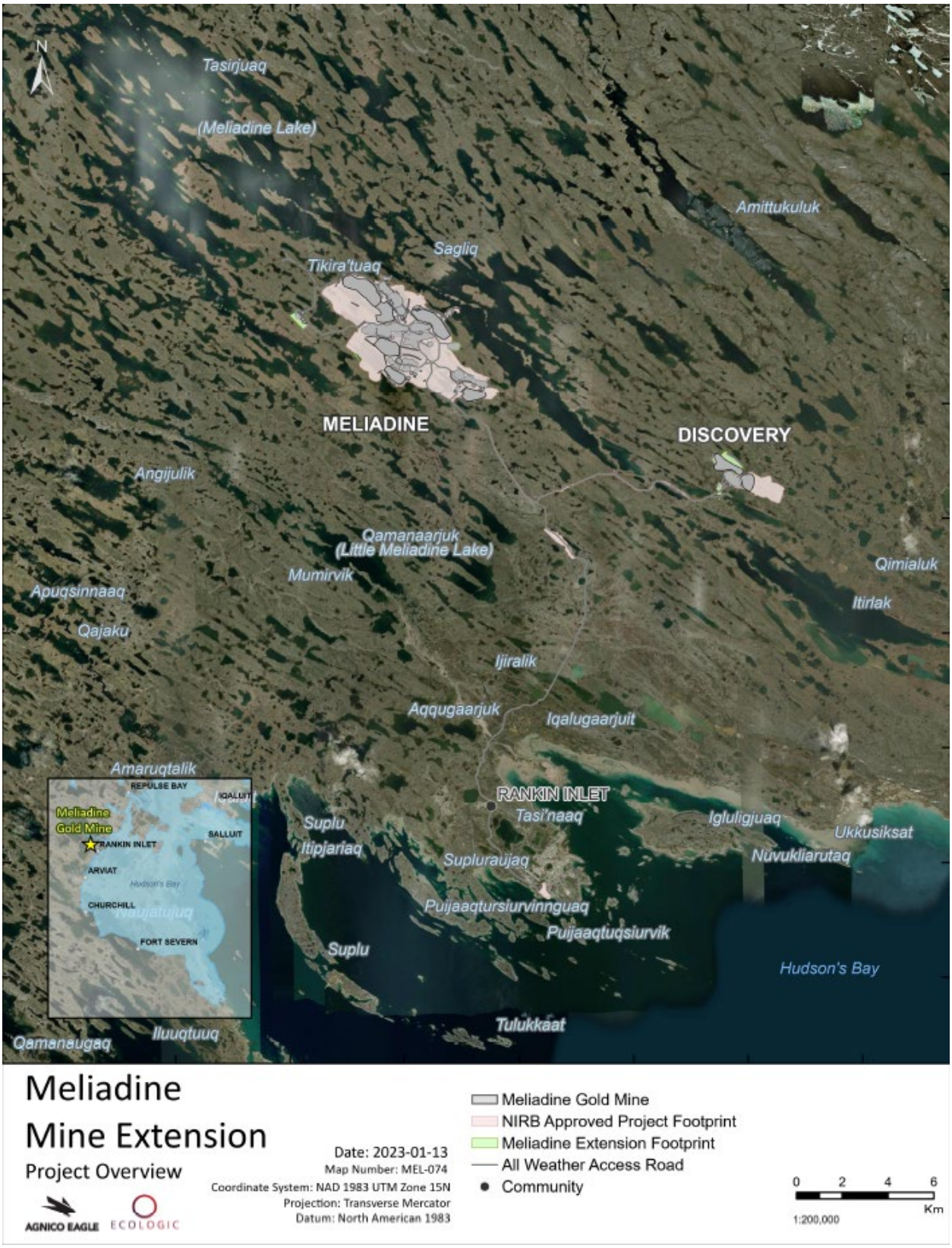
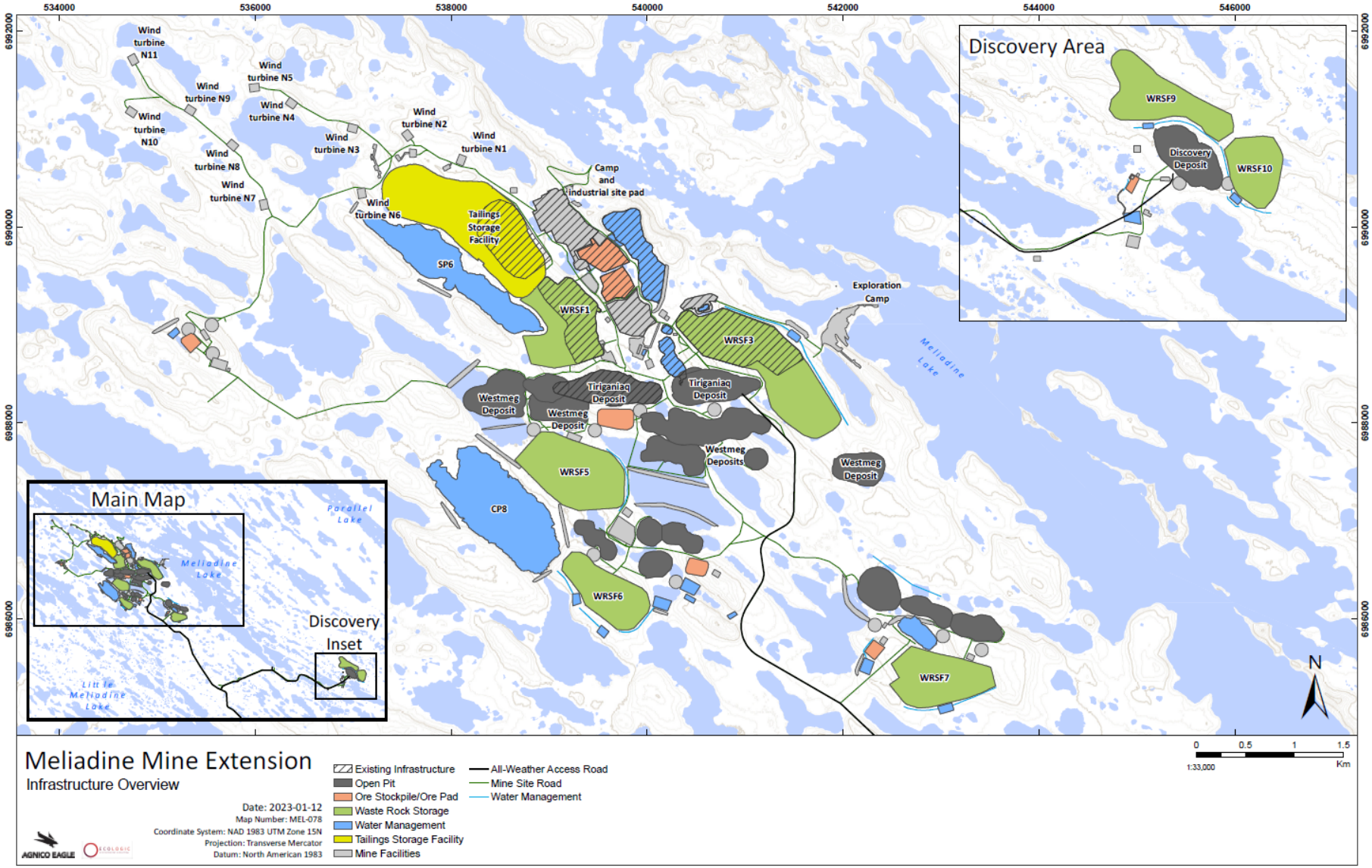


Figure 1.1-2: Meliadine Extension Infrastructure Overview



1.1 Regulatory Context

The operating Meliadine Mine was subject to the environmental and socio-economic impact assessment and permitting processes established under the Nunavut Agreement. Article 12, Part 5 of the Nunavut Agreement sets out the environmental and socio-economic review and assessment requirements managed by the NIRB.

Following a Part 5 public review, the NIRB provided the Minister with the Final Hearing Report and recommended Terms and Conditions for the Meliadine Project. On October 10, 2014, the Minister accepted the NIRB's recommendation on January 27, 2015 and Project Certificate No.006 was issued on February 26, 2015. This included the approval of the Tiriganiaq deposit and the F Zone, Wesmeg, Pump, and Discovery deposits of the Meliadine Mine and the associated infrastructure.

On May 19, 2016, the Minister approved the Type A Water Licence 2AM-MEL1631 to begin construction and operation of the Meliadine Mine. At that time, Agnico Eagle only applied for the Type A Water Licence required to proceed with the Tiriganiaq deposit. As indicated at that time, amendments would be required to proceed with the other deposits (F Zone, Wesmeg, Pump, and Discovery) included in Project Certificate No.006.

Since the Project Certificate was issued, the Meliadine Mine has been subject to two reconsiderations by NIRB. On February 26, 2019 the NIRB provided a positive decision to amend the Project Certificate to include discharge of saline effluent to the marine environment via diffuser at Itivia Harbour and to convey via truck saline effluent along the All Weather Access Road (AWAR) to Itivia Harbour (i.e., Melvin Bay). Additionally, on January 31, 2022, the Minister provided a positive decision to amend the Project Certificate to include the conveyance of saline effluent via a waterline along the AWAR (instead of via truck), to accommodate an increased volume of discharge at Itivia Harbour.

On June 23, 2021, the Minister approved the Type A Water Licence 2AM-MEL1631 Amendment which included updated total dissolved solids (TDS) thresholds to Meliadine Lake, increase of annual freshwater consumption, additional laydown area, additional landfarm, updated waste management strategy, construction of access roads, and an updated Interim Closure and Reclamation Plan (ICRP).

The current permits, leases, approvals and authorizations received as part of the Meliadine regulatory history outlined above are provided in Table 1.1-1.

For the Meliadine Extension, Agnico Eagle is seeking approvals and permits required to proceed with mining of the deposits that were not included in the Water Licence and associated approved activities. An Authorization under the *Fisheries Act* will be required for unavoidable impacts to fish and fish habitat.

Table 1.1-1: List of Permits, Leases, Approvals and Authorizations

Permit or Authorization	Status
NIRB Project Certificate No.006	Approval received February 26, 2015
NIRB Project Certificate No.006, Amendment 001	Approval received February 26, 2019
NIRB Project Certificate No.006, Amendment 002	Approval received March 3, 2022
NWB Type A Water Licence 2AM-MEL1631	Approval received May 19, 2016
NWB Type A Water Licence 2AM-MEL1631, Emergency Amendment	Approval received May 12, 2020
NWB Type A Water Licence 2AM-MEL1631, Amendment 001	Approval received June 23, 2021
KivIA Production Lease KVPL11D01	Issue date of June 30, 2017; Expiry date of June 29, 2027
KivIA Quarry Permit KVCA07Q08	Issue date of September 22, 2021; Expiry date of September 12, 2024
KivIA Quarry Permit KVCA11Q01	Issue date of April 19, 2021; Expiry date of April 19, 2024
KivIA Road Lease KVRW11F02	Issue date of July 26, 2022; Expiry date of July 25, 2032
Nunavut Airports Laydown Area Lease LE-03-320-0036	Issue date of July 1, 2021; Expiry date of June 30, 2031
Nunavut Airports Bypass Road Lease 102893	Issue date of July 1, 2017; Expiry date of July 1, 2027
GN-CGS Bypass Road Lease L-51808T	Issue date of June 1, 2017; Expiry date of May 31, 2027
GN-CGS AWAR Road Lease L-51809T	Issue date of June 1, 2017; Expiry date of May 31, 2027
CIRNAC Diffuser Lease 55K/16-42-2	Issue date of June 14, 2019; Expiry date of July 13, 2034
DFO Letter of Advice 11-HCAA-CA7-00014	Approval received in 2016

There are two provisions of the *Fisheries Act* that are relevant to the Meliadine Extension.

As mentioned above, subsection 35(1) of the *Fisheries Act* prohibits the HADD of fish habitat. Where proponents are unable to avoid or mitigate HADD of fish habitat, projects require authorization under subsection 35(2) of the *Fisheries Act* in order for the project to proceed without contravening the Act. For the Application for Authorization, proponents develop an offsetting plan that counterbalances the unavoidable HADD of fish habitat. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of deleterious substances of any type in water frequented by fish, unless the waterbody is designated as a tailings impoundment area (TIA) through an amendment to Schedule 2 of the Metal and Diamond Mining Effluent Regulations (MDMER). The MDMER regulate the deposit of mine waste (including mine effluent, mine contact water, waste rock, tailings, low-grade ore and/or overburden) into natural waters frequented by fish. Proponents that seek to use a natural waterbody frequented by fish to store mine waste must conduct an assessment of alternatives. The pollution prevention provisions of the *Fisheries Act* are administered by Environment and Climate Change Canada (ECCC).

A Conceptual Offsetting Plan for the Meliadine Mine was consulted on and reviewed as part of the approved 2014 Final Environmental Impact Statement (FEIS). At that time, the *Fisheries Act* was focused on preventing “serious harm to commercial, recreational, and Aboriginal fisheries”. The Meliadine Mine plan was reviewed by DFO and a Letter of Advice was issued advising that no serious harm was predicted from the works, undertakings, and activities proposed at that time.

In response to the Meliadine Extension amendment for Water Licence 2AM-MEL1631, an amendment application document was submitted and this Fish Offsetting Plan is provided to address any potential effects to fish and fish habitat.

1.2 Report Structure

Although two different regulatory agencies administer Section 35 and Section 36 of the *Fisheries Act*, offsetting plans to support each application require DFO approval. One fish habitat offsetting plan has been prepared to facilitate indigenous, public and regulatory review. It is recognized that separate accounting is required for each of the *Fisheries Act* provisions, and the fish habitat offsetting plan has therefore been organized to clearly differentiate between habitat losses and gains under each of the Section 35 (direct habitat impacts) and Section 36 (loss of habitat due to deleterious substances). The outline of the fish habitat offsetting plan follows the Information and Documents to be Provided in Schedule 1 of the *Fisheries Act* (Appendix A of this report provides a Table of Concordance to Schedule 1), section 27.1 of the MDMER (Appendix B of this report provides a Table of Concordance to S.27.1) and Appendix D of this report provides offsetting and contingency options.

SECTION 2 • RELATED DOCUMENTS

2.1 Meliadine Extension Overview

Mine development and operation plans and activities that are part of the Meliadine Extension have the potential to interact with waterbodies in the Meliadine Mine area. Proposed activities are provided below:

Mining areas: Meliadine Extension proposes the development of underground mining activities at the Wesmeg, Normeg, Wolf, Pump, F Zone, and Discovery gold deposits.

Life of mine: The operational phase will extend until 2043. Closure will occur from 2044 to 2050 and post-closure will be from 2051 to 2060.

Waste rock: The waste rock and overburden will be trucked to waste rock storage facilities (WRSF).

Contact Water: Contact water originating from developed areas will be intercepted and conveyed to various collection ponds for temporary storage. All contact water is eventually conveyed to surface water collection ponds (Collection Pond 1 and new ponds for the Extension). Contact water is routed through either the Effluent Water Treatment Plant (if required) and discharged to the receiving environment (Meliadine Lake or Itivia Harbour). Treated water that is discharged to the receiving environment will meet criteria consistent with the MDMER (for all receiving environments) and the Type A Water Licence (for discharge to Meliadine Lake).

Saline Water: Saline water originating from the underground mines will be pumped to saline water collection ponds on the surface. All saline water will be eventually conveyed to the Saline Effluent Treatment Plant, where it will be treated for total suspended solids and ammonia and discharged to the receiving environment (Itivia Harbour) through the waterline.

Infrastructure: A windfarm consisting of 11 turbines (phased in over time) is proposed.

2.2 Description of Proposed Project Works

The Project Description and Alternatives, including Project Components and Activities is outlined in Section 2 of the Meliadine Extension Water Licence Amendment Main Application Document.

The Meliadine Extension will begin as soon as approval and permits for the amendment applications are received, which are anticipated for mid-2024. The Operation phase (LOM) will be increased by 11 years, until 2043. Dismantling of infrastructures will occur from 2044 to 2046, and flooding from 2044 to 2050. Post-Closure Monitoring will take place from 2051 to 2060.

The Meliadine Extension allows the continuation of mining operations for the approved Meliadine Mine that has existing and licensed waste and water management facilities. Consistent with the approved Meliadine Mine, water management infrastructure includes: contact water collection ponds, WRSFs, diversion channels, retention dikes, and culverts. Salt rock storage facilities, wind turbines, and a waterline for saline and contact water discharge along the Discovery Road will be the newly added infrastructure associated with the Meliadine Extension.

Tailings will continue to be deposited in the approved Tailings Storage Facility (TSF), authorized under Project Certificate No.006 and Type A Water Licence 2AM-MEL1631. The dry-stack TSF will be extended to accommodate additional tailings produced by the extension of the LOM.

In the 2015 application for the Type A Water Licence, the locations of the proposed ore storage facilities were close to the Industrial Pad and primary crusher, with three smaller ore storage pads proposed instead of two large pads as proposed in the 2014 FEIS. Multiple changes were made to the configuration of various infrastructures within the Industrial Pad footprint since the 2015 application. As the general location of OP2 did not change, it was decided during detailed design of the facility to expand this originally planned footprint to incorporate the available remaining footprint of the previously planned OP1 and maximize the storage space next to the crusher during detailed design. For Meliadine Extension, this area will continue to be used.

Temporary ore stockpiles adjacent to the pits and portals at Pump, F Zone, Tiriganiaq-Wolf, and Discovery are also being proposed. They will facilitate ore handling and increases productivity of mine fleet which allows for more efficient equipment to transport the ore on a long distance (e.g., specific site to mill). Ore will be segregated by provenance and by ore grade. The ore will either be transported directly to the Approved mill and crusher for processing or will be temporally stockpiled at OP2. Contact water from the stockpiled ore material will be captured and redirected to the proper contact water collection pond.

Mining method includes the segregation of waste rock coming from the underground mines and open pits. Dedicated WRSFs were built to facilitate management of material coming from underground portions to keep it separate from open pit materials; additional WRSFs will be constructed as mining continues during the Meliadine Extension. Waste rock and overburden generated from open pit activities will be placed in one of the WRSFs.

Approximately 191.6 Mt of waste rock will be mined from the open pits and underground mine operations, with the majority of the waste rock produced (about 174.6 Mt) to be placed and stored within the designated WRSFs. The remaining waste rock will be used for other purposes, including backfill to the underground mine, construction activities (including thermal protection and aggregate production to support the open pits), and as TSF closure cover material. Waste rock generated from the underground mining activities will be separated from the open pit waste rock. The underground waste rock will be temporarily stored in saline waste rock storage facilities on surface. Material from the saline WRSFs will be brought back underground throughout the mine life and completely removed from surface at the end of operations. The four saline WRSFs include:

- Saline WRSF1 – from Pump Underground;
- Saline WRSF2 – from F Zone Underground;
- Saline WRSF3 – from Discovery Underground; and
- Saline WRSF4 – from Tiriganiaq-Wolf Underground.

The general water management strategy is to limit surface flow entering the mine footprint and restrict uncontrolled surface contact water releases from the mine footprint to the environment to limit impacts

on the receiving environment. In developing the water management plan, the following guiding principles were followed:

- segregate water as much as possible (non-contact, contact, and saline water);
- control and minimize contact water through diversion and containment;
- minimize or eliminate surface contact water discharges to Meliadine Lake as per Project Certificate No.006 Term and Condition 25;
- avoid placing collection ponds within overburden, site collection ponds within bedrock, or in lakes;
- minimize freshwater consumption by recycling and reusing the contact and process water wherever feasible; and
- meet discharge criteria before any site contact water is released to the receiving environment.

Saline ponds will be built at F Zone, Tiriganiaq-Wolf, Pump, and Discovery to collect and segregate water originating from underground mines. This water will be managed via the waterline. Contact water collection ponds (CPs) will be constructed to manage contact water from WRSF runoff and seepage as well as pit sump water.

Contact water will be discharged into Meliadine Lake or Itivia Harbour. Saline water will be conveyed to Rankin Inlet via waterline and discharged at Itivia Harbour through a diffuser.

Following completion of mining, the underground mines (Wesmeg, Pump, F Zone, Tiriganiaq-Wolf, and Discovery) will be flooded with contact water and saline water remaining at surface; the pits (Wesmeg, Pump, F Zone, Discovery) will be flooded by a combination of natural runoff and contact water from the site. Flooding will commence at the beginning of closure and will last seven years. During the closure and post-closure phases, the water management infrastructure will be decommissioned when the water quality monitoring results meet discharge criteria to allow water to passively flow to the natural environment.

Table 2.2-1 provides the proposed activities that will impact waterbodies. Table 2.2-2 provides the proposed activities that will impact the watercourses.

Table 2.2-1: Affected Waterbodies and Associated Mitigation

Water-body	Dewatering of the waterbody (i.e., water extraction)	Fish out if required	Overburden stripping (i.e., vegetation clearing and soil clearing) using industrial equipment	Mining activities in new or expanded pit overprinting a portion of waterbody (i.e., use of explosives)	Construction of road using industrial equipment to allow access around the pits	If the waterbody is not fully excavated, water will be managed to avoid infiltration in the pits
A2	X	X	X	-	X	X
A2a	X	X	X	-	X	X
A3	X	X	X	-	X	X
A4	X	X	X	-	X	X
A5	X	X	X	X	X	X
A6	X	X	X	X	X	X
A7	X	X	X	-	X	X
A8	X	X	X	X	X	X
A19	X	X	X	X	X	X
A30	X	X	X	-	X	-
A31	X	X	X	-	X	-
A32	X	X	X	-	X	-
A33	X	X	X	-	X	-
A34	X	X	X	-	X	X
A35	X	X	X	X	X	X
A37	X	X	X	X	X	X
A44	X	X	X	-	X	X
A45	X	X	X	-	X	X
A49	X	X	X	-	X	X
A50	X	X	X	X	X	X
A51	X	X	X	X	X	X
A52	X	X	X	-	X	X
A53	X	X	X	X	X	X
B4	X	X	X	-	X	X
B5	X	X	X	X	X	X
B6	X	X	X	-	X	X
B7	X	X	X	-	X	X
B19	X	X	X	-	X	X
B22	X	X	X	-	X	X
B25	X	X	X	-	X	X
B30	X	X	X	-	X	X
B31	X	X	X	-	X	X
B32	X	X	X	-	X	X
B34	X	X	X	-	X	X
B36	X	X	X	X	X	X

Water-body	Dewatering of the waterbody (i.e., water extraction)	Fish out if required	Overburden stripping (i.e., vegetation clearing and soil clearing) using industrial equipment	Mining activities in new or expanded pit overprinting a portion of waterbody (i.e., use of explosives)	Construction of road using industrial equipment to allow access around the pits	If the waterbody is not fully excavated, water will be managed to avoid infiltration in the pits
B37	X	X	X	X	X	X
B38	X	X	X	X	X	X
B39	X	X	X	-	X	X
B59	X	X	X	-	X	X
B60	X	X	X	-	X	X
B61	X	X	X	-	X	X
B62	X	X	X	X	X	X
B63	X	X	X	-	X	X
D31	X	X	X	-	X	X
H15e	X	X	X	-	X	X
I1	X	X	X	X	X	X
J2	X	X	X	-	X	X
J3	X	X	X	-	X	X
J4	X	X	X	-	X	X
J5	X	X	X	X	X	X
J6	X	X	X	X	X	X
J7	X	X	X	X	X	X
J8	X	X	X	-	X	X

Table 2.2-2: Affected Waterbodies and Associated Mitigation

Water-body	Dewatering of the waterbody (i.e., water extraction)	Fish out if required	Overburden stripping (i.e., vegetation clearing and soil clearing) using industrial equipment	Mining activities in new or expanded pit overprinting a portion of waterbody (i.e., use of explosives)	Construction of road using industrial equipment to allow access around the pits	If the waterbody is not fully excavated, water will be managed to avoid infiltration in the pits
A01-A02	-	X	-	-	-	-
A02A-A03	X	X	X	-	X	-
A03-A04	X	X	X	-	X	-
A04-A05	X	X	X	-	X	-
A05-A06	X	X	X	-	X	-
A05-A19	X	X	X	-	X	-
A06-A07	-	X	-	-	-	-
A06-A31	-	X	-	-	-	-
A06-A44	-	X	-	-	-	-
A07-A08	X	X	X	-	X	-
A19-A20	X	X	X	-	X	-

Water-body	Dewatering of the waterbody (i.e., water extraction)	Fish out if required	Overburden stripping (i.e., vegetation clearing and soil clearing) using industrial equipment	Mining activities in new or expanded pit overprinting a portion of waterbody (i.e., use of explosives)	Construction of road using industrial equipment to allow access around the pits	If the waterbody is not fully excavated, water will be managed to avoid infiltration in the pits
A50-A51	X	X	X	X	-	-
A51-A52	X	X	X	-	-	-
A5-A50	X	X	X	X	X	-
A6-A50	X	X	X	X	-	-
A49-A45	-	X	-	-	-	-
A31-A32	-	X	-	-	-	-
A6-A30	-	X	-	-	-	-
A44-A45	-	X	-	-	-	-
A30-A33	X	X	X	-	X	-
A33-A34	X	X	X	-	-	-
A8-A37	X	X	X	X	-	-
B03-B04		X				-
B05-B31	-	X	-	-	-	-
B30-B31	-	X	-	-	-	-
B31-B32	X	X	X	X	-	-
B05-B33	X	X	X	X	X	-
B5-B6	-	X	-	-	-	-
B06-B30	-	X	-	-	-	-
B36-B37	X	X	X	X	-	-
B37-B38	X	X	X	-	X	-
B04-B05	X	X	X	-	X	-
B04-B22	-	X	-	-	-	-
B04-B36	X	X	X	X	-	-
B04-B39	-	X	-	-	-	-
B04-B45	X	X	X	-	-	-
B05-B34	X	X	X	-	X	-
B06-B07	X	X	X	-	-	-
B07-B08	X	X	X	-	-	-
B07-B25	-	X	-	-	-	-
B07-B28	-	X	-	-	-	-
B31-B32	-	X	-	-	-	-
B59-B60	X	X	X	-	-	-
B59-B62	X	X	X	-	-	-
B60- B61	X	X	X	-	-	-
D04-D31	X	X	X	-	-	-
D33-31	X	X	X	-	-	-

Water-body	Dewatering of the waterbody (i.e., water extraction)	Fish out if required	Overburden stripping (i.e., vegetation clearing and soil clearing) using industrial equipment	Mining activities in new or expanded pit overprinting a portion of waterbody (i.e., use of explosives)	Construction of road using industrial equipment to allow access around the pits	If the waterbody is not fully excavated, water will be managed to avoid infiltration in the pits
J7-J6	X	X	X	X	-	-
J6-J4	X	X	X	X	X	-
J5-J4	X	X	X	X	X	-
J4-J3	X	X	X	X	-	-
J3-J2	X	X	X	-	-	-
J2-J8	X	X	X	-	-	-
J8-J1	X	X	X	-	X	-

2.3 Overview of Waterbodies Affected by Meliadine Extension

The Extension of Meliadine Mine will result in the loss of habitat from the development of Wesmeg, Normeg, Wolf, Pump, F Zone, and Discovery deposits. Figure 2.2-1 shows an overview of waterbodies affected by the mine infrastructure, and Table 2.2-3 and Table 2.2-4 provides location details. Further details are found in Section 4 of this report.

Table 2.2-3: Geographic Coordinates of Waterbodies Affected by Meliadine Extension

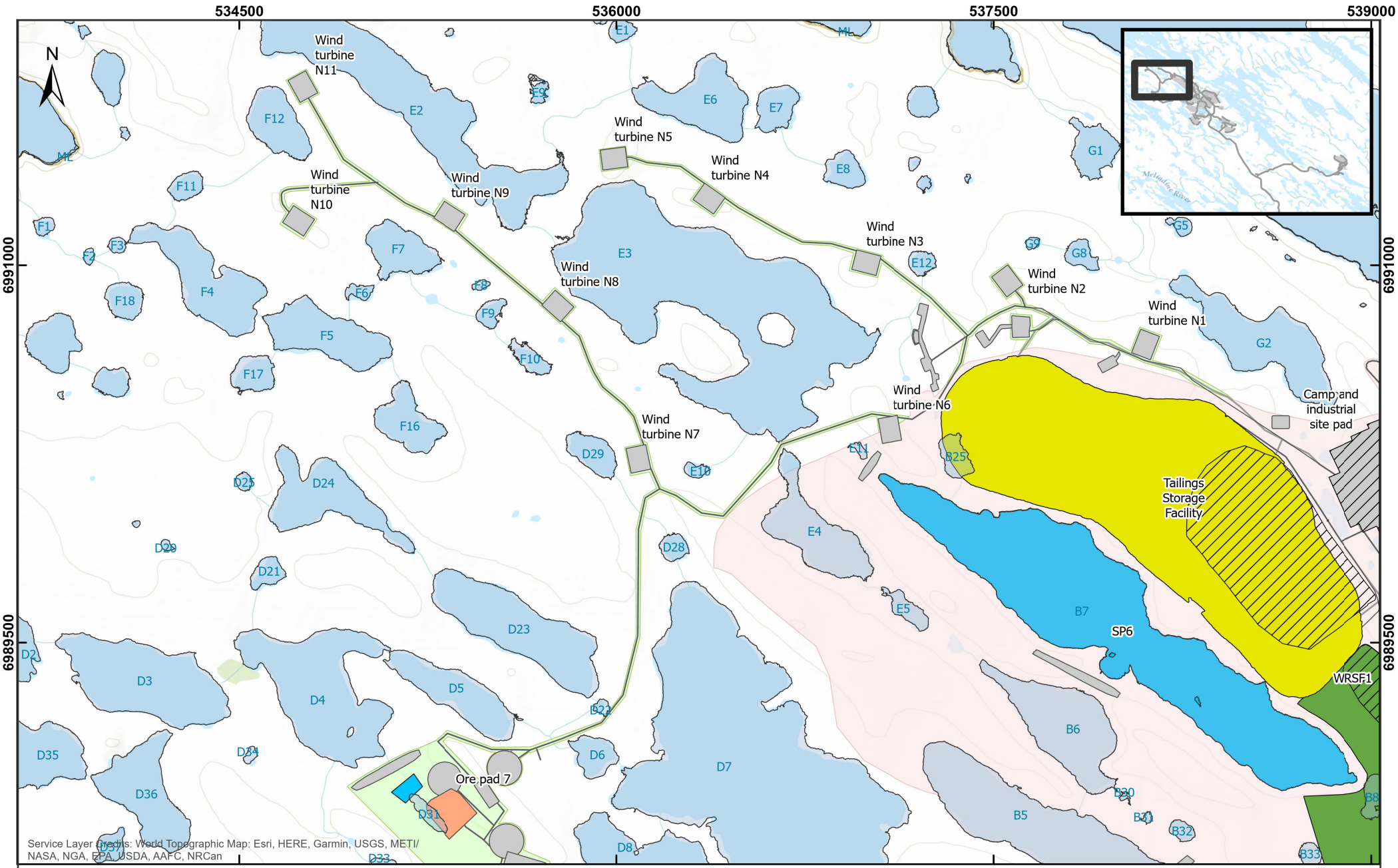
Water-body	Descrip-tion	UTM Easting	UTM Northing	Effect of Meliadine Extension	Timeline for Proposed Work
A2	Pond	543409	6986180	Water quantity	2027
A2a	Pond	543437	6986188	Water quantity	2027
A3	Pond	543055	6986225	Water quantity	2027
A4	Pond	542972	6986211	Water quantity	2027
A5	Pond	542790	6986288	Overprinted by pit	2029
A6	Lake	541797	6985731	Overprinted by pit; Loss of downstream connectivity	2028
A7	Pond	540944	6986537	Loss of downstream connectivity; Water quantity	2028
A8	Lake	540402	6987170	Overprinted by pit and waste rock storage facility	2025
A19	Pond	542462	6986490	Overprinted by pit	2029
A30	Pond	541837	6986464	Loss of downstream connectivity	2025
A31	Pond	541361	6986600	Loss of downstream connectivity	2025
A32	Pond	541209	6986731	Loss of downstream connectivity	2029
A33	Pond	541512	6986738	Loss of downstream connectivity	2025
A34	Pond	541389	6986827	Loss of downstream connectivity	2029
A35	Pond	540597	6987955	Overprinted by pit	2025
A37	Pond	540296	6987933	Overprinted by pit	2025
A44	Pond	541412	6985760	Loss of downstream connectivity	2027
A45	Pond	541265	6985695	Loss of downstream connectivity	2027

Water-body	Description	UTM Easting	UTM Northing	Effect of Meliadine Extension	Timeline for Proposed Work
A49	Pond	541142	6985796	Loss of downstream connectivity	2027
A50	Pond	542558	6986190	Overprinted by pit	2029
A51	Pond	542561	6986081	Overprinted by pit	2029
A52	Lake	542766	6985866	Collection pond	2029
A53	Pond	542471	6986082	Overprinted by pit	2029
B4	Lake	538772	6986895	Collection pond	2025
B5	Lake	538007	6988529	Overprinted by pit	2024
B6	Lake	537779	6989168	Loss of downstream connectivity; Water quantity	2025
B7	Lake	537992	6989589	Saline pond	2025
B19	Pond	537629	6987622	Overprinted by infrastructure; Loss of downstream connectivity	2025
B22	Pond	537861	6987857	Loss of downstream connectivity	2025
B25	Pond	537347	6990239	Loss of downstream connectivity, TSF	2025
B30	Pond	538020	6988887	Loss of downstream connectivity	2025
B31	Pond	538109	6988805	Loss of downstream connectivity	2025
B32	Pond	538247	6988753	Overprinted by waste rock storage facility	2025
B34	Lake	539440	6987610	Overprinted by waste rock storage facility	2027
B36	Pond	539438	6986913	Overprinted by pit	2027
B37	Pond	539709	6986708	Overprinted by pit	2027
B38	Pond	539968	6986670	Overprinted by pit	2027
B39	Pond	538156	6986743	Loss of downstream connectivity	2027
B59	Lake	540168	6986236	Loss of downstream connectivity	2027
B60	Pond	540479	6986300	Collection sump	2027
B61	Pond	540605	6986220	Overprinted by Salt Rock Pile	2027
B62	Pond	540297	6986468	Overprinted by pit	2027
B63	Pond	540420	6986380	Overprinted for mine development	2027
D31	Lake	535248	6988821	Overprinted by Ore stockpile	2029
I1	Pond	542227	6987476	Overprinted by pit	2025
J2	Pond	541506	6988004	Overprinted by waste rock storage facility	2021
J3	Pond	541263	6988187	Overprinted by waste rock storage facility	2021
J4	Pond	541126	6988253	Loss of downstream connectivity	2025
J5	Pond	541068	6988319	Overprinted by pit	2025
J6	Pond	540933	6988163	Overprinted by pit	2025
J7	Pond	541263	6987807	Overprinted by pit	2025
J8	Pond	541714	6987891	Overprinted by waste rock storage facility	2025

Table 2.2-4: Geographic Coordinates of Watercourses Affected by Meliadine Extension

Watercourse	Description	UTM Easting	UTM Northing	Effect of Meliadine Extension	Timeline for Proposed Work
A01-A02	Stream	543663	6986127	Water quantity	2027
A02A-A03	Stream	543128	6986181	Water quantity	2027
A03-A04	Stream	542999	6986218	Water quantity	2027
A04-A05	Stream	542904	6986230	Water quantity	2027
A05-A06	Stream	542579	6986291	Overprinted by pit	2028
A05-A19	Stream	542652	6986333	Water quantity	2028
A06-A07	Stream	541182	6986356	Loss of connectivity	2028
A06-A31	Stream	541454	6986501	Loss of connectivity; Water quantity	2028
A06-A44	Stream	541526	6985643	Loss of connectivity	2028
A07-A08	Stream	540790	6986664	Loss of connectivity; overprinted by pit	2028
A19-A20	Stream	542524	6986635	Overprinted by pit	2029
A50-A51	Stream	542559	6986157	Overprinted by pit	2029
A51-A52	Stream	542611	6986047	Overprinted by thermal berm	2029
A5-A50	Stream	542601	6986210	Overprinted by pit	2029
A6-A50	Stream	542430	6986157	Overprinted by pit	2028
A49-A45	Stream	541202	6985744	Loss of connectivity	2027
A31-A32	Stream	541241	6986696	Loss of connectivity	2025
A6-A30	Stream	541781	6986382	Loss of downstream connectivity	2025
A44-A45	Stream	541342	6985750	Loss of connectivity	2027
A30-A33	Stream	541581	6986601	Overprinted by haul road	2025
A33-A34	Stream	541435	6986806	Loss of connectivity	2025
A8-A37	Stream	540224	6987818	Overprinted by pit	2025
B03-B04	Stream	538026	6987063	Loss of connectivity; Water quantity	2025
B05-B06	Stream	537845	6988871	Water quantity	2024
B05-B31	Stream	538103	6988786	Loss of connectivity, overprinted by pit	2024
B05-B33	Stream, ephemeral overland flow, discontinuous	538722	6988623	Loss of connectivity due to pit	2024
B06-B30	Stream	537976	6988930	Loss of connectivity	2025
B26-B25	Stream, flat, overland flow	537258	6990353	Loss of connectivity	2025
B30-B31	Stream	538110	6988765	Loss of connectivity	2025
B36-B37	Stream	539591	6986766	Overprinted by pit	2027
B37-B38	Stream	539791	6986701	Overprinted by pit	2027
B04-B05	Stream	538264	6987776	Loss of connectivity, Collection Pond, Berm	2024
B04-B22	Stream	537985	6987792	Loss of connectivity, Collection Pond	2025
B04-B36	Stream	539120	6986908	Loss of connectivity, Collection Pond and pit	2025
B04-B39	Stream	538289	6986811	Loss of connectivity, Collection Pond	2025

Watercourse	Description	UTM Easting	UTM Northing	Effect of Meliadine Extension	Timeline for Proposed Work
B04-B45	Stream	538289	6986811	Loss of connectivity, Collection Pond	2025
B05-B34	Stream, flat, overland flow	539068	6987902	Loss of connectivity due to WRSF, vent raise	2024
B06-B07	Stream, flat, Connecting Channel	537928	6989387	Loss of connectivity, Collection Pond, dike	2025
B07-B08	Stream	537925	6989363	Loss of connectivity, Collection Pond, WRSF	2025
B07-B25	Stream, flat, overland flow	537355	6990154	Loss of connectivity, CP	2025
B07-B28	Stream	538142	6989759	Loss of connectivity, Collection Pond	2025
B08-B09	Stream	539087	6988764	Loss of connectivity, Collection Pond, WRSF	2025
B09-B10	Connecting Channel	539287	6988550	Loss of connectivity, Collection Pond, WRSF, pit	2025
B31-B32	Stream	538154	6988852	Overprinted by waste rock storage facility	2025
B59-B60	Stream	540367	6986296	Loss of connectivity, sumps	2027
B59-B62	Stream	540228	6986368	Overprinted by sump, vent raise	2027
B60- B61	Stream, flat, overland and subsurface flow	540562	6986250	Loss of connectivity, sump	2027
D04-D31	Stream	534831	6988916	Overprinted by infrastructure	2024
D33-D31	Stream	535225	6988681	Overprinted by infrastructure	2029
J7-J6	Stream	541016	6988006	Overprinted by road	2025
J6-J4	Stream	541029	6988238	Overprinted by road	2025
J5-J4	Stream	541097	6988288	Overprinted by road	2025
J4-J3	Stream	541168	6988263	Loss of connectivity	2021
J3-J2	Stream	541394	6988110	Overprinted by WRSF3	2021
J2-J8	Stream	541650	6987937	Overprinted by WRSF3 and road	2021
J8-J1	Stream	541851	6988097	Overprinted by WRSF 3, road and infrastructure	2025



Meliadine Mine Extension

Meliadine Infrastructure

Meliadine - North West

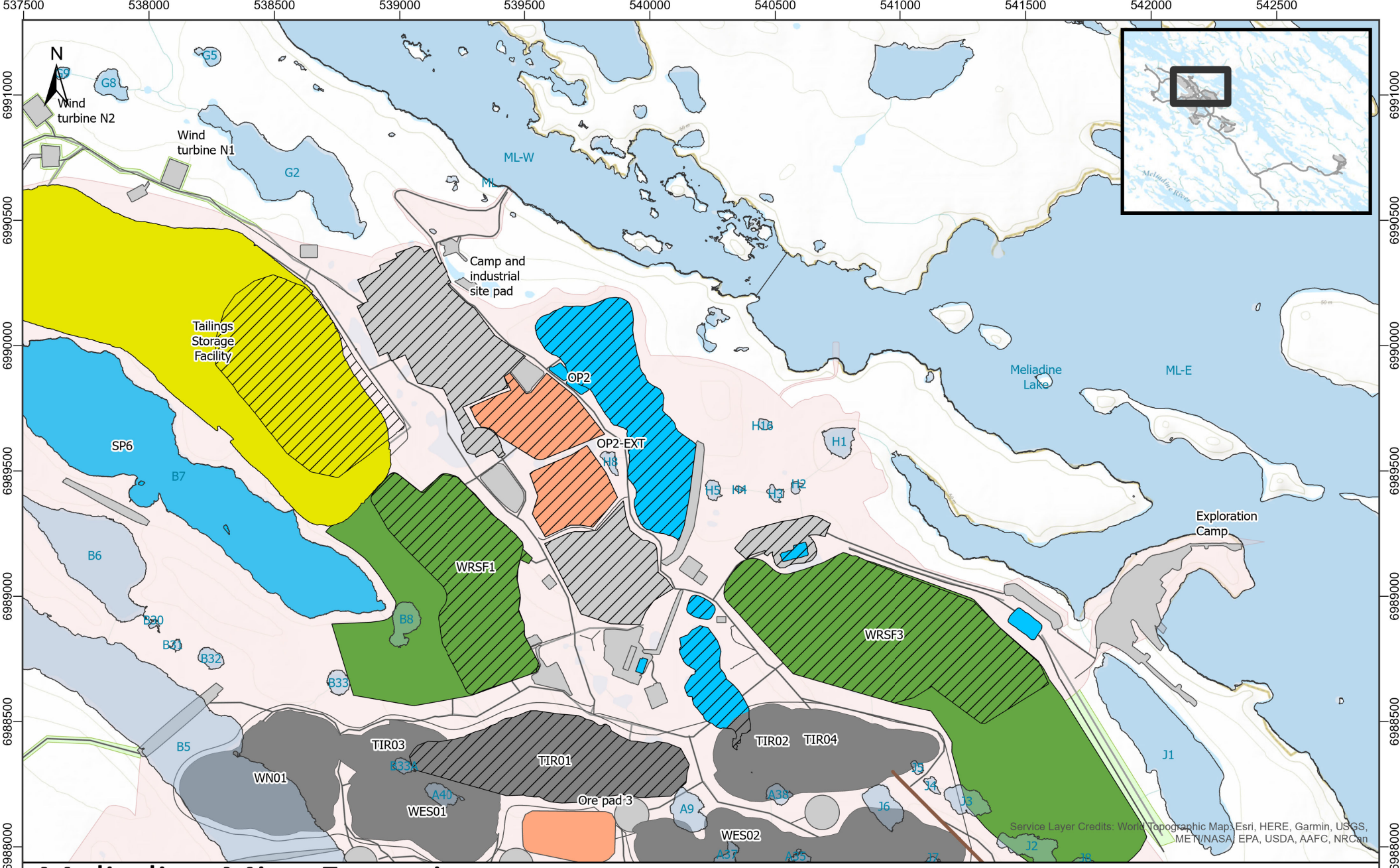
Date: 2023-01-13
Map Number: MEL-075a
Coordinate System: NAD 1983 UTM Zone 15N
Projection: Transverse Mercator
Datum: North American 1983

- Existing Infrastructure
- Waste Rock Storage
- Tailings Storage Facility
- Water Management
- Open Pit
- Mine Facilities
- Ore Stockpile/Ore Pad
- NIRB Approved Project Footprint
- Meliadine Extension Footprint
- Waterbody
- All Weather Access Road

0 0.25 0.5 0.75 1 Km

1:20,000

AGNICO EAGLE ECOLOGIC



Meliadine Mine Extension

Meliadine Infrastructure

Meliadine - North East

Date: 2023-01-13

Map Number: MEL-075b

Coordinate System: NAD 1983 UTM Zone 15N

Projection: Transverse Mercator

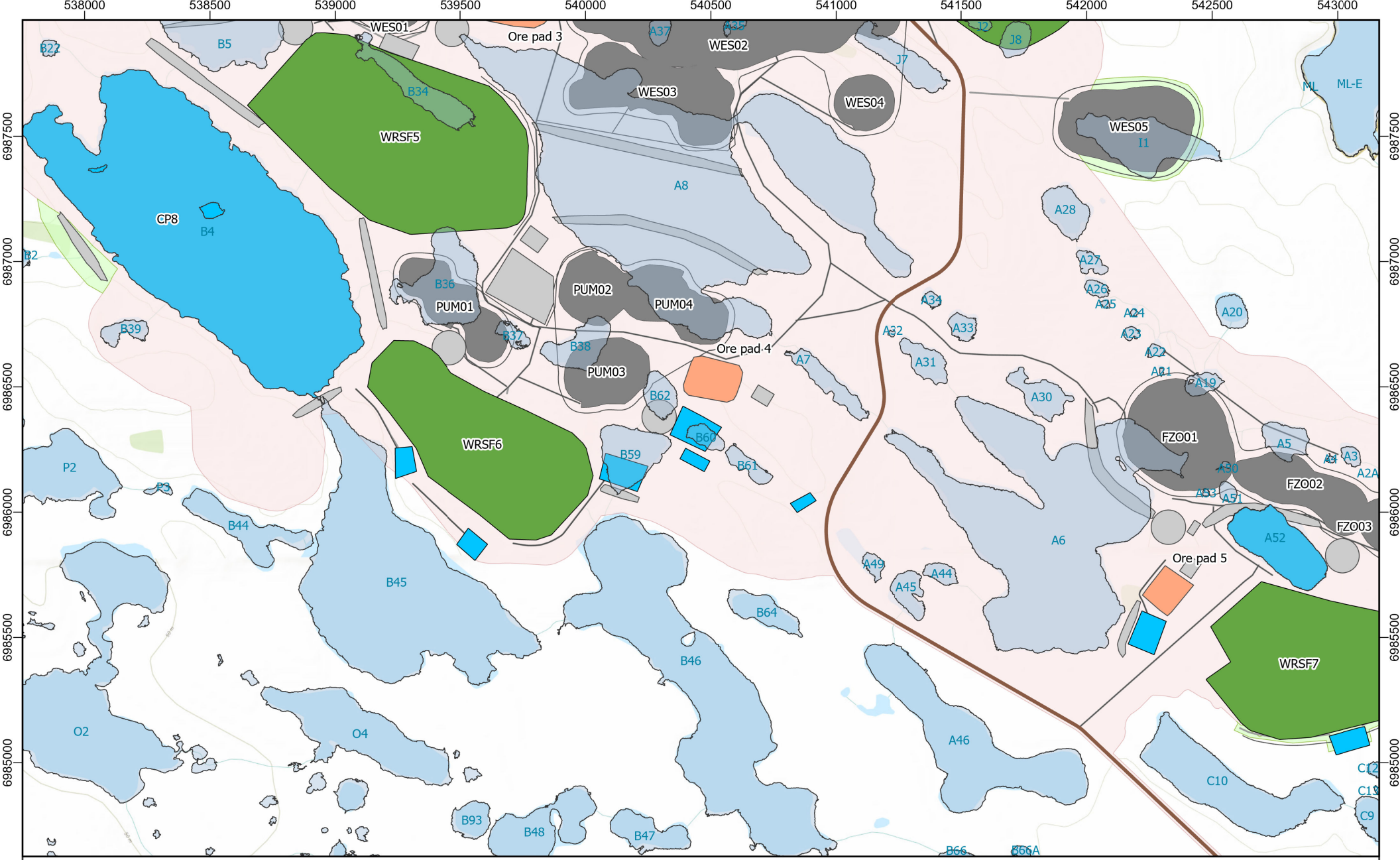
Datum: North American 1983

- Existing Infrastructure
- Waste Rock Storage
- Tailings Storage Facility
- Water Management
- Open Pit
- Mine Facilities
- Ore Stockpile/Ore Pad
- NIRB Approved Project Footprint
- Meliadine Extension Footprint
- Waterbody
- All Weather Access Road

0 0.25 0.5 0.75 1 Km

1:20,000

AGNICO EAGLE ECOLOGIC



Meliadine Mine Extension

Meliadine Infrastructure

Meliadine - South East

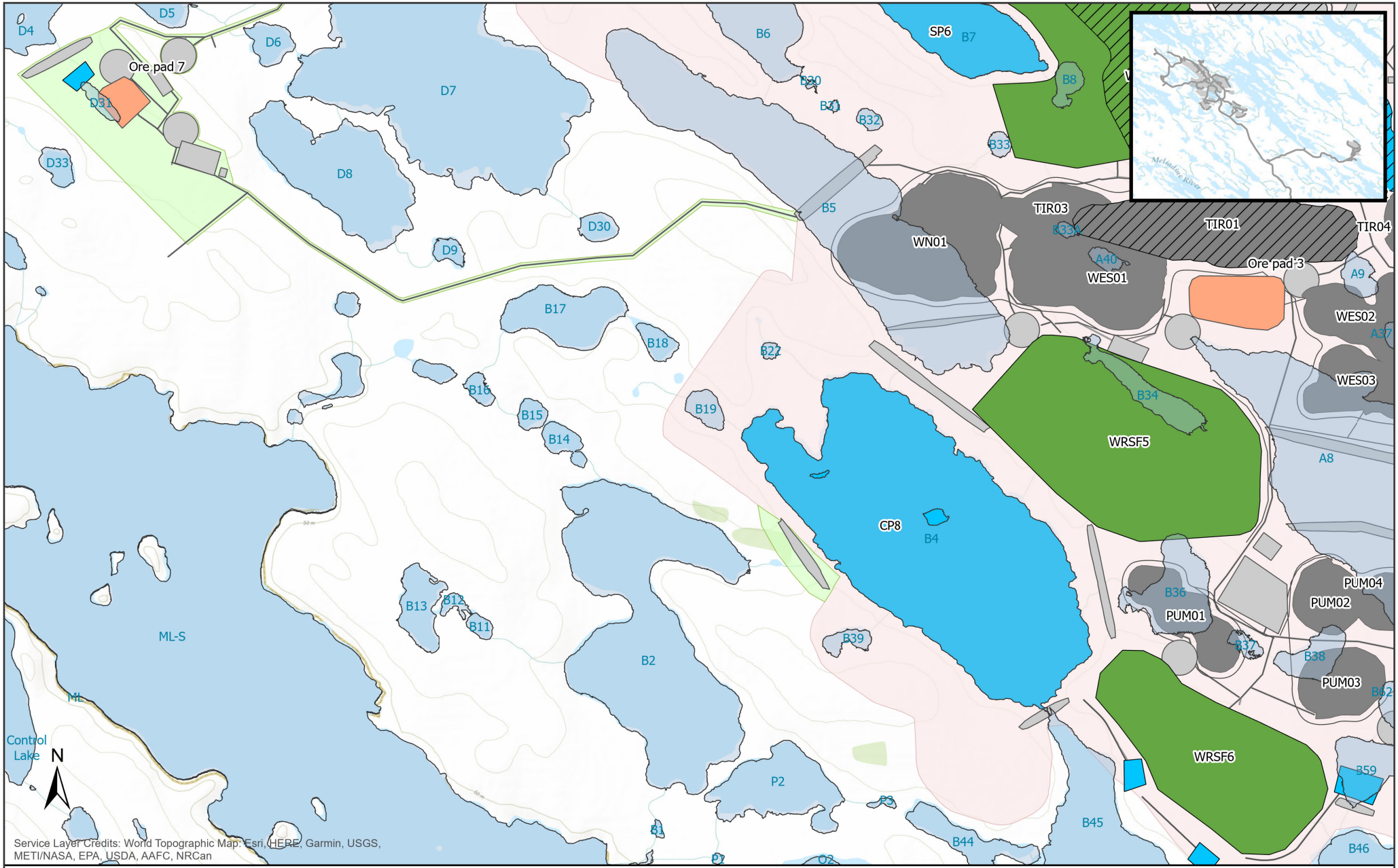
Date: 2023-01-13
Map Number: MEL-075c
Coordinate System: NAD 1983 UTM Zone 15N
Projection: Transverse Mercator
Datum: North American 1983

AGNICO EAGLE ECOLOGIC

- Existing Infrastructure
- Waste Rock Storage
- Tailings Storage Facility
- Water Management
- Open Pit
- Mine Facilities
- Ore Stockpile/Ore Pad
- NIRB Approved Project Footprint
- Meliadine Extension Footprint
- Waterbody
- All Weather Access Road

0 0.25 0.5 0.75 1 Km

1:20,000



Meliadine Mine Extension

Meliadine Infrastructure

Meliadine - South West

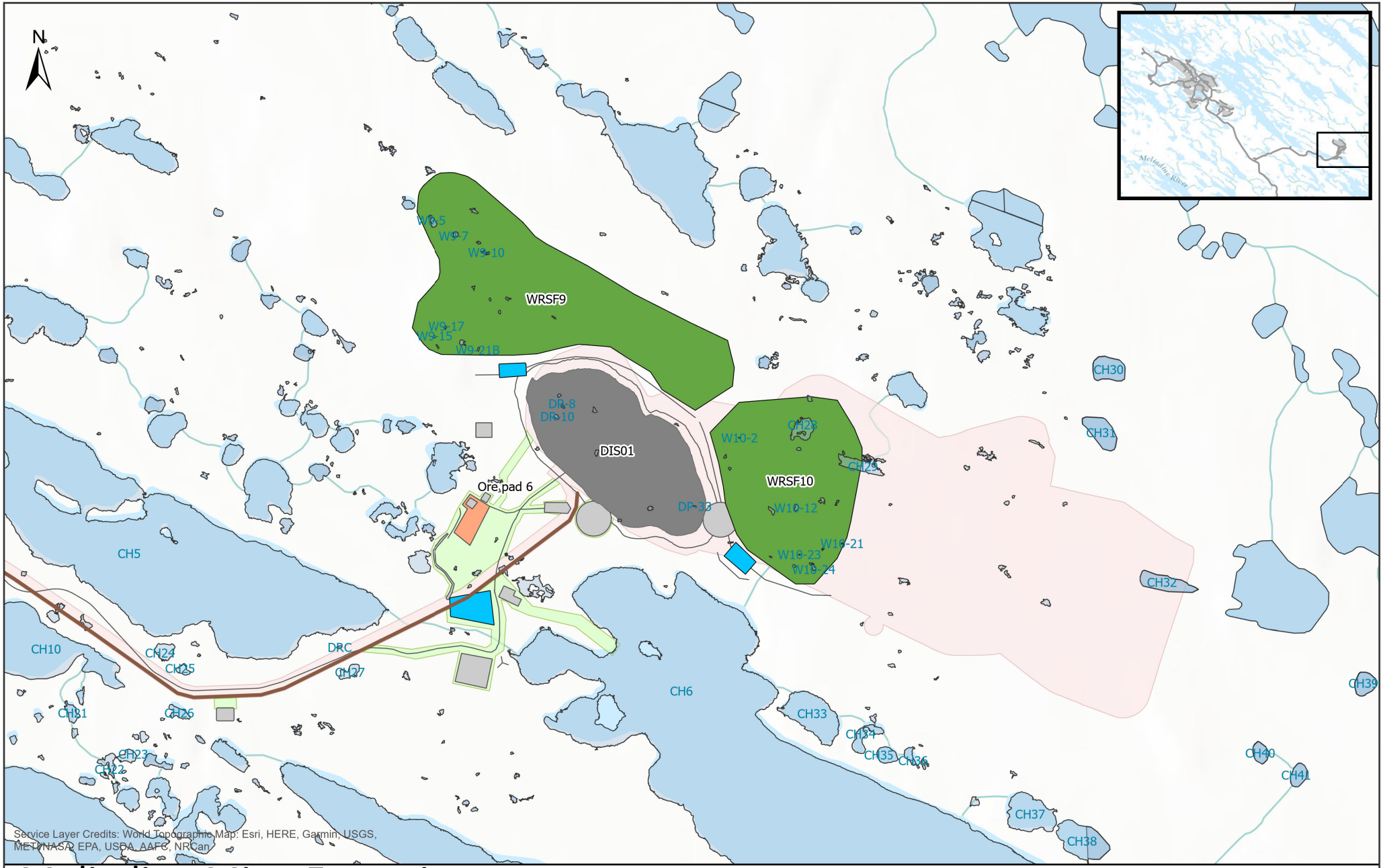
Date: 2023-01-13
Map Number: MEL-075d
Coordinate System: NAD 1983 UTM Zone 15N
Projection: Transverse Mercator
Datum: North American 1983

AGNICO EAGLE ECOLOGIC

- Existing Infrastructure
- Waste Rock Storage
- Tailings Storage Facility
- Water Management
- Open Pit
- Mine Facilities
- Ore Stockpile/Ore Pad
- NIRB Approved Project Footprint
- Meliadine Extension Footprint
- Waterbody
- All Weather Access Road

0 0.25 0.5 0.75 1 Km

1:20,000



Meliadine Mine Extension

Meliadine Infrastructure

Discovery

Date: 2023-01-13

Map Number: MEL-075e

Coordinate System: NAD 1983 UTM Zone 15N

Projection: Transverse Mercator

Datum: North American 1983

AGNICO EAGLE ECOLOGIC

- Existing Infrastructure
- Waste Rock Storage
- Tailings Storage Facility
- Water Management
- Open Pit
- Mine Facilities
- Ore Stockpile/Ore Pad
- NIRB Approved Project Footprint
- Meliadine Extension Footprint
- Waterbody
- All Weather Access Road

0 0.25 0.5 0.75 1 Km

1:20,000

SECTION 3 • CONSULTATION

Agnico Eagle has continued to work in partnership with community members and Kivalliq Elders to establish a mutually beneficial, cooperative, and productive relationship. Our approach is characterized by effective two-way communication, consultation, and partnering.

Community and public engagement are planned in accordance with community relations best practices and existing guiding principles.

- Consultation should be part of an ongoing relationship between the Proponent of a project proposal and the communities that will be potentially affected by the proposed project, where mutual trust and understanding builds over time through a continuing process of discussions, decisions, and follow-through. Importantly, consultation generally takes place before a project proposal is developed and decisions are made regarding the project.
- Consultation is a two-way communication process, in which all parties listen and contribute views, information and ideas. The Proponent should communicate back to participants to confirm understanding of the information and to indicate any resulting effects of shared views, information and ideas.
- Consultation leads to action. It is an opportunity for genuine and respectful listening. This does not necessarily mean that every suggestion made in a consultation is implemented, but that input will always be taken into account.

Additionally, Agnico Eagle processes are designed to be aligned with Inuit Qaujimajatuqangit (IQ) guiding principles, including:

- **Fostering good spirit by being open, welcoming, and inclusive**: Agnico Eagle welcomes, and has sought, input to this Application through consultation and engagement with stakeholder groups in Rankin Inlet.
- **Decision-making through discussion and consensus**: Agnico Eagle facilitated discussion about this Application, and the balance of impacts and benefits, in consultation with stakeholders in Rankin Inlet. Ongoing discussions and dialogue are providing feedback to our mitigation and monitoring plans.
- **Working together for a common cause**: Through consultation with community stakeholders including Elders, land users, youth, women, and local government, Agnico Eagle has endeavored to work collaboratively with stakeholders to identify the best possible management plans.
- **Respect and care for the land, animals, and the environment**: Agnico Eagle is committed to developing Meliadine Extension in a way that will minimize impacts on land, animals, and the environment.

IQ encompasses not only Traditional Knowledge (TK) about land and resources, but also the skills to apply this knowledge to livelihoods, and a value system that is founded upon respect, sharing, collaboration, collective decision-making, skills development, and the responsible use of resources.

3.1 Previous Consultation Activities

Agnico Eagle acquired the Meliadine project in July 2010 from Comaplex Mineral Corporation. Since that time, Agnico Eagle has actively engaged and consulted stakeholders throughout the Kivalliq region and adjacent jurisdictions. Public engagement and consultations efforts broadened in scope and frequency following the purchase.

As part of the 2014 FEIS, Agnico Eagle visited all Kivalliq communities and organized workshops and IQ interviews. Comments on the freshwater aquatic environment largely revolved around the fish in the small ponds to be lost during mining and what is to be done with them, and the need to protect the traditional use of fish from Meliadine Lake (for the complete list of concerns refer to the 2014 FEIS, SD 3-1 Public Engagement and Consultation Baseline Report; Agnico Eagle 2014).

Arctic Char, Lake Trout, and Arctic Grayling were identified as species of economic and cultural importance to traditional users in Nunavut, and representing important ecosystems processes (e.g., they are relatively abundant and occupy top trophic positions in their respective food web). Domestic fishing, on the other hand, is still an important part of the Inuit lifeway, accounting for as much as 20% of the diet of the residents of Rankin Inlet and Chesterfield Inlet. Most of the lakes in the Meliadine area are fished for Lake Trout and Arctic Char. Fishing for both Arctic Char and Arctic Grayling continue to be important to the people in the region. Ninespine Stickleback has not been identified as a species of interest. Additionally, the ponds identified in this application have not been identified by community members during the 2014 FEIS Consultation process as lakes that are being used for fishing.

3.2 2021-2022 Consultation Activities

In 2021, Agnico Eagle developed a Kivalliq Inuit Elders' Advisory Committee comprised of 21 Elders from Baker Lake, Chesterfield Inlet, Rankin Inlet, Whale Cove, Coral and Arviat to integrate IQ, Inuit Societal Values and community knowledge into exploration, planning, workforce, wellness, and operational plans.

As part of its mandate, the Kivalliq Inuit Elder's Advisory Committee reviews and validates collective IQ and TK shared with Agnico Eagle through multiple engagement channels with Kivalliq individuals, communities, and community groups. Engagement channels regroup focus groups, public consultations and open house.

2014 FEIS and newly collected TK and IQ validated by the Advisory committee as it pertains to this Application have been summarized below:

- *We learned from the community that fishing for both Arctic Char and grayling are important to people. There are remains of stone fishing weirs near the mouth of the Meliadine River, and stone drying racks scattered through the valley. ""Iqalugaarjuk"" translates as ""the river of little fishes,"" which refers to the grayling. Rectangular stone ""caches"" were used to store frozen char for winter use (Results of Inuit Qaujimajatuqangit interviews and focus groups held in Rankin Inlet, Chesterfield Inlet and Whale Cove for the FEIS 2015)."*
- *We heard from the community that Meliadine Lake is a good fishing spot in the late winter and springtime. Many people follow the winter road toward the Meliadine Camp and then follow snowmobile trails to the southeast end of the lake. There are many ice fishing holes made in Meliadine Lake in the spring (Results of Inuit Qaujimajatuqangit interviews and focus groups held in Rankin Inlet, Chesterfield Inlet and Whale Cove for*

the FEIS 2015).

- *We heard from community consultation that Meliadine Lake is an important area (Elder's Group Meeting, March 2021).*
- *The seasons are changing, and the streams are getting lower having an impact on fish. Some years are dry, and the water is low. Some years, the water is high when there is more rain. Fish have different sizes depending on the size of rocks in the streams and their location; they change accordingly. When the water becomes dirty, fish move somewhere else. The community fish using fishnets, and they have seen different species of fish they have not seen before. (Kivalliq Elders Advisory Committee, June 2021)*
- *Community members used to walk from Rankin Inlet to the area near Diane River to fish on the surrounding lakes. It would take all day. All fish at Meliadine go upstream to Peter Lake, and then go downstream to the ocean via Diane River. There are many Char at Josephine River Falls. Also, there are a lot of fish at Landing Lake. (Kivalliq Elders Advisory Committee, June 2021)*
- *People like to fish for Lake Trout, Arctic Char, and Arctic Grayling. (Kivalliq Elders Advisory Committee, June 2021)*
- *Fish meat is part of the weekly diet. Arctic Char is stocked up during the summer and ice freeze up with gill net in the ocean or lakes. Fish is stored in catches for personal consumption and to feed dog team. (Kivalliq Elders Advisory Committee, June 2021)*
- *Women did, and still do, most of the fishing in the communities. (Kivalliq Elders Advisory Committee, June 2021)*

From our discussions with the community in 2021-2022, we also heard that:

- People like to fish in lakes close to the community.
- Meliadine Lake and larger lakes are more important for fishing than smaller lakes.
- Meliadine Lake area is historically important, and still is considered as a special place for annual fish and caribou harvest.
- Char River used to have higher flows and elevation and was used more heavily by char for spawning. It would be interesting to rehabilitate this river.
- Fishing is practiced year-round. We heard from the community that Meliadine Lake is a good fishing spot in the late winter and springtime. Many people follow the winter road toward the Meliadine Camp and then follow snowmobile trails to the southeast end of the lake. There are many ice fishing holes made in Meliadine Lake in the spring. Additionally, we heard that summertime is generally a good season for fishing Lake Trout and spending time on the lake.
- There are a lot of fish at Landing Lake. There is first Landing Lake and second Landing Lake. It's called Landing Lake because float planes landed there. Fish species at this site include: Trout, Arctic Char, and Landlocked Char (half breed fish, does not go downstream). Meeting participants called Landlocked Char the beauty and the beast fish. Landlocked Char, fish that resembles an eel (the liver is a delicacy, and the meat makes a good broth), white fish (that do not go up/downstream), Grayling. The food fish eat affects the color of their flesh. As Arctic Char go up (upstream), they lose their red color, as they stop eating shrimp.

A number of examples of fish habitat offsetting options were presented to the community, to solicit feedback and generate discussion on new ideas that they may have:

- Fish Habitat Creation (lake or stream)
- Enhancement of Nipissar Lake
- Access Enhancement- reconnecting watercourses
- Turning mined-out pits into lakes
- Reclaiming lakes that were dewatered
- Arctic Char Hatchery

Fish Habitat Creation (lake or stream)

- Raise water level in a lake to make it larger (e.g., Nipissar Lake);
- Build rocky reefs in a lake to provide spawning habitat for fish; and
- Constructing channels in between existing or newly created lakes.

There is interest in the community for these options especially if large-bodied fish habitat is enhanced. No location was identified by the community during engagement activities. Concerns were raised regarding building of infrastructures outside the already impacted footprint. Some community members preferred that offsetting options be within the existing mining footprint rather than in a pristine environment. Also, some community members shared that flooding land that has not been impacted to create new lakes or enhance existing lakes is counter to IQ values of protecting the land.

Access Enhancement

- Remove physical barriers to fish passage (e.g., Pistol Bay, Suluppqugaliit, Iquutuuq)
- Change habitat features (e.g., spawning pads at Meliadine River, Diane River, Char River or watercourse at Km10 of the AWAR); and
- Change water level and flows.

There is interest in the community for these options. Additional locations were identified by the community during engagement activities, but they are outside of the mine area.

In November 2022, Agnico Eagle met with the Cabin Owners Committee members to discuss access enhancement. Pistol Bay, Suluppqugaliit and Iquutuuq options have been identified in the Habitat Assessment and Initial Restoration Plan prepared by Hutchison in 2020 for the Kivalliq Inuit Association. Knowledge holders were involved in the selection of the 12 sites proposed in Hutchinson's report and as such there is interest from the community to move forward with these concerns were raised regarding building of infrastructures outside the already impacted footprint. Some community members preferred that offsetting options be within the existing mining footprint rather than in a pristine environment. Also, some community members shared that flooding land that has not been impacted to create new lakes or enhance existing lakes is counter to IQ values of protecting the land.

Turning mined-out pits into lakes

- Reshape mined-out pits so they act like natural lakes; and
- Reconnection of open pit lake to natural lake to let fish in.

There is great interest from the community for this option as this would not result in impacting other areas outside the existing mine footprint. However, this will only be possible once mining of the pits is completed.

3.3 Consultation with KivIA

Agnico Eagle established a Fisheries Committee with the KivIA in February 2022 to support ongoing cooperation and communication amongst both parties regarding fish and fish habitat and potential effects from the Meliadine Extension. The objective of the Fisheries Committee is to review and provide advice to Agnico Eagle on aspects of fish and fish habitat in relation to offsetting opportunities by:

- Facilitating consultation of local community groups to evaluate offsetting options and gather local feedback;
- Play an important public relations role as well as providing the FC with differing perspectives on fish offsetting issues and concerns.
- Explore further studies related to offsetting in the Arctic;
- Consider fish habitat enhancements that have been previously suggested and approved by DFO;
- Make recommendations and/or provide key information in the development of the offsetting plan;
- Create a northern approach to managing fish and fish habitat; and
- Work to build capacity for local youth e.g.: training and work experience opportunities.

Field reconnaissance at the proposed offsetting locations has been completed in June 2022 to provide a further understanding of the fish habitat and to gather additional information for future offsetting.

In the 2020, Habitat Assessment and Initial Restoration Plan, prepared for the KivIA, Pistol Bay was identified has a degraded site that may be potentially restored through physical alterations. A potential blockage close to Hudson Bay was identified through interviews - removal of the blockage would directly benefit the local Arctic char population (Hutchinson, 2020). Pistol Bay was visited with the KivIA during 2022 field reconnaissance and although an additional visit was suggested, it was still considered as an interesting option.

The Corbett Bay option was looked at but no barrier to fish was found. It was decided by both Parties to remove it from the list.

KivIA is in support of doing offsetting options at Suluppqugaliit. The site would benefit from restoration work to define a main channel which would provide greater depth but the gains provided would overall be small.

KivIA mentioned that Diane River should be removed from any offsetting option list as the community would prefer this watercourse to remain pristine. They are in support of creating spawning pads at the Char River, Meliadine River or watercourse by km10 of the AWAR. However, they should be built downstream of any drinking water source for the community.

A few sites along the Char River were visited. Areas upstream of Lower Landing Lake were considered not ideal due to the characteristics of the watercourse and location upstream of a drinking water source. Two sites downstream of Lower Landing Lake generated interest. The channel could be redirected to make it more suitable for Arctic Char. KivIA also proposed to remove the weir that was likely constructed by a local fisherman in the stream as it is currently an obstacle. KivIA mentioned this option would be beneficial for the community.

Meliadine River, downstream of the AWAR bridge, near the outlet to Hudson Bay would be a good candidate according to KivIA. They mentioned that the community might not be in favor of activities upstream of the bridge. Areas with sandy substrate should be remove from the list. A site visited further upstream of the bridge (i.e., by Little Meliadine Lake) was also visited but considered not a good candidate.

The Km10 AWAR site was identified as having good depth for Arctic Grayling pads and spawning. Fish presence indicated it is a promising site for spawning pad construction. KivIA mentioned minimal community concerns are anticipated as this area has already been impacted by the bridge and road.

Following this, the Km10 AWAR site was selected as part of the Dewatering of Site Ponds Offsetting Plan and not carried forward in this application.

SECTION 4 • DESCRIPTION OF FISH AND FISH HABITAT

The Meliadine Mine, including the ponds identified in this plan is situated in the headwaters of the A and B watersheds. The A and B watersheds have respectively a drainage area of 9 and 23 km^2. These two watersheds drain into Meliadine Lake. Meliadine Lake has a water surface area of approximately 107 km^2, a maximum length of 31 km, features a highly convoluted shoreline of 465 km, and has over 200 islands. Unlike most lakes, it has two outflows that drain into Hudson Bay through two separate river systems. It has a drainage area of 560 km^2 upstream of its two outflows. Most drainage occurs via the Meliadine River, which originates at the southwest end of the lake. The Meliadine River flows for a total stream distance of 39 km. The Meliadine River flows through a series of waterbodies, until it reaches Little Meliadine Lake and then continues into Hudson Bay. A second, smaller outflow from the west basin of Meliadine Lake drains into Peter Lake, which discharges into Hudson Bay through the Diane River system (a stream distance of 70 km). At its mouth, the Diane River has a drainage area of 1,460 km^2.

Watersheds within the LSA (A, B, C, D, E, G, H, I, J, and P near the main Meliadine Mine footprint; and X and CH near Discovery) comprise an extensive network of waterbodies, and interconnecting streams (Agnico Eagle 2022). The Meliadine Extension is located within the same footprint as the Meliadine Mine, and primarily within the A, B, H, and J watersheds (Agnico Eagle 2022). The study area is located on the Canadian Shield within a Low Arctic ecoclimate of continuous permafrost and is one of the coldest and driest regions of Canada.

Waterbodies less than 2m in maximum depth were classified as ponds, whereas deeper waterbodies were classified as lakes. Ponds do not provide overwintering habitat as they freeze to the bottom during wintertime. The lakes within the Meliadine Mine are ultra-oligotrophic/oligotrophic (nutrient poor, unproductive) headwater lakes that are typical of the Arctic. The ice-free season on the lakes is very short. Ice break-up usually begins during mid- to late-June, with the lakes becoming ice-free in early July. Ice begins to form again on the lakes in late September or early October. Complete ice cover is attained by late October, with maximum ice thickness of about 2m occurring in March/April. Most of the streams surveyed were narrow (i.e., mean channel width <1.1 m) and shallow (maximum water depth <0.5 m), with instream habitat dominated by shallow runs. Other habitat types encountered included short riffles and small pools. Substrate was dominated by organic materials, primarily detritus (i.e., decaying organisms and plant material). The surveyed streams provide suitable rearing habitat for small-bodied fish (e.g., Ninespine Stickleback). Many small watercourses become dry once the land begins to freeze in the fall and, where water is present, most freeze to the bottom during the winter. Flows during the spring melt and the summer vary with drainage area.

The fish community and habitat of the affected areas are well-studied. Baseline fisheries investigations from 1994 to 2012 in support of the Meliadine Mine were completed in the peninsula lakes (which include waterbodies in the A to J watersheds) and Meliadine Lake in support of the 2014 FEIS (Golder 2012a,b). Additional fish sampling was conducted in the Meliadine Mine footprint in 2020 and 2021 in Watersheds A, B, D, E, H, I, and J, as well as in Watersheds CH and X near Discovery in support of plans for Meliadine

Extension (ERM 2021). The 2020 and 2021 field investigations generally corroborated the earlier findings. A reconnaissance fish and fish habitat survey (Appendix C-X) was undertaken in 2022 throughout the main Meliadine Mine footprint (Watersheds A, B, and H), along the proposed Discovery Road alignment (series D) and within the Discovery Deposit area (series E, W, and CH), to collect additional data from waterbodies and watercourses that may be impacted by the Meliadine Extension and to validate and augment the understanding of historical baseline data and more recent data collected in 2020 and 2021. This study also included the collection of associated fish habitat and fish presence/absence data to support the design of offsetting plans for the Meliadine Extension discussed in greater detail within Section 8.0. Reconnaissance data for offsetting was collected around Nipissar Lake, Meliadine Lake, Meliadine River, Km 10 (AWAR), Char River, Suluppqugaliit, Iquutuuq, and Pistol Bay.

Substantial fishing effort (over 800 sampling events) was undertaken between 1997 and 2009 during baseline investigations of fish communities in the Meliadine Study Area (Golder 2012a). Field biologists used angling, backpack electrofishing, fyke nets, gill nets, minnow traps, and a fish fence to sample fish communities in 155 waterbodies, most of which (n=140) comprised small lakes, ponds and interconnecting streams in the Peninsula basins (Golder 2012a). These sampling efforts resulted in the capture of 19 722 fish. The overall catch was comprised of 9 species, 5 of which are members of the Salmonidae family. Threespine Stickleback were most prevalent (33% of total catch) followed by Arctic Char (20%), Ninespine Stickleback (16%), Cisco (14%), Arctic Grayling (10%) and Lake Trout (4%). Round Whitefish, Slimy Sculpin, and Burbot comprised only a small portion of the catch. Details of the baseline fishing effort can be found within Golder 2012a. Further baseline fish population data was collected at 18 lakes, 26 ponds, and 5 streams in the study area in July and August 2011 (Golder 2012b). The primary methods used to capture fish in lakes and ponds in 2011 were fyke nets, gill nets (short duration sets), and minnow traps. Backpack electrofishing was used to collect fish from streams and ponds, while angling was used to supplement sampling in larger lakes. The total fish catch in 2011 was 3474 fish. The catch was comprised of 8 species, 4 of which are members of the salmonid family (Arctic Char, Arctic Grayling, Lake Trout, and Round Whitefish). Ninespine Stickleback were most prevalent followed by Round Whitefish, Threespine Stickleback, Lake Trout, Arctic Grayling, Slimy Sculpin, Arctic Char, and Burbot. In streams, the catch (n=53) was dominated by Ninespine Stickleback (85%), with Arctic Grayling and Slimy Sculpin captured infrequently. In lakes, the total catch (n=1861) was also dominated by Ninespine Stickleback (94%). The remainder of the catch in lakes included Round Whitefish, Arctic Grayling, Lake Trout, Threespine Stickleback, Arctic Char, Slimy Sculpin and Burbot. Fish were captured or observed in 23 of the 26 ponds sampled. The total fish catch in ponds (n=1560) was dominated by Ninespine Stickleback (97.7%). The only other species captured in ponds were Threespine Stickleback (in A2 and C7) and Arctic Char (in O2). A comprehensive summary table of all fishing efforts from 1997 to 2022 are provided in Table 4.1-1. Detailed catch per unit effort summary tables were extracted from the original baseline reports (Golder 2012a,b) and have been provided in Appendix C.

Fish communities in 52 waterbodies were assessed during the 2020-2021 field programs (ERM 2021). The primary methods used to capture large-bodied fish in lakes and deeper ponds (> 2m deep) were sinking gillnets and angling. Small-bodied fish communities were assessed using a backpack electrofisher, minnow

traps, and drift nets. This fishing effort resulted in the capture of 2,917 fish (not including fish captured by drift netting) from surveyed waterbodies. A total of seven species were identified within the waterbodies surveyed, including Arctic Char, Arctic Grayling, Cisco, Ninespine Stickleback, Threespine Stickleback, Slimy Sculpin, and Burbot. Across all waterbodies, Ninespine Stickleback were the most prevalent (95.6%) followed by Threespine Stickleback (2.3%), and Arctic Grayling (1.5%). Slimy Sculpin, Burbot, Cisco, and Arctic Char each comprised < 1% of the total catch (not including fish captured by drift netting). Overall, the 2020-2021 survey results are generally consistent with those presented in previous baseline aquatic resources studies (Golder 2012a,b), with some exceptions. Ninespine Stickleback were captured in six waterbodies (i.e., A19, A3, A4, A50, A9, B61) in which no fish had previously been captured, and in four waterbodies which had not been previously sampled (i.e., E5, D31, D33, W1). One Cisco was captured in E4, a waterbody in which this species had not been previously captured. Slimy Sculpin were captured in three waterbodies (i.e., A6, A8, B6) in which they had not been previously captured. Ninespine Stickleback were captured in three waterbodies (i.e., A8, B5, B6) which had not been previously sampled using methods that target small-bodied fish species (i.e., minnow trapping, electrofishing). Approximately 35,604 fish were captured across eight streams sampled using drift nets. Ninespine Stickleback made up approximately 99% of the catch. Threespine Stickleback and Arctic Grayling each comprised < 1% of the total catch. Arctic Grayling captured in drift nets deployed at A50-A5, A1-MEL, and B4-B2 indicates that juvenile Arctic Grayling utilize these stream sections as rearing and migratory habitats. The high abundance and wide distribution of Ninespine Stickleback in stream sections within the A-Chain and B-Chain suggests that small, ephemeral streams provide important migratory habitat for all life stages of Ninespine Stickleback, which may have a large contribution to downstream productivity for larger-bodied species (ERM 2021). A summary table of fishing effort from 1997 to 2022 are provided in Table 4.1-1. Detailed catch per unit effort summary tables were extracted from the original ERM (2021) report and have been provided in Appendix C.

During the 2022 field campaign, a total of 76 waterbody (lakes and ponds) and 41 watercourse (streams and channels) locations were assessed for fish, fish habitat and/or offsetting potential (Appendix C). The fishing effort conducted in 2022 was mainly used to augment previous data collected and to confirm fish presence/absence data in small ponds and ephemeral streams not previously assessed. Forty-one sites were sampled by single-pass electrofishing and 62 minnow traps were deployed in 2022. A total of 131 fish were captured. Ninespine Stickleback were the most widespread species comprising of 86% of the total number of fish captured, followed by Arctic Grayling at 13%. Only one Slimy Sculpin was caught (<1%). The 2022 Field Reconnaissance Report has been provided in Appendix C for further details.

Table 4.1-1: Fish Species Observed in Waterbodies and Watercourses From 1997 to 2022 in the Meliadine Area

Water-body Name	Water-body Type	Year(s) Sampled	Confirmed Fish Community (Access Factor)									Number of species
			Arctic Char (*Salvelinus alpinus*)	Lake Trout (*Salvelinus namaycush*)	Round Whitefish (*Prosopium cylindraceum*)	Burbot (*Lota lota*)	Slimy Sculpin (*Cottus cognatus*)	Ninespine Stickleback (*Pungitius pungitius*)	Cisco (*Coregonus artedi*)	Arctic Grayling (*Thymallus arcticus*)	Threespine Stickleback (*Gasterosteus aculeatus*)	
A2	Pond	1997, 2011, 2020						1			1	2
A2A	Pond	Golder 2014 FEIS						1			1	2
A3	Pond	2012, 2020						1				1
A4	Pond	2012, 2020						1				1
A5	Pond	1997, 2009, 2020						1				1
A6	Lake	1997, 1998, 2009, 2020	2				1	1	1	1	1	6
A7	Pond	2011						1				1
A8	Lake	1997, 1998, 2020					1	1		1		3
A19	Pond	2012, 2020						1				1
A30	Pond	Golder 2014 FEIS						1				1
A31	Pond	Golder 2014 FEIS						1				1
A32	Pond	Not Sampled										Not Sampled
A33	Pond	2022						1				1
A34	Pond	Not Sampled										Not Sampled
A35	Pond	2008										0
A37	Pond	2008						1				1
A44	Pond	2011						1				1
A45	Pond	2011						1				1
A49	Pond	2011						1				1
A50	Pond	2009, 2020						1				1
A51	Pond	2009, 2020						1				1
A52	Pond	2008, 2020						1				1
A53	Pond	2009						1				1

Water-body Name	Water-body Type	Year(s) Sampled	Confirmed Fish Community (Access Factor)									Number of species
			Arctic Char (*Salvelinus alpinus*)	Lake Trout (*Salvelinus namaycush*)	Round Whitefish (*Prosopium cylindraceum*)	Burbot (*Lota lota*)	Slimy Sculpin (*Cottus cognatus*)	Ninespine Stickleback (*Pungitius pungitius*)	Cisco (*Coregonus artedi*)	Arctic Grayling (*Thymallus arcticus*)	Threespine Stickleback (*Gasterosteus aculeatus*)	
B4	Lake	1997, 1998, 2011, 2020						1		1		2
B5	Lake	1997, 1998, 2020				1		1		1		3
B6	Lake	1997, 2008, 2020					1	1	1	1		4
B7	Lake	1997, 1998, 2008, 2020				1		1	1	1		4
B19	Pond	2012						1				1
B22	Pond	2022										0
B25	Pond	2009, 2020						1				1
B30	Pond	2008, 2011, 2020						1				1
B31	Pond	2008, 2020						1				1
B32	Pond	2008, 2020						1				1
B34	Lake	2011, 2020						1				1
B36	Pond	2011, 2020						1				1
B37	Pond	2011, 2020						1				1
B38	Pond	2011, 2020						1				1
B39	Pond	2022										0
B59	Lake	2012								1		1
B60	Lake	2012, 2020										0
B61	Pond	2011, 2020						1				1
B62	Pond	2011, 2012, 2020						1				1
B63	Pond	2020						1				1
D31	Pond	2021						1				1
I1	Pond	2012										0
J2	Pond	2011, 2012						1				1
J3	Pond	2012										0

Water-body Name	Water-body Type	Year(s) Sampled	Confirmed Fish Community (Access Factor)									Number of species
			Arctic Char (*Salvelinus alpinus*)	Lake Trout (*Salvelinus namaycush*)	Round Whitefish (*Prosopium cylindraceum*)	Burbot (*Lota lota*)	Slimy Sculpin (*Cottus cognatus*)	Ninespine Stickleback (*Pungitius pungitius*)	Cisco (*Coregonus artedi*)	Arctic Grayling (*Thymallus arcticus*)	Threespine Stickleback (*Gasterosteus aculeatus*)	
J4	Pond	2012						1				1
J5	Pond	2012										0
J6	Pond	2012, 2021										0
J7	Pond	2012						1				1
J8	Pond	2012						1				1
A1-2	Stream	1997, 1998, 2020	2	2				1		1	1	7
A2-3	Stream	1997, 1998	2	2			1	1		1	1	8
A3-4	Stream	1997, 1998, 2020						1		1		2
A4-5	Stream	1997, 1998, 2020						1		1		2
A5-6	Stream	1997, 1998, 2009	2	2			1	1		1	1	8
A5-A19	Stream	2020, 2022						1				1
A6-7	Stream	1997, 1998, 2000, 2008, 2009					1	1	1	1	1	5
A6-A31	Stream	Not Sampled										0
A6-A44	Stream	Not Sampled										0
A7-8	Stream	1997, 1998					1	1		1		3
A19-A20	Stream	Not Sampled										0
A50-A51	Stream	Not Sampled										0
A52-A51	Stream	2020						1			1	2
A5-A50	Stream	2020										0
A6-A50	Stream	2020										0
A49-A45	Stream	Not Sampled										0
A31-A32	Stream	Not Sampled										0
A6-A30	Stream	Not Sampled										0
A44-45	Stream	1998, 2000						1				1

Water-body Name	Water-body Type	Year(s) Sampled	Confirmed Fish Community (Access Factor)									Number of species
			Arctic Char (*Salvelinus alpinus*)	Lake Trout (*Salvelinus namaycush*)	Round Whitefish (*Prosopium cylindraceum*)	Burbot (*Lota lota*)	Slimy Sculpin (*Cottus cognatus*)	Ninespine Stickleback (*Pungitius pungitius*)	Cisco (*Coregonus artedi*)	Arctic Grayling (*Thymallus arcticus*)	Threespine Stickleback (*Gasterosteus aculeatus*)	
A30-A33	Stream	Not Sampled						0				0
A33-A34	Stream	Not Sampled						0				0
A8-37	Stream	1998						1				1
B3-B4	Stream	1997, 1998	2	2		1	1	1		1		8
B5-B31	Stream	2011, 2020					1	1		1		3
B30-B31	Stream	2011						1		1		2
B31-B32	Stream	Not Sampled										0
B5-B33	Stream	Not Sampled										0
B6-B30	Stream	2011 2020					1	1				2
B36-B37	Stream	Not Sampled										0
B37-B38	Stream	Not Sampled										0
B4-B5	Stream	1997, 1998, 2020				1	1	1		1		4
B4-B22	Stream	Not Sampled										0
B4-B36	Stream	1997					1	1				2
B4-B39	Stream	Not Sampled										0
B4-B45	Stream	1997, 2011, 2022						1		1		2
B5-B34	Stream	2022						1				1
B6-B7	Stream	1997, 1998, 2020				1	1	1		1		4
B7-B8	Stream	1998						1				1
B7-B25	Stream	Not Sampled										0
B7-B28	Stream	Not Sampled										0
B59-B60	Stream	2022										0
B59-B62	Stream	2022										0
B60-B61	Stream	2022										0
D04-D31	Stream	Not Sampled										0

Water-body Name	Water-body Type	Year(s) Sampled	Confirmed Fish Community (Access Factor)									Number of species
			Arctic Char (*Salvelinus alpinus*)	Lake Trout (*Salvelinus namaycush*)	Round Whitefish (*Prosopium cylindraceum*)	Burbot (*Lota lota*)	Slimy Sculpin (*Cottus cognatus*)	Ninespine Stickleback (*Pungitius pungitius*)	Cisco (*Coregonus artedi*)	Arctic Grayling (*Thymallus arcticus*)	Threespine Stickleback (*Gasterosteus aculeatus*)	
D33-D31	Stream	Not Sampled										0
J7-J6	Stream	Not Sampled										0
J6-J4	Stream	Not Sampled										0
J5-J4	Stream	Not Sampled										0
J4-J3	Stream	Not Sampled										0
J3-J2	Stream	Not Sampled										0
J2-J8	Stream	Not Sampled										0
J8-J1	Stream	Not Sampled										0

SECTION 5 • DESCRIPTION OF POTENTIAL EFFECTS ON FISH AND FISH HABITAT

A comprehensive analysis of the potential pathways for effects on fish and fish habitat during the construction, dewatering, operational, closure, and post-closure phases of the Meliadine Extension, is provided in Section 7 of the Meliadine Extension FEIS Addendum (Agnico Eagle 2022).

Potential effects to fish and fish habitat are predicted to occur through the loss of waterbody area due to the footprint of Project Infrastructure and resulting alteration of the hydrological landscape (Figure 2.2-1). For clarity, the following description of effects has been split into those occurring through infrastructure footprint and water loss (Section 35 of the *Fisheries Act*) and those lost through the footprint required for the deposition of deleterious substances (Section 36 of the *Fisheries Act*).

5.1 Potential Effects to Fish and Fish Habitat Lost through Project Infrastructure (Section 35)

The following fish habitat losses are predicted to result in HADD under Section 35 of the *Fisheries Act* and arise from the development, operation, and closure of the Meliadine Mine.

A total of 40 waterbodies will be impacted by the project, 4 of the waterbodies are categorized as lakes and the remaining are pond habitat. This will result in the loss of 271.52 hectares (ha) and 99.73 Habitat Units (HU) of fish habitat. Additionally, a total of 56 watercourses will be impacted by the project, resulting in the loss of 11.55 ha and 4.27 HU of fish habitat.

A total of 283.07 Ha and 104 HU of lake and watercourse habitat are predicted to be lost due to dewatering, loss of downstream connectivity, mining infrastructure, and overprinting from pits. This is the total area that falls under Section 35 of the *Fisheries Act*.

5.2 Potential Effects to Fish and Fish Habitat Lost by Deposit of Mine Waste (Section 36)

All Section 36 losses that are incurred from the Meliadine Extension are anticipated to be permanent. A total of approximately 165.66 Ha and 54.95 HU of fish habitat is predicted to be lost due to deposit of mine waste. There are a total of 12 waterbodies, three of which are categorized as lakes, and five watercourses (Table 5.2-1). The following waterbodies will be used for mine waste disposal: saline pond (Lake B7); contact water containment ponds (Lake B4 and Pond A52); and WRSF overprinting Lake B34). These waterbodies are known to support fish communities and are therefore considered fish habitat. Therefore, their use for mine waste disposal will require an amendment to Schedule 2 of the MDMER.

The Meliadine Extension will also result in the unavoidable loss of additional waterbodies that support fish communities, including B25, B32, J2, J3, and J8 as a result of the extensions of the TSF and WRSF. In addition, Pond B61, Pond B60, B61-B60, and Pond D31 will be overprinted as a result of placement of Saline WRSF and Tiriganiaq-Wolf ore. The waterbodies support fish communities and therefore are included in the Schedule 2 amendment of the MDMER.

Table 5.2-1: Summary of Total Area and Habitat Units of Fish Bearing Waterbodies/Watercourses to be Impacted by Meliadine Extension

Feature	Associated Infrastructure	Size (ha)	Habitat Units (HU)
B7	Saline Pond	57.88 ha	20.38
B6-B7	Saline Pond	0.36 ha	0.12
B7-B25	Saline Pond	0.26 ha	0.09
B4	Contact Water Containment Pond	85.82 ha	23.73
A52	Contact Water Containment Pond	7.07 ha	4.62
B4-B5	Contact Water Containment Pond	0.01 ha	0.004
B4-B36	Contact Water Containment Pond	0.01 ha	0.001
B34	Waste Rock Storage Facility (WRSF)	4.37 ha	1.50
B25	Extension of the TSF and WRSF	1.58 ha	0.83
B32	Extension of the TSF and WRSF	0.6 ha	0.36
J2	Extension of the TSF and WRSF	1.89 ha	1.23
J3	Extension of the TSF and WRSF	1.47 ha	0.00
J8	Extension of the TSF and WRSF	1.35 ha	0.90
B60	Saline WRSF and Tiriganiaq-Wolf Ore	0.98 ha	0.00
B61	Saline WRSF and Tiriganiaq-Wolf Ore	1.16 ha	0.72
B61-B60	Saline WRSF and Tiriganiaq-Wolf Ore	0.01 ha	0.004
D31	Saline WRSF and Tiriganiaq-Wolf Ore	0.91 ha	0.68

SECTION 6 • MEASURES AND STANDARDS TO AVOID OR MITIGATE IMPACTS TO FISH

6.1 Description of Measures and Standards

Agnico Eagle is committed to conduct its operations in an environmentally and socially responsible manner, and to avoid adverse effects on the environment and people who use the land and resources.

Project-specific measures and standards to avoid and mitigate harm to fish and fish habitat during dewatering activities, including the construction of offsetting habitat will include the following measures:

- Erosion and sediment control measures will be in place before commencing any works that have the potential to release sediment into waters frequented by fish.
- The existing Sediment and Erosion Management Plan will be complied with.
- All works will avoid using explosives in or near water, respect timing windows, and will prevent entry of deleterious substances in water.
- A Fish-Out Plan will be developed according to current published DFO Guidelines.
- All water intakes within ponds that support fish shall adhere to the Freshwater Intake End-of-Pipe Fish Screen Guideline (DFO 1995).
- Water withdrawal will adhere to the Protocol for Winter Water Withdrawal from Ice covered Waterbodies in the Northwest Territories and Nunavut (DFO 2010).

6.2 Monitoring Effectiveness of Measures and Standards

Agnico Eagle has developed monitoring and management programs required to mitigate, monitor, and report on its environmental performance against the regulatory requirements contained within its Meliadine operating authorizations, permits, licenses, and leases consistent with the legal requirements of applicable Acts and Regulations in Nunavut. Existing and approved programs will focus on ensuring impacts to waste and water, are consistent with those predicted for the Mine. The accuracy of the environmental impact predictions and the effectiveness of the mitigation measures will be verified through monitoring and annual reporting. If unusual or unforeseen adverse environmental impacts are noticed, corrective action will be put in place. Contingency measures to account for effects unable to be mitigated by measures outlined in Section 6.1 will be addressed through the adaptive management process. Under this process the existing mitigation measures will be adjusted, or new mitigation measures implemented if necessary. External reporting will be completed, as required.

Applicable monitoring plans to fish habitat, include:

Plan	Notes	Reference
Water Management Plan	Appendices to Water Management Plan: Freshet Action Plan Sediment and Erosion Management Plan Water Quality and Flow Monitoring Plan	Provided as Appendix F-21 to Meliadine Extension Type A 2AM-MEL1631 Water Licence Amendment Application

Plan	Notes	Reference
Adaptive Management Plan		Provided as Appendix F-1 to Meliadine Extension Type A 2AM-MEL1631 Water Licence Amendment Application
Spill Contingency Plan	Will be implemented to prevent effects from emergency spills and help address Inuit concerns related to effects to fish and fish habitat	Provided as Appendix F-20 to Meliadine Extension Type A 2AM-MEL1631 Water Licence Amendment Application
Aquatic Effects Monitoring Program	Developed to monitor mining-related processes that could potentially impact the aquatic receiving environment, including fish	Provided as Appendix F-3 to Meliadine Extension Type A 2AM-MEL1631 Water Licence Amendment Application

A monitoring plan for the offsetting measures will be developed, which will include monitoring to confirm that offsetting measures are implemented and effectively counterbalancing the habitat losses from the dewatering activities. General considerations to include in the monitoring plan are outlined in Section 8.2.4.

Consistent with Project Certificate No.006, Agnico Eagle is required to:

- Mitigate potential impacts to surface waters (T&C 27);
- Develop appropriate sediment and erosion controls to prevent impacts to surface waters and sediment quality (T&C 28);
- Monitor and mitigate potential effects to the freshwater aquatic environment (T&C 30);
- Mitigate impacts of runoff/sedimentation into freshwater aquatic habitat (T&C 31);
- Mitigate impacts of the Project on natural drainage and minimize sedimentation (T&C 32);
- Mitigate impacts of explosives use on fish and fish habitat (T&C 33); and
- Prevent blockages or restrictions to fish passages (T&C 34).

SECTION 7 • RESIDUAL EFFECTS

The Meliadine Extension will result in permanent, unavoidable fish habitat losses through direct habitat loss from infrastructure footprint, change in flows, and through the deposit of mine waste.

Table 7.1-1: Residual Effects

Sub-watershed	*Fisheries Act* Section	Lake Area (ha)	Lake Habitat Units	Watercourse Area (ha)	Watercourse Habitat Units
A	Section 35	167.11	64.06	3.39	1.23
	Section 36	7.07	4.62	0.00	0.00
	Sub-watershed Total	**174.18**	**68.68**	**3.39**	**1.23**
B	Section 35	91.12	33.39	5.32	2.07
	Section 36	152.97	47.52	0.00	0.00
	Sub-watershed Total	**244.09**	**80.91**	**5.32**	**2.07**
D	Section 35	0.00	0.00	0.73	0.25
	Section 36	0.91	0.68	0.00	0.00
	Sub-watershed Total	**0.91**	**0.68**	**0.73**	**0.25**
I	Section 35	7.63	0.00	0.00	0.00
	Section 36	0.00	0.00	0.00	0.00
	Sub-watershed Total	**7.63**	**0.00**	0.00	0.00
J	Section 35	5.66	2.28	2.11	0.72
	Section 36	4.71	2.13	0.00	0.00
	Sub-watershed Total	**10.37**	**4.41**	**2.11**	**0.72**
Total Residual Effects by Waterbody Type		**437.18**	**154.68**	**11.55**	**4.28**

7.1 Calculation of Habitat Losses and Habitat Equivalence Units (HU)

The Habitat Evaluation Model (HEP) used to quantify habitat losses for Meliadine Mine is based on the procedure used for the 2012 No Net Loss assessment for the Meadowbank Mine (Agnico Eagle 2012) and incorporates refinements that have been introduced during subsequent work between 2014 and 2016 to develop offsetting measures for Vault and Phaser Lake, and various changes incorporated as a result of the DFO review of the conceptual (Agnico Eagle 2015) and fish offsetting plans for the approved Whale Tail Pit Project and Whale Tail Expansion Project (Agnico Eagle 2016a,b).

The foundation of the HEP is the delineation of areas that provide certain “habitat types” based on depth and substrate (Table 7.1-2). Habitat types 1 – 12 are lake/pond habitats and were components of the original Meadowbank HEP model. These habitats are delineated by intersecting depth and substrate polygons.

Table 7.1-2: Characteristics of the Habitat Types

Habitat Type	Depth Zone	Substrate
1	0-2 m	Fine
2	0-2 m	Mixed
3	0-2 m	Coarse
4	2-4 m	Fine
5	2-4 m	Mixed
6	2-4 m	Coarse
7	>4 m	Fine
8	>4 m	Mixed
9	>4 m	Coarse
10	connecting channels	Coarse
11	small streams	Fine
12	small streams	Coarse

The designation HT10 was assigned to the connecting channels that occur between several of the lakes in the Meliadine Extension area. These channels are wide and have predominantly boulder and cobble substrates. They have shallow surface flow over most or all of their length during spring freshet and only interstitial flow over most or all of their length later in the open-water season. They freeze during the winter. The edge of the water in the connecting channels was observed in the field to correspond closely to the edge of the tundra vegetation. Therefore, these channels were delineated by digitizing the edge of the tundra vegetation in the July 21, 2011, satellite imagery. The upstream and downstream limits of the connecting channels are defined by the intersection of the upstream and downstream lake elevations with the digital elevation model (DEM).

Habitat types 11 and 12 are also specific to this area and represent small streams with fine and coarse substrate respectively. These streams were characterized from field measurements made using a point-transect method during the period July 5 through July 8, 2016. Many of these small streams have multiple channels and the width of each of the channels was measured at transects across the watercourses and those widths were summed to determine the total wetted width at a transect. To facilitate GIS analysis, the primary flow path of each of these streams was digitized based on the July 21, 2011, satellite imagery and a ‘stream polygon’ was created by assigning the total wetted width to the digitized flow path at each transect location. This allows the areas of stream habitat to be visualized and calculated during baseline and subsequent stages using standard GIS techniques. The portion of stream habitat that is fine substrate (habitat type 11) or coarse substrate (habitat type 12) was calculated by multiplying the stream polygon area by the proportion of the points where substrate was fine or coarse based on the field measurements.

The extent of each lake/pond habitat type was calculated from data collected by the historical baseline studies and from existing conditions studies conducted in 2020 and 2021. In instances where fish community data was not available, waterbodies and watercourses were assumed to contain small-bodied fish, specifically Ninespine Stickleback. Additionally, in waterbodies and watercourses where data was deficient, estimates of fish communities were derived based on the known fish communities in upstream and downstream lakes.

Watercourse habitats were assigned habitat type 11 or type 12 where stream habitat data was not available. No watercourses were assigned habitat type 10 (connecting channel) as habitat type 10 and type 12 (coarse substrate) had identical values in the HSI, with one exception. Arctic Grayling foraging habitat, which was 0.0 in habitat type 10 and 0.25 in type 12, making type 12 the more conservative choice. Furthermore, habitat type ratios were assigned with the assumption that habitat types are represented consistently across watersheds. The mean of habitat types 11 and 12 were calculated across sites where habitat type information was available (no habitat type 10 information was available). The mean values for habitat type 11 (20%) and type 12 (80%) were used for habitat unit calculations where substrate information was not available.

Where watercourse area (ha) data was not available (n=34), watercourse areas were calculated as the product of the mean bankfull width and stream length. Watercourse widths were assumed to be represented consistently across watersheds. The mean bankfull widths were calculated across sites where bankfull width data was available. Watercourse lengths were measured using a desktop GIS mapping application.

The HEP classified lake and pond habitats into 10 habitat types based on depth and substrate. For the Meliadine Extension, two additional habitat types have been incorporated to address connecting channels between lakes and small streams. The suitability of each habitat type is ranked between 0 to 1 for each of four life functions (spawning, nursery, foraging, overwintering) for each fish species that is (or is predicted to be) present. The area of each habitat type (in hectares) is multiplied by a habitat suitability index (HSI) and a series of weightings (a species weighting, a life-function weighting, and an access factor), and summed to derive a value in HUs that describes both the quality and quantity of habitat. These calculations were based on baseline conditions in the vicinity of the current Meliadine Mine. The habitat loss associated with the Meliadine Extension was calculated for all impacted areas using the HEP described below. In the net change calculation, only differences between existing and post-construction conditions were compared. For waterbodies where HADD is predicted, the area of the potential HADD has been conservatively estimated as the entire waterbody area at this time, although the actual HADD realistically may be smaller based on the final location of the designed mine footprint plus implemented mitigations and environmental design features.

The habitat suitability term represents the relative quality of each habitat type for each life function of each fish species present in the region. In the case of this HEP, the life functions of spawning, nursery, foraging and overwintering were considered. Habitat suitability for each life function is indicated through a ranking of 0, 0.25, 0.5, 0.75, or 1. HSIs for fish species and habitat types used in this HEP are shown in Table 7.1-2. The HSIs for the lake habitats (habitat types 1 – 9) were developed through a series of consultations and workshops beginning in July 2011 with KivIA, HTO, and DFO, and a series of workshops held with Golder and DFO between November 2011 and December 2011. Further review of the HEP by Minns (2017) recommended continued use of this method. Depth zones, substrate types (fines, mixed, coarse), and habitat types under pre-construction conditions throughout the primary study area are shown on Table 7.1-2.

The HSIs for stream habitat types 10, 11, and 12 were assigned based on their habitat characteristics and the fish sampling conducted as part of baseline investigations, taking into consideration the HSIs previously developed for lake habitats. Based on data collected at the Whale Tail and Meliadine projects, these connecting channels do not provide foraging habitat for large-bodied fish (foraging HSI = 0). The connecting channels are assumed to provide habitat for juvenile large-bodied fish during the open-water season. Therefore, for all large-bodied species the connecting channels have been assigned the same nursery HSIs as coarse substrate in the 0 – 2 m lake depth stratum. The connecting channels freeze during the winter and therefore have been assigned HSIs of zero for overwintering for all species and zero for spawning for fall/winter spawning species, which includes all of the large-bodied species that are present. The nursery HSIs for fine and for coarse substrates in the 0 – 2 m lake depth habitat (habitat types 1 and 3 respectively) have been applied to habitat types 11 and 12 for the four large-bodied fish species. The absence of adult large-bodied fish from the electrofishing catches in the small streams is consistent with them being so shallow, and confirms that, as would be expected, there is little if any foraging in these streams by adults of the large-bodied species. The small streams have been assigned a HSI of zero (0) for foraging by the four large-bodied species. Slimy Sculpin and Ninespine Stickleback, the two small-bodied species that are present in the Meliadine mine area, have both been captured in the connecting channels and likely use the shallow areas and interstitial spaces in much the same way that they do in shallow areas with coarse substrate in lake habitats. For these two species the HSIs for fine and for coarse substrates in the 0 –2 m lake depth habitat (habitat types 1 and 3, respectively) were applied to habitat types 12 and 13 for spawning, nursery and foraging.

Using the equation below, the area of each habitat type (in hectares) is multiplied by the habitat suitability index (HSI) and a series of weights (a species weight, a life-function weight and an access weight) a habitat cofactor, and summed to derive a value in habitat units (HUs) for an individual species.

The habitat units are summed across all species to arrive at the total number of habitat units, which describes both the quality and quantity of habitat for the fish community.

The HEP model used here can be described, for each fish species (spp 1-n) as:

$$HU_{spp\ 1-n} = \sum HT\ 1-12 \left(\sum sp, nu, fo, ow \left[HT_{1-12} \times HSI_{sp,nu,fo,ow} \times LF \times SP \right] \right) \times AF \times HC$$

where: HT1-12 = area (ha) of habitat types 1 through 12

$HSI_{sp,\ nu,\ fo,\ ow}$ = habitat suitability index for each life function:

sp = spawning use
nu = nursery use
fo = foraging use
ow = overwintering use

LF = life function weight
SP = species weight
AF = access factor
HC = habitat co-factor

7.1.1 Life Function Weight

This HEP values all life functions equally, with a weight of 0.25 each assigned for spawning, nursery, foraging and overwintering.

7.1.2 Species Weight

Depending on fishery or habitat objectives for an area, fish species can be given different weights in a HEP model. The species weight for this HEP takes into account the fisheries contribution and cultural contribution, based on consultation with the local community. While it is recognized that small-bodied fish play an important role in the ecosystem, they are generally less limited in distribution due to their ability to use a wider variety of habitat types (e.g., small, ephemeral ponds and watercourses). Most of the waterbodies sampled as part of the program to document existing conditions for the Meliadine Extension contained only Ninespine Stickleback.

Information shared by community members highlights that larger waterbodies and large-bodied fish are more important than shallow ponds that freeze to the bottom each year and support only small-bodied fish on a seasonal basis. Therefore, large-bodied fish species were assigned a higher species weight than small-bodied fish species. The exact species weights differ among waterbodies depending on how many large and small bodied species are present or predicted to be present; the species weight for species of local interest (Arctic Char, Arctic Grayling, and Lake Trout) were generally approximately double the species weights for other species. For example, in a waterbody with Arctic Grayling, Ninespine Stickleback, and Slimy Sculpin, Arctic Grayling were assigned a species weight of 0.5, while Stickleback and Sculpin each were assigned a weight of 0.25.

7.1.3 Access Factor

Access factor may be used when fish assemblages are expected to change in the offsetting scenario. According to this concept, the access factor is 1 for any species present in the habitat area, and 0 for any species not present. Each species receives an access factor in both the loss and gain calculations. Therefore, the opening of access to a habitat area for a species (that did not have access previously), results in an increase of habitat units. Similarly, the loss of access results in a loss of habitat units. These gains or losses may be complete (i.e., affect all species), or partial (only some species are affected). The presence or absence of a species in loss calculations is typically based on the observed presence/absence of each species during baseline monitoring studies. For the calculations in this report, an access factor of 1 has been applied for all fish species that have been captured or are hypothesized to be present in a particular lake/pond/stream. If a change in access is predicted for an offset scenario (i.e., due to the

removal of a barrier to fish movement) the change would need to be confirmed as part of compensation monitoring.

Table 7.1-3: Access Factor Theoretically Applied to Each Species for Habitat Loss and Gain Calculations, based on Presence/Absence (or Anticipated Presence/Absence for Offsetting Projects)

Scenario	Access Factor	
	Losses	Gains
Species Present	1	1
Species Not Present	0	0

7.1.4 Habitat Co-factor

The habitat co-factor represents any changes to non-mapped habitat quality (thermal, hydrological, biological or chemical regimes) that will occur as a result of impacts or offsetting. No habitat co-factor has been applied to the HEP calculations presented in this report.

7.2 Section 35 HADD

The following fish habitat losses are predicted to result in HADD under Section 35 of the *Fisheries Act* and arise from the development, operation, and closure of the Meliadine Mine (Table 7.2-1). All ponds are assumed to be partially or completely overprinted by the changes to the pit outline of these pits, by the construction of new pits, associated mining activates, and through mining infrastructure. A loss of 283.07 ha and 104 HU is predicted due to dewatering, loss of downstream connectivity, mining infrastructure, and overprinting from pits.

Table 7.2-1: Fish and Fish Habitat Lost through Project Infrastructure (Section 35)

A Watershed		B Watershed		I Watershed	J Watershed
Pond A2	Pond A32	Lake B5	Pond B62	Pond I1	Pond J4
Pond A2A	Pond A33	Lake B6	Pond B63		Pond J5
Pond A3	Pond A34	Pond B19			Pond J6
Pond A4	Pond A35	Pond B22			Pond J7
Pond A5	Pond A37	Pond B30			
Lake A6	Pond A44	Pond B31			
Pond A7	Pond A45	Pond B36			
Lake A8	Pond A49	Pond B37			
Pond A19	Pond A50	Pond B38			
Pond A30	Pond A51	Pond B39			
Pond A31	Pond A53	Pond B59			

7.3 Section 36 HADD

All Section 36 losses that are incurred from the Meliadine Extension are anticipated to be permanent (Table 7.3-1). A loss of 165.65 ha and 54.95 HU is predicted due to dewatering, loss of downstream connectivity, mining infrastructure, and overprinting from pits.

Table 7.3-1: Fish and Fish Habitat Lost by Deposit of Mine Waste (Section 36)

A Watershed	B Watershed	D Watershed	J Watershed
Pond A52	Lake B4	Pond D31	Pond J2
	Lake B7		Pond J3
	Pond B25		Pond J8
	Pond B32		
	Lake B34		
	Pond B60		
	Pond B61		

SECTION 8 • OFFSETTING PLAN

8.1 Overview

As a result of the Meliadine Extension, there will be HADD to fish habitat resulting in a potential loss of 448.73 ha and 158.95 HU, which will be required to be offset through Section 35 and 36 of the *Fisheries Act*. As such, fish offsetting will be required to counterbalance this loss. Using past Fisheries Authorizations as a benchmark (NU03-0191 and 16-HCAA-00370), a ratio of offsetting gains:losses of 1.66:1, would require 263.86 HUs gained through offsetting for Meliadine Extension (i.e. losses of 158.95 HU multiplied by 1.66). The offsetting program proposed for the Meliadine Extension is anticipated to provide a gain of 83.4 HUs from pit lake restoration and a biomass equivalency of 317.9 HU to produce an offsetting ratio of 2.5:1 (gains:losses).

Following DFO's Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat under the *Fisheries Act* (DFO 2019), Agnico Eagle has applied avoidance and mitigation prior to considering offsetting for Project effects (Sections 5 and 6). According to the policy, offsetting measures may be grouped into the following general categories (DFO 2019):

- Habitat restoration and enhancement, which includes physical manipulation of existing habitat to improve habitat function and productivity;
- Habitat creation which is the development or expansion of aquatic habitat into a terrestrial area;
- Chemical or biological manipulation, which includes chemical manipulation of water bodies, and stocking of fish or shellfish, management or control of aquatic invasive species; and
- Complementary measures, which are investments in data collection and scientific research related to maintaining or enhancing the productivity of fisheries.

Explicit within the offsetting plan was an effort to consider Indigenous Peoples perspectives during its development. Additional community and stakeholder engagement was conducted in 2021 and 2022, along with field programs, to inform potential offsetting options. Community engagement specific to this offsetting plan is summarized in Section 3.

8.2 Habitat Creation and Enhancement

8.2.1 Pit Lake

Agnico Eagle is proposing to restore 132.2 Ha of habitat through reclaiming mined out pits and converting them into pit lakes for fish habitat. The calculations are preliminary and do not account for additional gains through the flooding and reconnection of previously dewatered lakes and channels to pit lakes, and to other purposed options as described in Section 8.2.5. Additional offsetting options will be further analyzed through continued consultation with the local community and the KivIA to determine supplemental gains in habitat to offset the total anticipated loss. To finalize the additional locations and type of offsetting measures, Agnico Eagle proposes to work jointly with the KivIA and community members in 2023.

The same HEP model (described in Section 7) that was used to estimate fish habitat losses was also used to estimate the habitat gains that are potentially achievable via the restoration of up to nine pit lakes as offsetting measures. It is envisioned that lakes will be created at the locations of the following pits: FZO01, FZO02, FZO04, PUM02, PUM04, TIR02, TIR04, WES03, and WES04 (Table 8.2-1). The same HEP model, species-specific HSI ratings and weightings and calculation methods that were used to estimate losses were also used to estimate habitat gains except that only three habitat types were used: HT3 (< 2 m depth; coarse substrate), HT6 (2 to 4 m; coarse substrate) and HT9 (> 4 m depth; coarse substrate). Habitat types 1, 2, 4, 5, 7, and 8 were not used to estimate the pit lake fish habitat gains because it was anticipated that the pits will be backfilled with coarse material only. It was further assumed that the depth profiles of the restored pit lakes would consist of 10% of lake area as habitat type 3, 40% of area as habitat type 6, and 50% as habitat type 9. In addition, Agnico Eagle assumes that Arctic Char, Lake Trout, Slimy Sculpin, Ninespine Stickleback, and Arctic Grayling will be present in all of the above-mentioned pit lakes.

A preliminary estimate of the additional offsets required due to the anticipated time lag between the HADD and the start of the offsetting works in the pit lakes has been generated. This estimate is based on the approach of Minns (2017) and R-code provided by DFO. It assumes the current HU estimates are reasonable. It also assumes that the HADDs all occur in year 1, the offsetting in all pit lakes starts at year 7 and the time to get to a working ecosystem in each pit lake is 20 years.

Table 8.2-1: Total Area of Each Proposed Pit Lake and Area of Each Habitat Type in Restored State

Grouped Pit Lakes	Individual Pit Lakes	Total Area (ha)	Habitat Type 3 Area (ha)	Habitat Type 6 Area (ha)	Habitat Type 9 Area (ha)
F Zone Pit Lake	FZO01	15.2	1.52	6.08	7.6
	FZO02	9.3	0.93	3.72	4.65
	FZO04	11.5	1.15	4.6	5.75
Pump Pit Lakes	PUM02	5.9	0.59	2.36	2.95
	PUM04	8.3	0.83	3.32	4.15
TIRI02/04 Pit Lake	TIRI02	8.3	0.83	3.32	4.15
	TIRI04	24.5	2.45	9.8	12.25
WES Pit Lake	WES03	15.1	1.51	6.04	7.55
	WES04	34.1	3.41	13.64	17.05
Grand Total	-	**132.2** (83.4 HU)	-	-	-

8.2.2 Pistol Bay Fish Passage Restoration

Agnico Eagle is proposing altering the existing fish passage barrier at Pistol Bay Falls to allow a higher rates of Arctic Char passage and increasing Arctic Char biomass. The underlying assumption is that in its current state, fish passage at Pistol Bay Falls is limited during lower flow periods and to the fittest fish.

Preliminary calculations suggest that significant increases to Arctic Char production can be gained from improved access to spawning, rearing, and overwintering habitat above the area of Pistol Bay Falls can

increase Arctic Char significantly by modifying the falls to be passable during periods of lower water (e.g., low tide).

The habitat losses from the Meliadine Extension project are 448.73 ha, which has a biomass equivalency of 1052 kg/year. Biomass equivalency is based on the previously estimated biomass production value for Second Portage Lake (2.34 kg per ha per year; Golder 2020). An offsetting target of 200% of the estimated losses would equal production of 2104 kg/year.

Fish passage rates were assumed to be 30% at Pistol Bay Falls as the baseline. Arctic Char productivity was estimated for increases in Arctic Char at 50%, 70%, and 90% fish passage rates (Table 8.2-2, Appendix D). The results suggest an increase in passage from 30% to 50% is estimated to produce double the biomass lost.

Table 8.2-2: Estimated Productivity Increases Based on Improved Arctic Char Passage Rates at Pistol Bay Falls

	Productivity (kg/yr)
Mel Ext Loss Equivalency	1052
200% Productivity Target	2104
Increase from baseline (30%) to 50% passage rate	2101
Increase from baseline (30%) to 70% passage rate	5,260
Increase from baseline (30%) to 90% passage rate	7,891

8.2.3 Timeline, Design, and Construction of the Offsetting Measure

Preliminary estimates of the offsets required due to the anticipated time lag between the HADD and the start of the offsetting works in the pit lakes has been considered. It assumes the current HU estimates are reasonable. It also assumes that the HADDs all occur in year 1, the offsetting in all pit lakes starts at year 7 and the time to get to a working ecosystem in each pit lake is 20 years.

8.2.3.1 Pit Lakes

Pit lakes construction will not occur until after mine closure. Construction and design for the proposed offsetting measures will be refined in the interim and adjusted based on community, KivIA, and DFO inputs, as well as any future field programs.

8.2.3.2 Pistol Bay Falls

Construction of the Pistol Bay Falls offsetting measures will begin in 2024. Construction and design for the proposed offsetting measures will be adjusted based on community, KivIA, and DFO inputs as well as additional field studies to enable a comprehensive characterization of the site and detailed design. Monitoring Offsetting Measures

A monitoring program will be developed to include physical, biological, and ecological components to record whether the off-setting measures are constructed and functioning as intended.

Physical monitoring components will include, but not limited to:

- Structural evaluation for stability and integrity
- Aerial photos
- Visual observation

Biological monitoring components will include, but not limited to:

- Fish use
- Fish health
- Fish productivity (Pistol Bay Falls)

Ecological monitoring components include, but not limited to:

- Water quality (Pit Lakes)
- Benthic invertebrate and periphyton (Pit Lakes)

The assessment of habitat features incorporates monitoring methods with specific quantitative criteria for success (i.e., physical structure, biological and ecological endpoints). All monitoring results are integrated in a weight-of-evidence approach to determine habitat feature functionality.

An example of the monitoring plan can be found in Appendix E.

8.2.4 Contingency Offsetting Measures

Contingency measures are planned secondary measures which would be implemented if the planned offsetting measures did not meet their objective(s). Agnico Eagle has identified other alternatives relating to additional offsetting such as:

- Agnico Eagle has identified two locations that may support Arctic Grayling spawning pads (i.e., Char River, Meliadine River).
- In-lake spawning shoals (i.e., similar to those approved at the AEM Amaruq Site)
- Flooding and reconnecting watercourses to new pit lake habitat;
  Restoring dewatered lake basins; and

Additional field investigations will be required to confirm suitability of these options.

8.2.5 Offsetting Measures Cost Estimate

Agnico Eagle will work with DFO through the review of this Fish Offsetting Plan to determine the monetary value of the letter of credit to cover the cost for implementing elements of the offsetting plan, including monitoring measures.

SECTION 9 • SUMMARY

There will be HADD to fish habitat as a result of the Meliadine Extension during the operations phase, resulting in a potential loss of up to approximately 448.73 ha and 158.95 HU which will be required to be offset through Section 35 and 36 of the *Fisheries Act*. Habitat enhancement will be utilized to offset the predicted losses to fish habitat.

Habitat creation through the pit lakes is estimated to contribute at least 132.2 ha and 83.4 HUs. Additional habitat may be realized through reflooding of the previously dewatered waterbodies and watercourses. Improving fish passage at Pistol Bay Falls is anticipated to increase productivity of Arctic Char in that system by 200%, resulting in a doubling in biomass and an equivalency gain of 897.86 ha of fish habitat. These offsetting measures will meet the community objectives of restoring habitat. The restoration of pit lakes and improved fish passage is also in line with Agnico Eagle's sustainability and closure objectives and their respect for the local community values.

Offsetting options may change as Agnico Eagle continues to consult and collaborate with local community organizations in addition to collecting supplemental field data for continued offsetting efforts.

SECTION 10 • REFERENCES

Agnico Eagle (Agnico Eagle Mines Limited). 2012. AEM Meadowbank Division – No Net Loss Plan. October 15, 2012.

Agnico Eagle. 2014. Final Environmental Impact Statement (FEIS) - Meliadine Gold Project, Nunavut from: ftp://ftp.nirb.ca/02-REVIEWS/ACTIVE%20REVIEWS/11MN034-AgnicoEagle%20MELIADINE/2-REVIEW/09-FINAL%20EIS/FEIS.

Agnico Eagle. 2015. AEM Meadowbank Division – No Net Loss Plan Addendum – Vault Area Offsetting Plan. July, 2015.

Agnico Eagle. 2016a. Whale Tail Pit Project - Meadowbank Mine Final Environmental Impact Statement and Type A Water Licence Amendments. Amendment/Reconsideration of the Project Certificate (No. 004/ File No. 03MN107) and Amendment to the Type A Water Licence (No. 2AM-MEA1525). Submitted to the Nunavut Impact Review Board. June 2016.

Agnico Eagle. 2016b. AEM Meadowbank Division - Conceptual Fish Habitat Offsetting Plan: Whale Tail Pit. June, 2016.

Agnico Eagle. 2022. Meliadine Mine – Meliadine Extension FEIS Addendum. July 2022.

DFO (Fisheries and Oceans Canada). 1995. Freshwater Intake End-of-Pipe Fish Screen Guideline. ISBN 0-662-23168-6.DFO (Fisheries and Oceans Canada). 2013. Fisheries Productivity Investment Policy: A Proponent's Guide to Offsetting. Ottawa, ON, Canada. ISBN 978-1-100-22930-0.

DFO. 2010. DFO Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut.

DFO. 2019. Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act. Ecosystem Programs Policy, Fisheries and Oceans Canada. Ottawa, Ontario.http://dfo-mpo.gc.ca/pnw-ppe/reviews-revues/policies-politiqueseng. html#_699 (Accessed December 6, 2019).

ERM (ERM Consultants Canada Ltd.). 2021. Meliadine Extension Fish and Fish Habitat Field Program 2020-2021.

Golder (Golder Associates Ltd.). 2012a. SD 7-1 Aquatics Baseline Synthesis Report, 1994 to 2009 – Meliadine Gold Project, Nunavut. Final Report.

Golder. 2012b. SD 7-2 2011 Aquatic Baseline Studies Meliadine Gold Project, Nunavut. Final Report.

Golder. 2014. SD 7-4 Conceptual Fisheries Protection and Offsetting Plan –Meliadine Gold Project, Nunavut. Submitted to Agnico Eagle Mines Limited. April, 2014.

Hutchinson Environmental Science Ltd, 2020, Habitat Assessment and Initial Restoration Plan

APPENDIX A • CONCORDANCE WITH AUTHORIZATIONS CONCERNING FISH AND FISH HABITAT PROTECTION REGULATIONS (SCHEDULE 1)

Table A-1: Concordance with Authorizations Concerning Fish and Fish Habitat Protection Regulations (Schedule 1)

Schedule 1 Description	Section of Report
Section 2. A detailed description of the proposed work, undertaking or activity and, if applicable, a detailed description of the project of which the proposed work, undertaking or activity is a part, including:	
(a) the purpose of the proposed work, undertaking or activity and, if applicable, the project;	Sections 2.1 & 2.2
(b) the associated infrastructure;	Sections 2.1 & 2.2
(c) any permanent or temporary structure involved; and	Sections 2.1 & 2.2
(d) the construction methods, building materials, explosives, machinery and other equipment that will be used.	Sections 2.1 & 2.2
Section 3. If physical works are proposed, the project engineering specifications, scale drawings and dimensional drawings.	To be provided as part of the Authorization application
Section 4. A description of the phases and the schedule of the proposed work, undertaking or activity and, if applicable, the project of which the proposed work, undertaking or activity is a part.	Section 1 and Table 2.2-3 and Table 2.2-4
Section 5. A description of the location of the proposed work, undertaking or activity and, if applicable, of the location of the project of which the proposed work, undertaking or activity is a part, including:	
(a) geographic coordinates	Table 2.2-3 & 2.2-4
(b) a small-scale plan identifying the overall location and boundaries	Figure 2.2-1
(c) a large-scale site plan indicating the size and spatial relationship of the planned facilities, infrastructure and other components and of any existing structures, landmarks, water sources or water bodies and other geographic features	Figures 1.1-2 & 2.2-1
(d) the name of any watersheds, water sources and water bodies that are likely to be affected and the geographic coordinates of the water sources and water bodies.	Sections 2.2 & 2.3
Section 6. The name of the community nearest to the location and the name of the county, district or region and the province in which the proposed work, undertaking or activity will be carried on	Section 1 and Figure 1.1-1
Section 7. A description and the results of any consultations undertaken in relation to the proposed work, undertaking or activity, including with Indigenous communities or groups and the public. If applicable, the applicant must include information about any consultation already undertaken prior to submitting the application These consultations would have to have related to the work, undertaking, or activity for which an authorization would be sought. The description should provide an overview of consultations, if any, held with Indigenous groups and/or with the public at large.	Sections 3.1, 3.2 & 3.3
Section 8. A detailed description of the fish and fish habitat found at the location of the proposed work, undertaking or activity and within the area likely to be affected by the proposed work, undertaking or activity, including:	
(a) the type of water source or water body	Section 2 & Section 4
(b) the characteristics of the fish habitat and how those characteristics directly or indirectly support fish in carrying out their life processes	Sections 4 & 5
(c) the fish species that are present and an estimate of the abundance of those species	Section 4 and Table 4.1-1
(d) a description of how the information provided under paragraphs (a) to (c) was obtained, including the sources, methods and sampling techniques used.	Table 4.1-1
Section 9 (1) A detailed description of the likely effects of the proposed work, undertaking or activity on fish and fish habitat. The description must include:	
(a) the fish species that are likely to be affected and the life stages of the individuals of those species	Table 2.2-1, Table 2.2-2, and Table 3.1-1

Schedule 1 Description	Section of Report
(b) the extent and type of fish habitat that is likely to be affected	Section 5
(c) the probability, magnitude, geographic extent and duration of the likely effects on fish and fish habitat	Section 5
(d) a description of how the information provided under paragraphs (a) to (c) was derived, including the methodologies used	2022 FEIS Addendum (Sections 7.5.2-7.5.5)
Section 9 (2) A detailed description of:	
(a) how the effects referred to in subsection (1) are likely to result in the death of fish or the harmful alteration, disruption or destruction of fish habitat	Section 5
(b) the extent of the elements referred to in paragraph (a).	Section 5 and Figure 2.2-1
Section 10. A detailed description of the measures and standards that will be implemented, including an analysis of the expected effectiveness of those measures and standards, to:	
(a) avoid the death of fish or to mitigate the extent of their death or (b) avoid or mitigate the harmful alteration, disruption or destruction of fish habitat	Section 6
Section 11. A detailed description of the monitoring measures that will be implemented to assess the effectiveness of the measures and standards referred to in section 10.	Section 6
Section 12. A detailed description of the contingency measures that will be implemented if the measures and standards referred to in section 10 do not meet their objectives.	Section 8.2.5
Section 13. A quantitative and detailed description of the death of fish referred to in subsection 9(2) after the measures and standards referred to in paragraph 10(a) are implemented.	Section 8
Section 14. A quantitative and detailed description of the harmful alteration, disruption or destruction of fish habitat referred to in subsection 9(2) after the measures and standards referred to in paragraph 10(b) are implemented.	Sections 7 & 9
Section 15. The number of habitat credits that the applicant plans to use to offset the death of fish referred to in section 13 and the harmful alteration, disruption or destruction of fish habitat referred to in section 14, as well as the number of any certificate referred to in paragraph 42.02(1)(b) of the Act.	Section 7
Section 16. A detailed description of a plan to offset the death of fish referred to in section 13 and the harmful alteration, disruption or destruction of fish habitat referred to in section 14 that were not offset by the habitat credits referred to in section 15, including:	
(a) the geographic coordinates of the location where offsetting measures will be implemented;	Section 8.2
(b) a small-scale site plan identifying the general location and boundaries of the location where the measures will be implemented;	Appendix D
(c) a detailed description of the measures and how those measures will meet their objectives;	Section 8
(d) a detailed description of the monitoring measures that will be implemented to assess the effectiveness of the measures referred to in paragraph (c);	Section 8.2.4 - Final plan will be provided as part of the Authorization application
(e) a detailed description of the contingency measures and associated monitoring measures that will be implemented if the measures referred to in paragraph (c) do not meet their objectives;	Section 8.2.5
(f) a detailed description of any adverse effects on fish and fish habitat that could result from the implementation of the plan;	Section 5
(g) a detailed description of the measures and standards that will be implemented to avoid or mitigate the adverse effects and how those measures will meet their objectives;	Sections 6.1 & 6.2
(h) the timeline for the implementation of the plan;	Sections 8.2.3

Schedule 1 Description	Section of Report
(i) an estimate of the cost of implementing each element of the plan; and	Section 8.2.6. To be submitted as part of the Authorization Application.
(j) if the implementation of the plan requires access to lands, water sources or water bodies that are not owned by the applicant, a description of the steps that are proposed to be taken to obtain the authorization required for the applicant, the Department of Fisheries and Oceans and anyone authorized to act on the Department's behalf to access the lands, water sources or water bodies in question. This information is not required if the applicant is Her Majesty in right of Canada, Her Majesty in right of a province or the government of a territory."	Not applicable

APPENDIX B • CONCORDANCE WITH S.27.1 METAL AND DIAMOND MINING EFFLUENT REGULATIONS (SCHEDULE 2)

Table B-1: Concordance with Authorizations Concerning Fish and Fish Habitat Protection Regulations (Schedule 2)

Schedule 2 Description	Section of Report
27.1 (1) The owner or operator of a mine shall, before depositing a deleterious substance into a tailings impoundment area that is set out in Schedule 2, submit to the Minister of the Environment a compensation plan that includes the information described in subsection (2) and obtain that Minister's approval of the plan.	
(2) The purpose of the compensation plan is to offset the loss of fish habitat resulting from the deposit of any deleterious substance into the tailings impoundment area. It shall contain the following information:	
(a) a description of the location of the tailings impoundment area and of fish habitat that will be affected by the deposit;	Section 5.2.and Table 2.2-3 and Table 2.2-4
(b) a quantitative impact assessment of the deposit on fish habitat;	Section 5.2.
(c) a description of the measures to be taken to offset the loss of fish habitat;	Section 8
(d) a description of the measures to be taken during the planning and implementation of the compensation plan to mitigate any potential adverse effects on fish habitat that could result from the plan's implementation;	Section 8.2
(e) a description of the measures to be taken to monitor the plan's implementation;	Section 8.2.4
(f) a description of the measures to be taken to verify the extent to which the plan's purpose has been achieved;	Section 8.2
(g) the time required to implement the plan that allows for the achievement of the plan's purpose within a reasonable time; and	Section 8.2.3
(h) an estimate of the cost of implementing each element of the plan.	Section 8.2.5
(3) The owner or operator of a mine shall submit with the compensation plan an irrevocable letter of credit to cover the plan's implementation costs, which letter of credit shall be payable upon demand on the declining balance of the implementation costs.	If deemed required, a letter of credit will be submitted with final authorization package. See also Section 8.2.6
27.1 (1) The owner or operator of a mine shall, before depositing a deleterious substance into a tailings impoundment area that is set out in Schedule 2, submit to the Minister of the Environment a compensation plan that includes the information described in subsection (2) and obtain that Minister's approval of the plan.	
(4) The Minister of the Environment shall approve the compensation plan if it meets the requirements of subsection (2) and the owner or operator of a mine has complied with subsection (3).	This acknowledgement to be completed with final authorization package.
(5) The owner or operator of a mine shall ensure that the compensation plan approved by the Minister of the Environment is implemented and, if the compensation plan's purpose is not being achieved, the owner or operator shall inform the Minister of the Environment.	This acknowledgement to be completed with final authorization package.
(6) If the compensation plan's purpose is not being achieved, the owner or operator of a mine shall, as soon as practicable in the circumstances, identify and implement all necessary remedial measures to ensure that the purpose is achieved.	This acknowledgement to be completed with final authorization package.

APPENDIX C • FISHING EFFORT 1997-2022

AGNICO EAGLE

Fish and Fish Habitat Field Reconnaissance Program 2022

MELIADINE EXTENSION

Submitted by:

Agnico Eagle Mines Limited – Meliadine Division

December 14, 2022

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

1 PROJECT OVERVIEW

Agnico Eagle Mines Limited (Agnico Eagle) is operating the Meliadine Mine, located approximately 25 km north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. On October 10, 2014, the Nunavut Impact Review Board (NIRB) provided the Minister with the Final Hearing Report and recommended Terms and Conditions for the Meliadine Project. The Minister accepted the NIRB's recommendation on January 27, 2015 and Project Certificate No.006 was issued on February 26, 2015. This included the approval of the Tiriganiaq deposit and the F Zone, Wesmeg, Pump, and Discovery deposits of the Meliadine Mine and the associated infrastructure.

On May 19, 2016, the Minister approved the Type A Water Licence 2AM-MEL1631 to begin construction and operation of the Meliadine Mine. At that time, Agnico Eagle only applied for the Type A Water Licence required to proceed with the Tiriganiaq deposit. As indicated at that time, amendments are required to proceed with the other deposits, as part of this application (Meliadine Extension) included in Project Certificate No.006.

Since the Project Certificate was issued, the Meliadine Mine has been subject to two reconsiderations by NIRB. On February 26, 2019 the NIRB provided a positive decision to amend the Project Certificate to include discharge of saline effluent to the marine environment via diffuser at Itivia Harbour and to convey via truck saline effluent along the All Weather Access Road (AWAR) to Itivia Harbour (i.e., Melvin Bay). On January 31, 2022 the Minister provided a positive decision to amend the Project Certificate to include the conveyance of saline effluent via a waterline along the AWAR (instead of via truck), to accommodate an increased volume of discharge at Itivia Harbour.

On June 23, 2021, the Minister approved the Type A Water Licence 2AM-MEL1631 Amendment which included updated total dissolved solids (TDS) thresholds to Meliadine Lake, increase of annual freshwater consumption, additional laydown area, additional landfarm, updated waste management strategy, construction of access roads, and an updated Interim Closure and Reclamation Plan (ICRP).

As mentioned above, Project Certificate No.006, including the Meliadine Extension deposits, has been issued in 2015. Based on additional geological investigations conducted, lessons learned since NIRB approval in 2015, and to continue developing the Meliadine Mine in a sustainable way, Agnico Eagle is seeking approval to add the following activities:

- underground mining and associated saline water management infrastructures at the Pump, F Zone, and Discovery deposits that were previously assessed and approved for open pit mining activities by NIRB;
- development of a new portal and associated infrastructures in the Tiriganiaq-Wolf area to improve access to and expand the existing Tiriganiaq underground mine;
- construction and operation of a windfarm to reduce greenhouse gas (GHG) emissions (NIRB Project Certificate No.006 Term and Condition [T&C] 9);
- use of additional borrow pits and quarries to replace depleted sources and build a road to the

windfarm, Tiriganiaq-Wolf portal, airstrip, road to Discovery and other deposits; and
- extension of the operation phase (i.e., mine life) by 11 years to 2043.

Agnico Eagle is also seeking approval for the following options/alternatives should it be required:

- use of exhausted pits to store tailings to complement the current waste management strategy; and
- use of exhausted pits to store waste rock to complement the current waste management strategy.

Collectively, this is referred to as Meliadine Extension. Proposed changes to the approved footprint are illustrated on Figure 1-1.

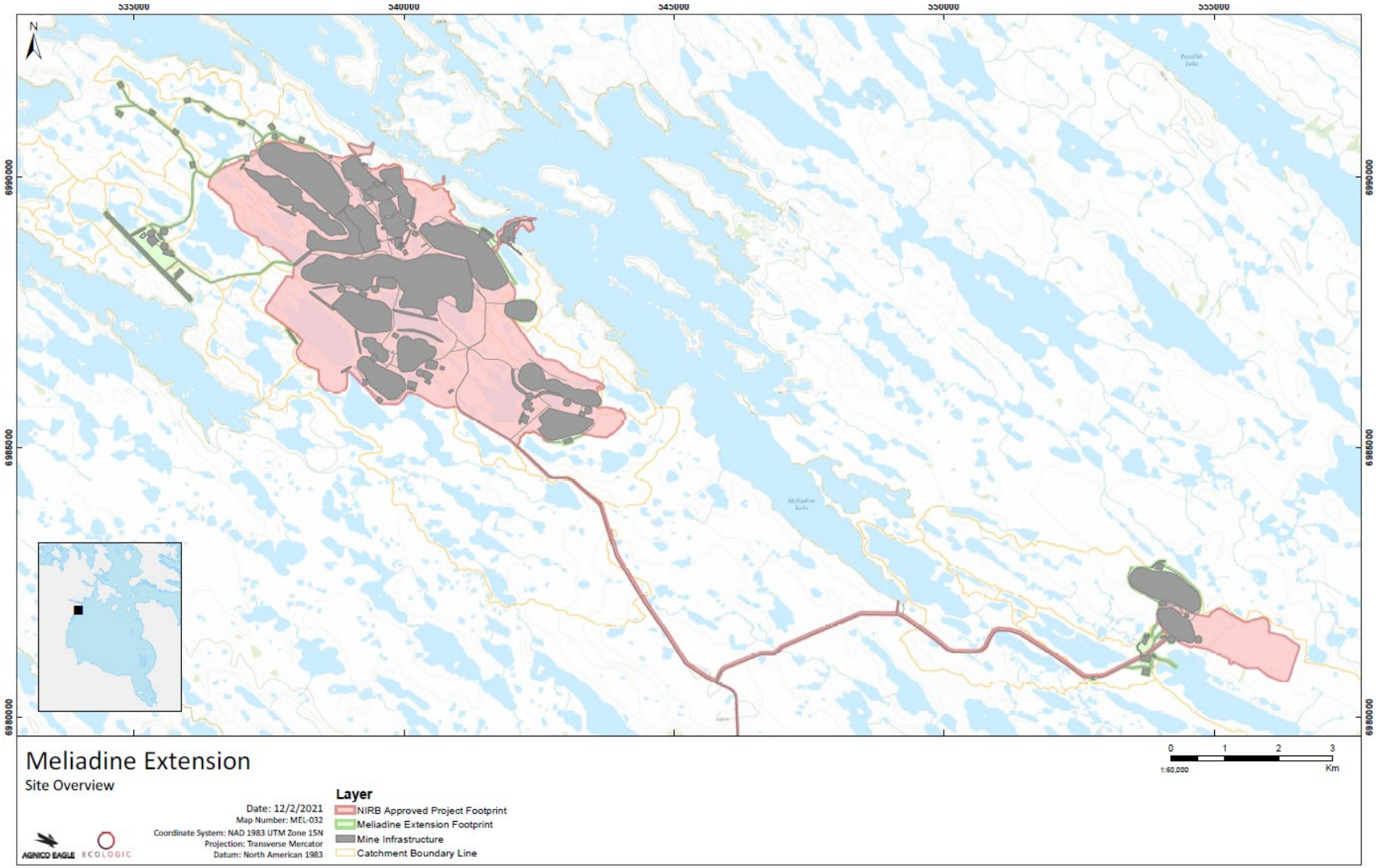
A conceptual offsetting plan for the Meliadine Mine was consulted on, and reviewed as part of the approved 2014 FEIS. The Meliadine Mine plan was reviewed by DFO and a Letter of Advice was issued for waterbodies and watercourses affected by the Tiriganiaq deposit only advising that no serious harm was predicted from the works, undertakings, and activities proposed at that time. In 2019, the *Fisheries Act* was revised to prohibit "harmful alteration, disruption, or destruction" (HADD) of fish habitat or death of fish.

In the spring of 2022, an emergency authorization (21-HCAA-02733) under paragraphs 34.4 (2)(b) and 35(2)(b) of the *Fisheries Act* was issued to Agnico Eagle to allow the dewatering and fish out activities of five ponds within the A and B watershed at Meliadine Mine site (A9, B33, B33A, A40 and A38) beginning in spring 2022 to meet operational needs and to address geotechnical and safety issues associated with Tiriganiaq Pit 01 and Tiriganiaq Pit 02. This is referred to in this document as the Dewatering of Site Ponds Authorization.

As a result of the Meliadine Extension activities included within the 2022 NIRB Amendment, the Meliadine Extension is likely to require an Authorization under S.35 and S.36 of the Act for unavoidable impacts due to the development of mining activities. As part of the application for Issuance of an Authorization under Paragraphs 34.4(2)(b) and 35(2)(b) of the Fisheries Act, an updated Offsetting Plan/Fish Habitat Compensation and Monitoring Plan is required to counterbalance losses from mine infrastructure and deposition of deleterious waste into fish-frequented waterbodies. This will be required for both the Dewatering of Site Ponds and the Meliadine Extension Authorizations.

This report presents the results of the 2022 Fish and Fish Habitat Reconnaissance Field Program, which included fish habitat, fish presence/absence surveys in waterbodies that may be affected by the Meliadine Extension and Dewatering of Site Ponds Authorizations. Offsetting reconnaissance surveys were also conducted at locations of interest to the Community and those which may provide exceptional habitat gains.

Figure 1-1:Meliadine Mine Approved and Meliadine Extension Footprint



2 HISTORICAL BASELINE AND RECENT STUDIES

Comprehensive baseline studies were completed from 1997 to 2011 to characterize fish habitat and fish communities in potentially affected waterbodies in the Meliadine Gold Mine Project area (Golder, 2012). The studies focused on determining the distribution of fish species throughout watersheds, assessing movements of Arctic Char (*Salvelinus alpinus*), Lake Trout (*Salvelinus namaycush*), and Arctic Grayling (*Thymallus arcticus*) using radio telemetry, and determining the timing and size of the Arctic Char run in the Meliadine River. Habitat assessments were also conducted to characterize habitat features with regard to their suitability for spawning, rearing, migration, and overwintering. The studies informed the aquatic resources effects assessment in Agnico Eagle's Final Environmental Impact Assessment (FEIS; Agnico Eagle 2014) for the Meliadine Gold Mine Project.

In 2020-2021 fish habitat and fish community assessments were conducted to validate and augment historical baseline data through sampling of Project area waterbodies, identify critical habitat features that may be affected by water quantity loss downstream of the mine infrastructure, and collect data to inform measures to avoid or mitigate potential impacts. Table A-1 and Table A-2 in Appendix A summarizes the 1997 to 2021 sampling effort.

3 STUDY OBJECTIVES

The objectives of the 2022 field study were to collect additional data at new and/or previously identified proposed offsetting sites. Data was also collected from waterbodies and watercourses that may be impacted by the Extension to validate and augment the understanding of historical baseline data. This study also included the collection of associated fish habitat and fish presence/absence data to support the design of offsetting programs for the Meliadine Extension and Dewatering of Site Ponds *Fisheries Act* Authorizations.

To meet these objectives, the field work included:

- fish community assessments to augment existing baseline datasets and provide an understanding of existing conditions around the Meliadine Extension area;
- fish habitat assessments at waterbodies with limited data;
- assessment of habitat offsetting potential.

Tables A-3 to A-7 in Appendix A summarizes the habitat quality and fish data collected in 2022.

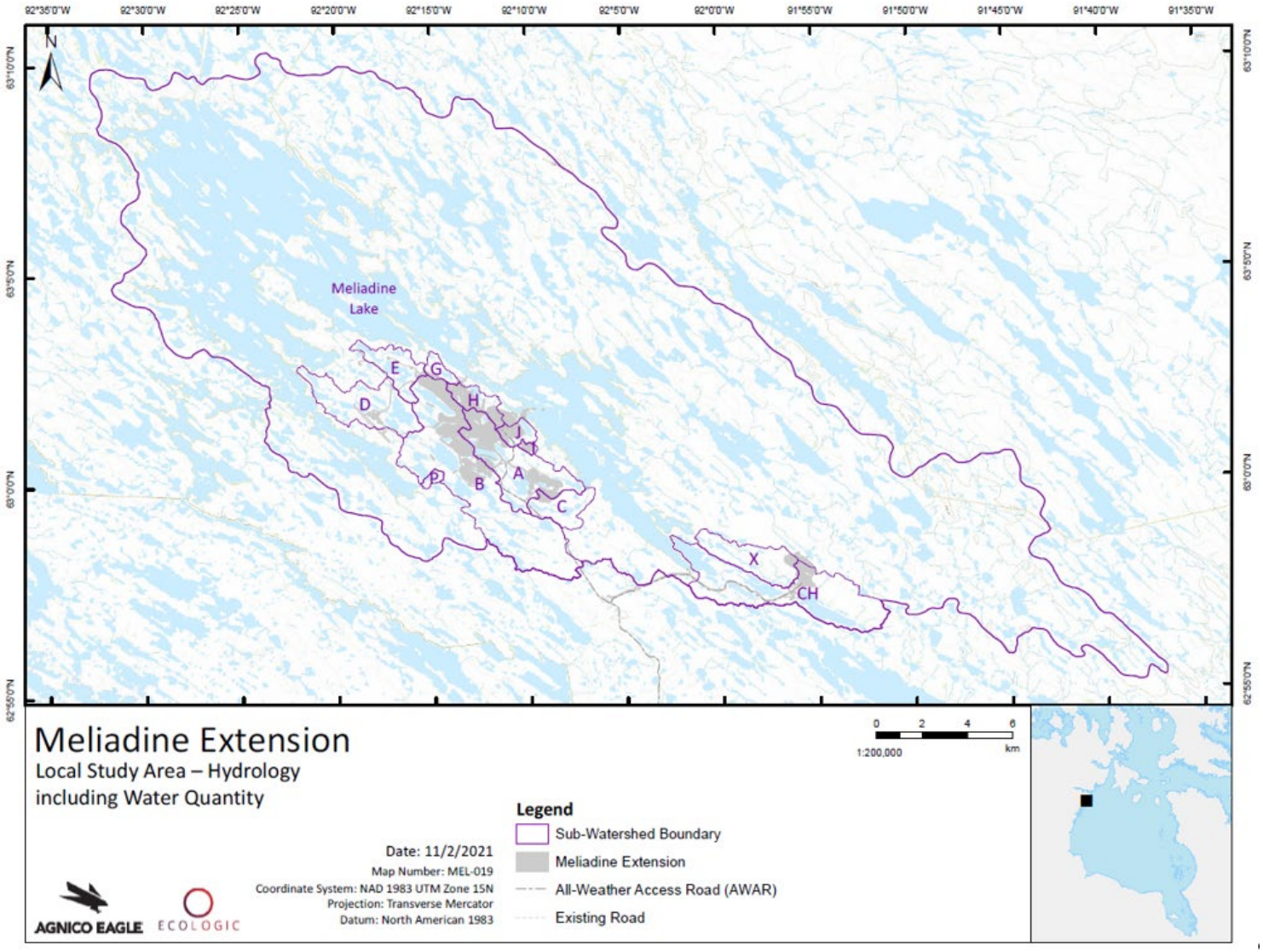
4 STUDY AREA

The approved Meliadine Mine and the Meliadine Extension are located on Inuit owned lands, approximately 25 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 Bay, the Meliadine Extension is located on a peninsula (the Peninsula) between the east, south, and west basins of Meliadine Lake. Several small watersheds drain into Meliadine Lake from the Peninsula, which are made up of a series of lakes, ponds, and interconnecting streams (Figure 4-1). Lakes within the Peninsula are generally small (< 90 ha in area), shallow (< 5 m in maximum depth), and are connected through short stream sections (Golder 2012a,b). These lakes can be isolated due to lower stream flows during the summer/fall and frozen conditions during the winter (Golder 2012a,b).

Sub-watersheds within the Meliadine Lake watershed were designated by letter codes defined by Golder (2012 a,b). Waterbodies and watercourses within the sub-watersheds (A – J) were numbered relative to their position in the drainage, with numbers increasing in the upstream direction within a chain of waterbodies (ERM, 2021b). Streams were designated using the corresponding waterbody number/letter codes (e.g., Stream A1-A2 connects waterbodies A1 and A2 in Basin A). As identified in previous field program reports (ERM, 2021b), 'Chain' is used to refer to a series of waterbodies within the same basin/drainage (e.g., A-Chain, refers to waterbodies within Basin A).

The study area for the 2022 field program included 76 lakes and ponds and their connecting channels in and around the Meliadine Extension area. Waterbodies were selected based on the Meliadine Extension general site layout and prioritized based on the availability of existing baseline data from the FEIS (Agnico Eagle 2014), or where data would be considered insufficient to understand existing conditions. Data was collected in the A, B, and H – Chains, the Discovery Road (D) and Discovery Deposit areas (E, W, CH). Reconnaissance data for offsetting was collected around Nipissar Lake, Meliadine River, Km 10 (AWAR) and areas of interest to the Community for offsetting potential (Char River, Suluppqugaliit, Iquutuuq, Pistol Bay). A total of 76 waterbodies (lakes and ponds) and 41 watercourses (streams and channels) were assessed for fish, fish habitat and offsetting potential during the 2022 field programs. A summary table of fish and fish habitat data collected in 2022 has been provided in Appendix A, Table A-3 to A-7. Figure 5-1 to Figure 5-6 identifies the fish habitat sampling locations and Figure 5-7 to Figure 5-10 shows the fish community sampling locations.

Figure 4-1: Local Study Area Watersheds



5 METHODS

Fish and fish habitat data was collected during 3 separate field trips:

- June 8 to June 20, 2022
- July 25 to August 8, 2022
- September 23 to October 5, 2022

5.1 Fish Habitat

Watercourse (Streams and channels) and waterbody (ponds and lakes) fish community and habitat reconnaissance assessments were conducted within 41 streams and 76 ponds within the A, B, H, Discovery Road (D), Discovery Area (E, CH and W) Chain systems during the open water season in 2022. Fish habitat summary data are presented in Appendix A, Table A-3, Figure 5-1 to Figure 5-4 below, shows the fish habitat sampling locations . Habitat reconnaissance data was also collected in Nipissar Lake, Meliadine Lake, Char River, Meliadine River, Suluppqugaliit River, Iquutuuq River and Pistol Bay. Habitats were surveyed using standard methodologies similar to those described for conducting a reconnaissance level 1 field survey in the Fish Habitat Assessment Procedures (FHAP; Johnston and Slaney 1996).

Habitat area in watercourses was determined by length, width and depth (bankfull); substrate composition (% abundance of bedrock, boulders, cobble, gravel, and fines); residual pool depth, bank stability, and bank height. Stream attributes were marked using a handheld GPS unit and representative photographs were taken. Cross-sectional stream flows were assessed for 4 streams. Barriers or seasonal restrictions to fish migration were also noted and measured, where appropriate. Digital photos and habitat notes were taken and are provided in (Appendix B).

The connectivity of each stream to other fish-bearing waterbodies was assessed to determine whether the stream might provide seasonal habitat to fish. Small Arctic streams flow seasonally; some flow during freshet only and then become dry later in the summer, while others flow throughout the ice-free (open water) period but freeze to the substrate in the winter. These seasonal streams are only of value to fish if they are connected to other habitat types where fish can overwinter, such as lakes or deep ponds, allowing fish to migrate from or into overwintering habitats during the open water season.

Overall fish habitat quality was assessed for each waterbody and watercourse using similar methods applied in previous reports (ERM, 2021) and are presented in Table 6-1. The connectivity of each stream to other fish-bearing waterbodies was assessed to determine whether the stream might provide seasonal habitat to fish. Small Arctic streams flow seasonally; some flow during freshet only and then become dry later in the summer, while others flow throughout the ice-free (open water) period but freeze to the substrate in the winter. These seasonal streams are only of value to fish if they are connected to other habitat types where fish can overwinter, such as lakes or deep ponds, allowing fish to migrate from or into overwintering habitats during the open water season.

Table 5-1:Habitat Quality Ratings

	Habitat Quality Rating			
	Good	**Fair**	**Poor**	**None**
Spawning	The presence of high-value spawning habitat (e.g., locations with an abundance of suitably sized spawning substrates for the fish species present).	The presence of suitable spawning habitat (e.g., locations with some suitably sized spawning substrates for the fish species present).	The presence of suitable spawning habitat but where another factor may limit spawning potential (e.g., access to suitably sized spawning substrates is limited by flow conditions).	The absence of suitable spawning habitat (e.g., little or no suitably sized spawning substrates for the fish species present).
Rearing	The presence of high-value rearing habitat (e.g., locations with an abundance of deep pools, undercut banks, or stable debris)	The presence of suitable rearing habitat (e.g., some locations that provide rearing cover such as deep pools, undercut banks, or stable debris).	The presence of suitable rearing habitat but where another factor may limit rearing potential (e.g., suitable flow conditions but limited cover).	The absence of suitable rearing habitat (e.g., water depth or flow conditions not suitable for rearing for the fish species present).
Migration	Stream conditions (e.g., depth, velocity, water quality, presence of barriers, etc.) allow for unimpeded fish passage on the survey date.	Stream conditions are suitable for fish passage on the survey date (e.g., may be impediments but no passage barriers).	Stream conditions are not suitable for fish passage on the survey date (e.g., inadequate depth or flow, presence of temporary passage barriers).	The absence of suitable migration habitat on the survey date (e.g., NDC, dry channel, permanent barrier).
	High	**Moderate**	**Low**	**None**
Overall Value	Habitat supports all life stage uses for fish.	Habitat supports fish but lacks at least one life stage use.	Habitat may support fish, but does not provide all life stage uses, or is seasonal in nature.	At least one parameter prevents the use of stream as habitat for any life stage (e.g., barriers, water level, temperature, conductivity, pH).

*Table adapted from ERM, 2021

Figure 5-1: Fish Habitat Sampling Locations in 2022 - Meliadine West

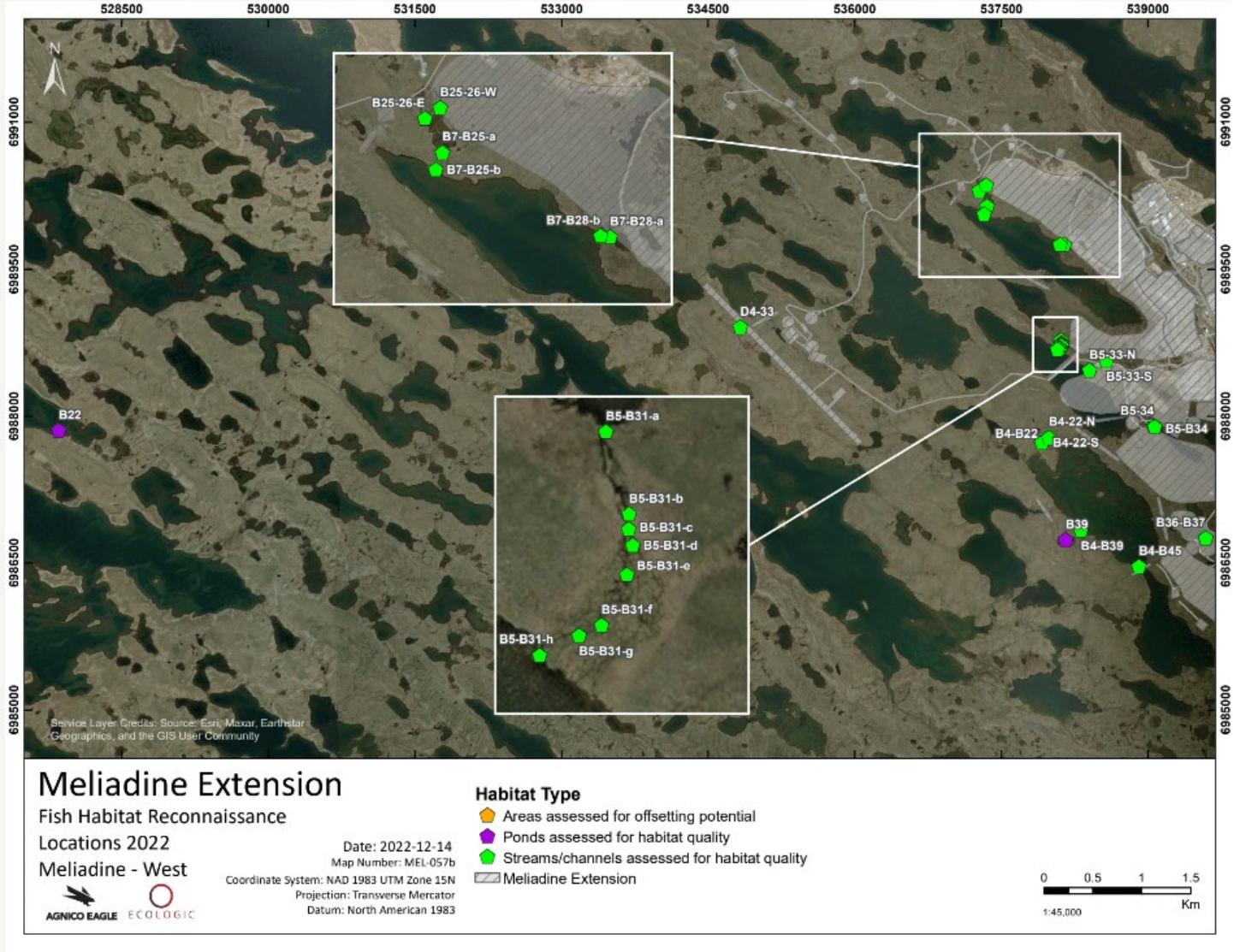


Figure 5-2: Fish Habitat Sampling Locations in 2022 – Meliadine East

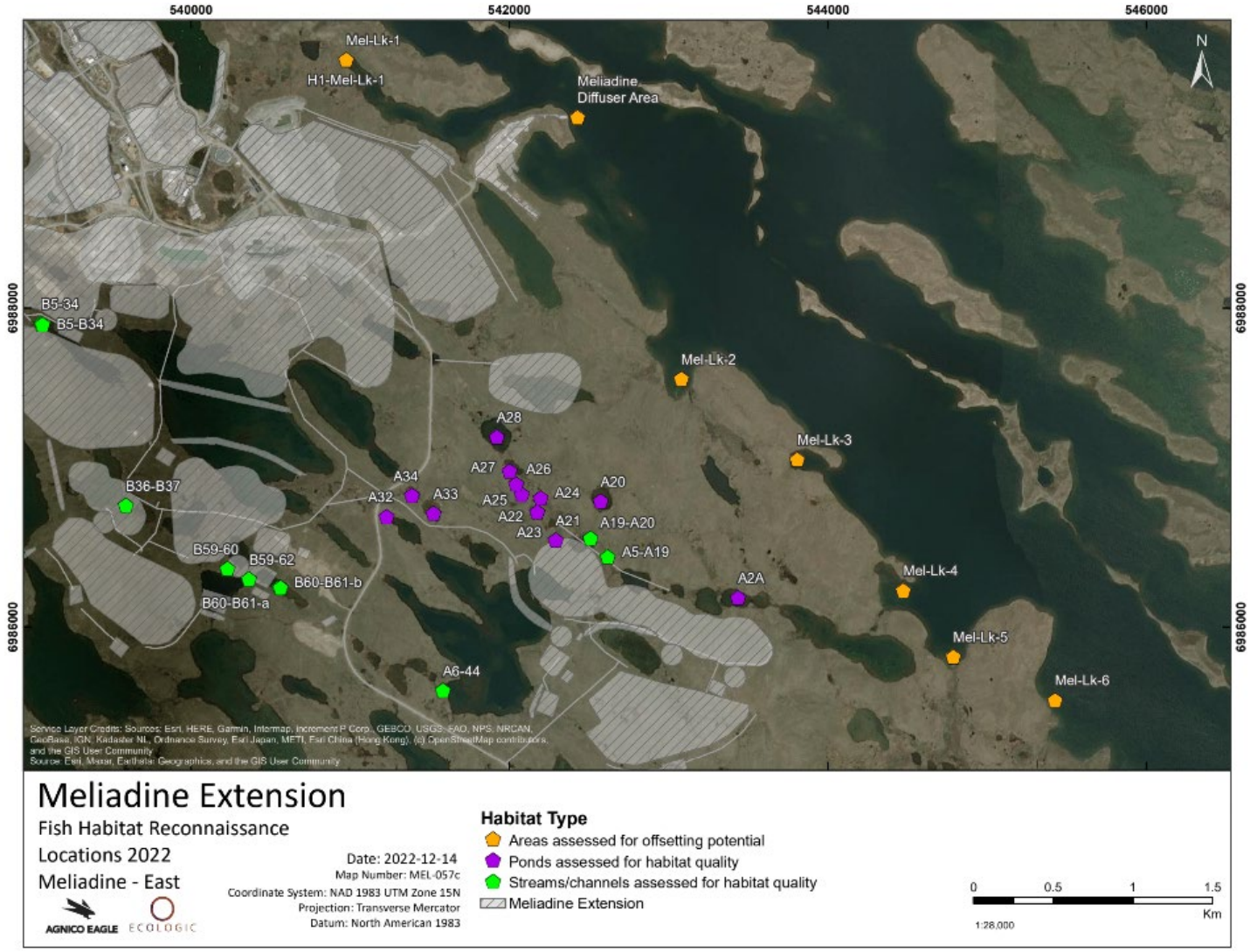


Figure 5-3: Fish Habitat Sampling Locations in 2022 – Road to Discovery

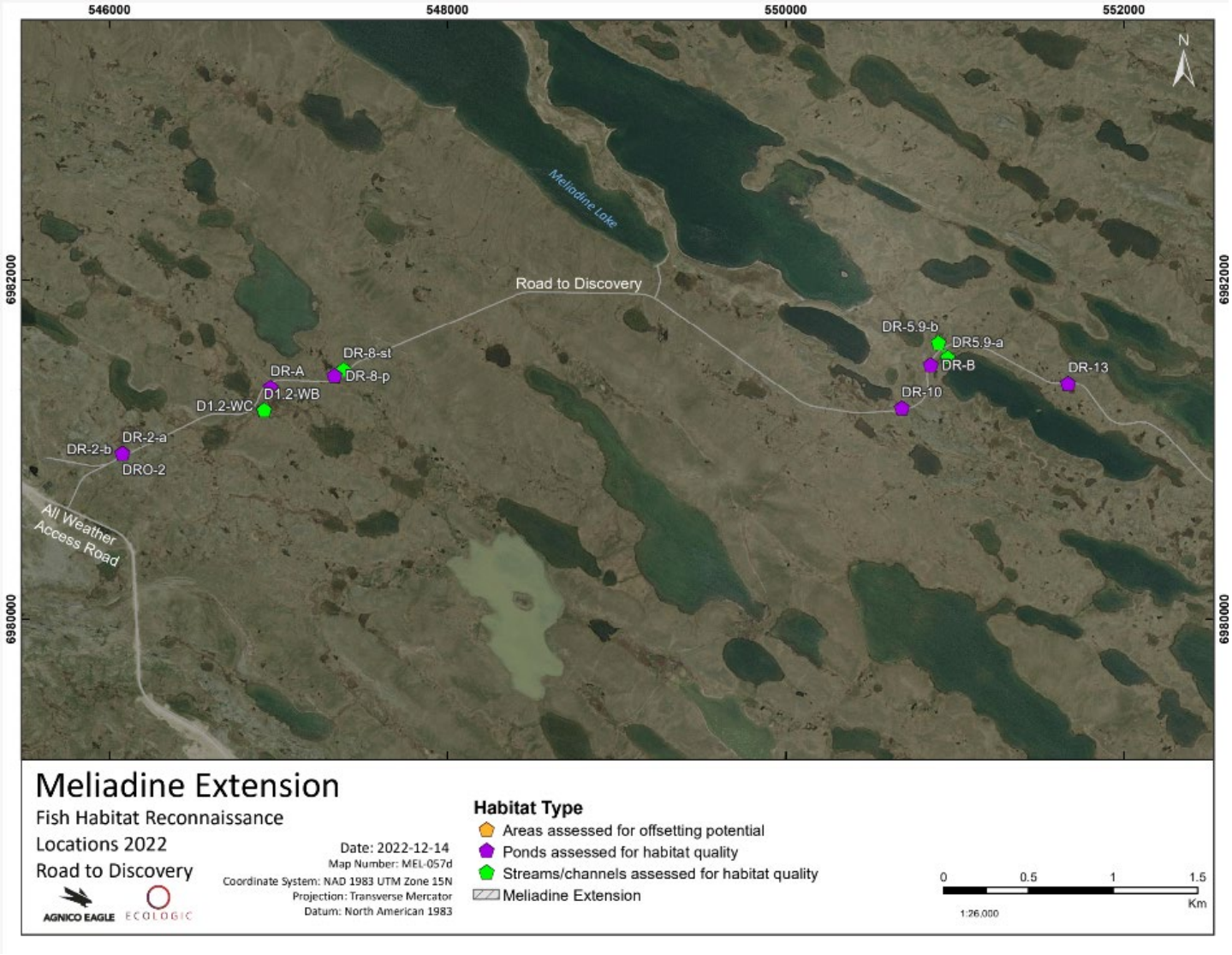


Figure 5-4: Fish Habitat Sampling Locations in 2022 - Discovery

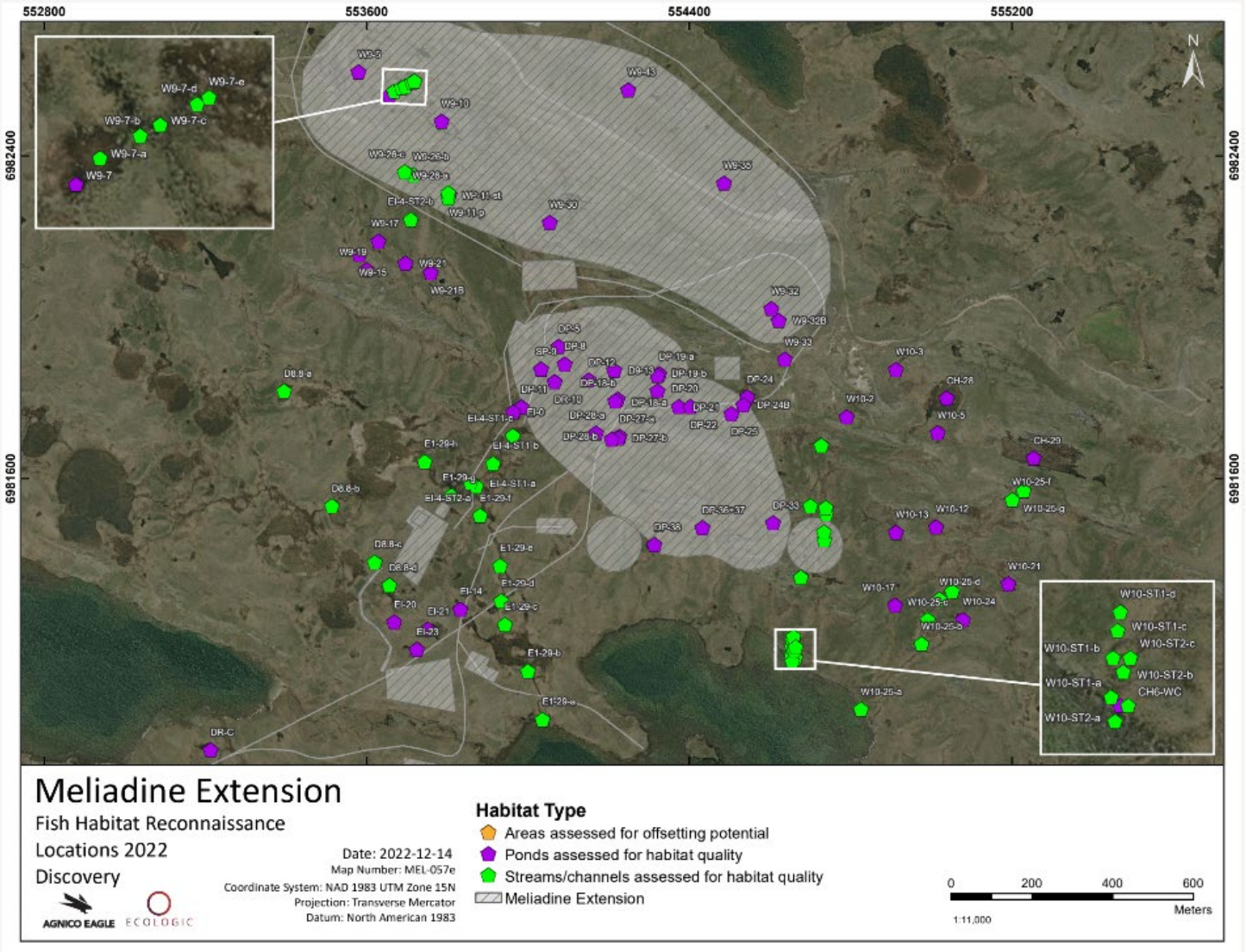


Figure 5-5: Fish Habitat Sampling Locations in 2022 – Rankin North

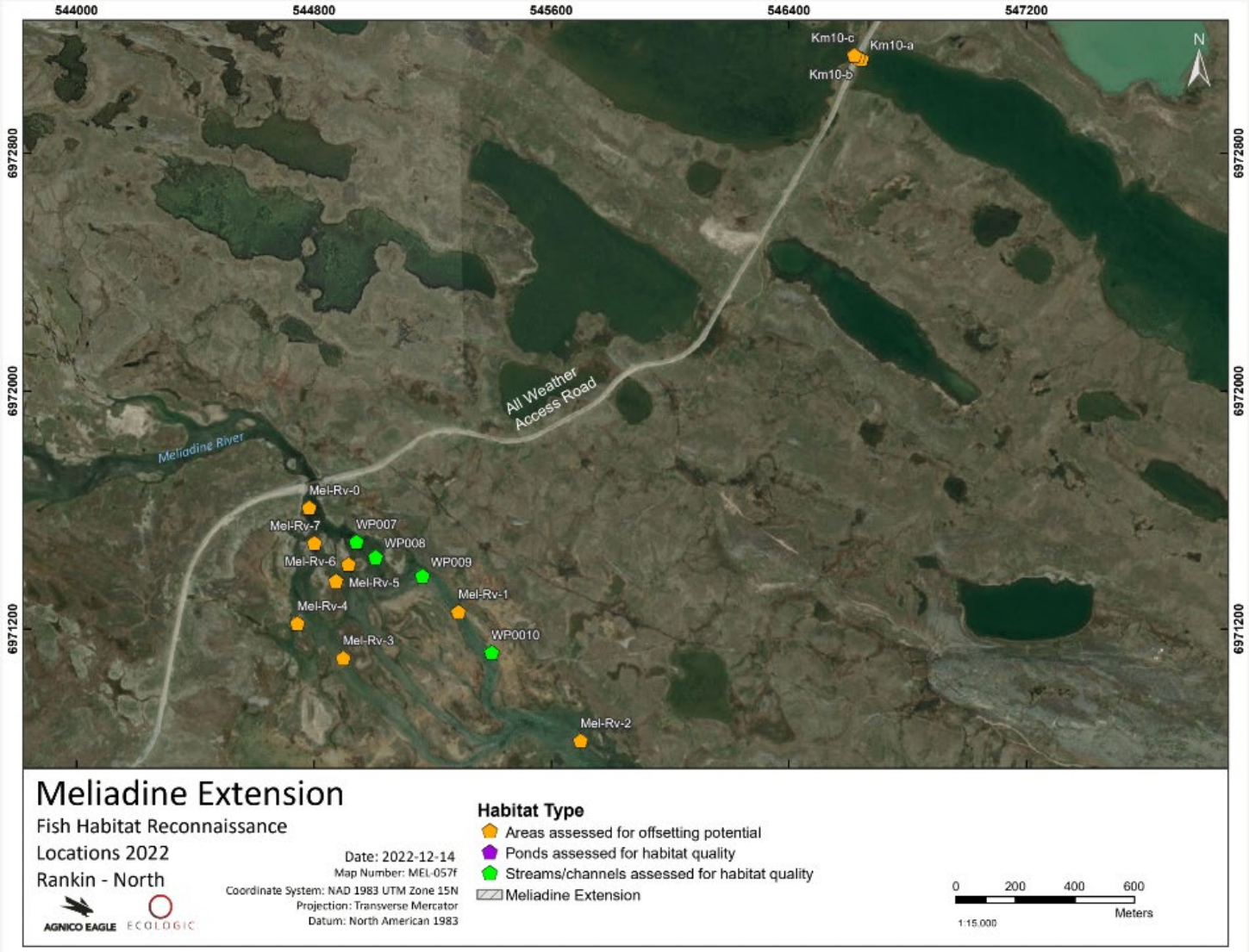
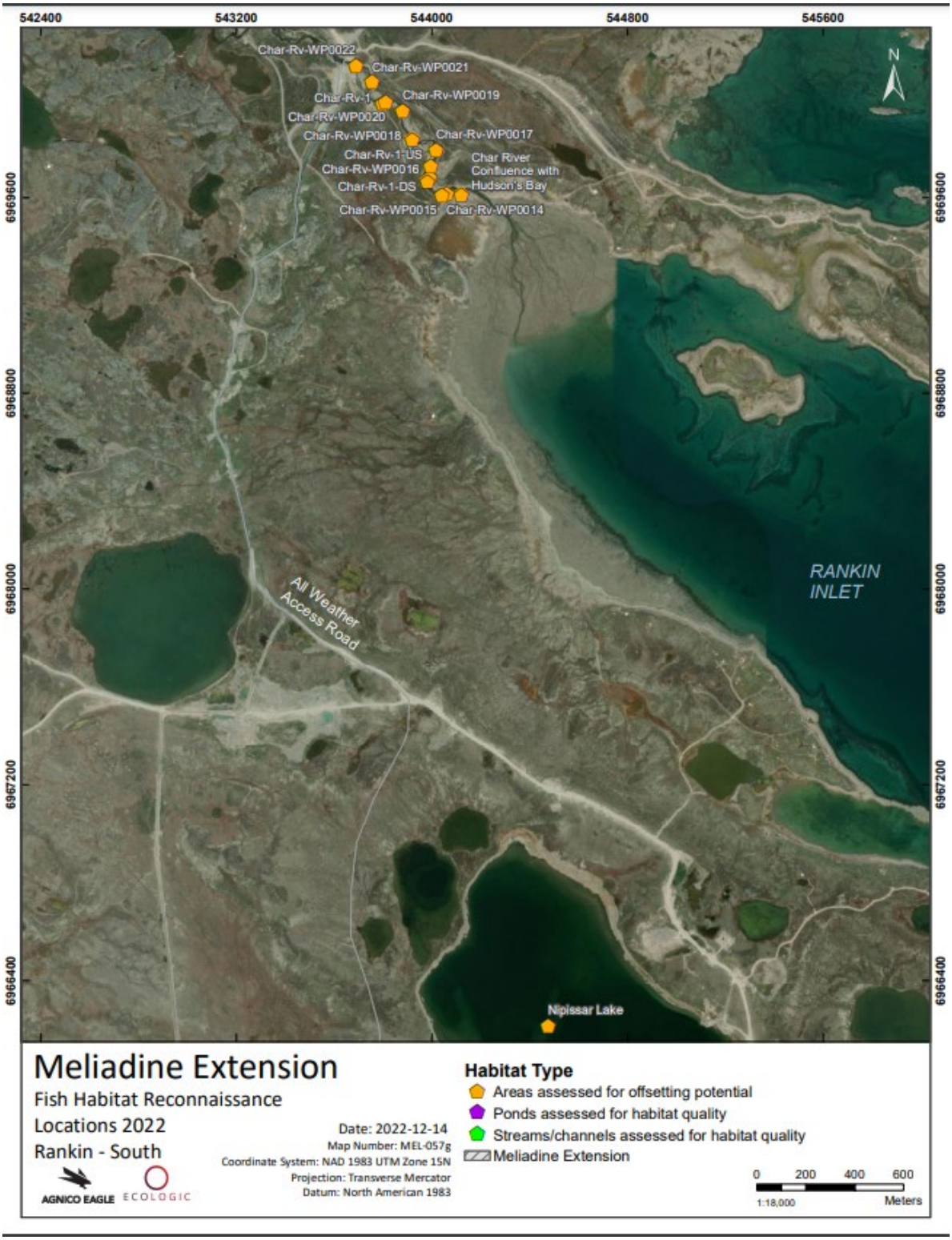


Figure 5-6: Fish Habitat Sampling Locations in 2022 – Rankin South



5.2 Fish Community

Sampling gear included minnow traps and electrofishing since ponds/lakes were predominantly less than 2 m deep. All fish sampling was non-lethal, with no incidental mortalities observed. Prior to collecting meristic data, all fish were transferred to buckets (~1 to 4 gallons) filled with fresh and well-oxygenated water to recuperate prior to release. Portable air bubblers and water transfers were also used as necessary to minimize fish stress. The number of fish per tub or bucket was dependent on size of fish and the number captured. All fish captured will be identified to species, measured for fork length (+/- 0.1 cm) and weighed (+/- 0.01 g) and subsequently released at the site of capture. Larger fish will also be assessed for sex and maturity (when possible). All fish will be inspected for overall condition and the presence of parasites or abnormalities (Deformities, Eroded fins, Lesions and Tumours – DELTS), with photographs taken of any parasites or abnormalities observed.

Fish community sampling summary data are presented in Appendix A, Figure 5-5 to Figure 5-8 identifies the fish community sampling locations. Fish community sampling was conducted under an amended License to Fish for Scientific Purposes (LFSP; S-22/23-1029-NU) issued by Fisheries and Oceans Canada on July 8, 2022. Summary tables of fish captured are provided in Appendix A.

5.2.1 Electrofishing

Backpack electrofishing was used to sample fish communities at 23 lakes and ponds and 18 streams and channels between July 25 and October 5, 2022 (Appendix A, Table A-6). Fishing could not be conducted during the June field trip as the DFO Licence was not issued until July 8, 2022. A Halltech-2000 battery powered backpack electrofisher was used, accompanied by one dip netter. An anode ring diameter of 28 cm and a dip net diameter of 21 cm with 3.2 mm mesh were used. A systematic sweep sampling approach was conducted; the shoreline was sampled between the water's edge to the maximum safe wading depth.

The primary objective of the Reconnaissance survey in 2022 was to confirm fish presence/absence and not to collect detailed fish community data. Electrofisher voltage (V), and frequency (Hz) settings were adapted to maximize capture efficiency at each site. Fish that were observed but not captured were recorded. All captured fish were immediately placed in a holding tank for species identification, enumeration, and biological processing, and then released.

Figure 5-7: Fish Community Sampling Locations 2022 - A and B Chain

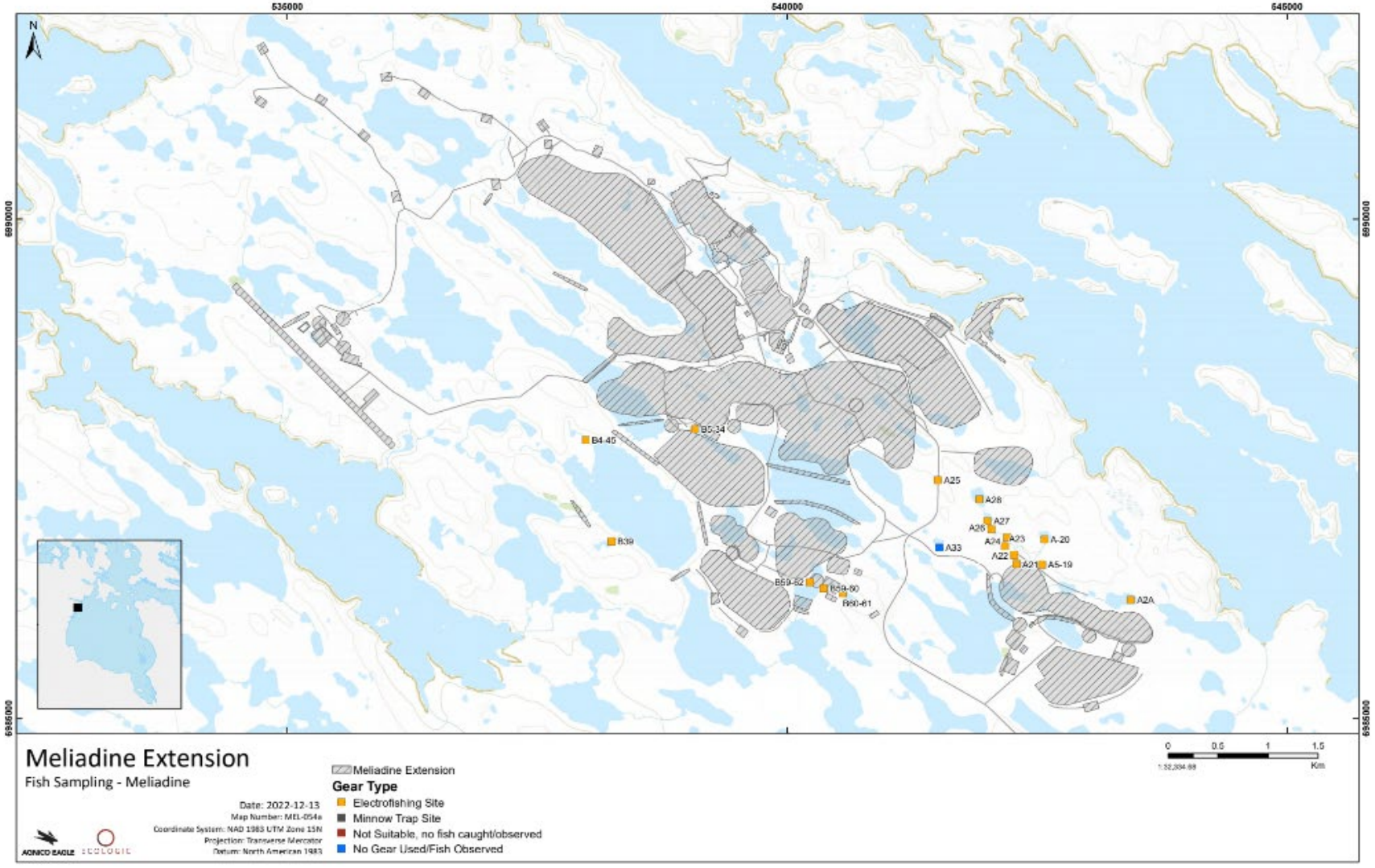


Figure 5-8: Fish Community Sampling Locations 2022 - Discovery Rd West

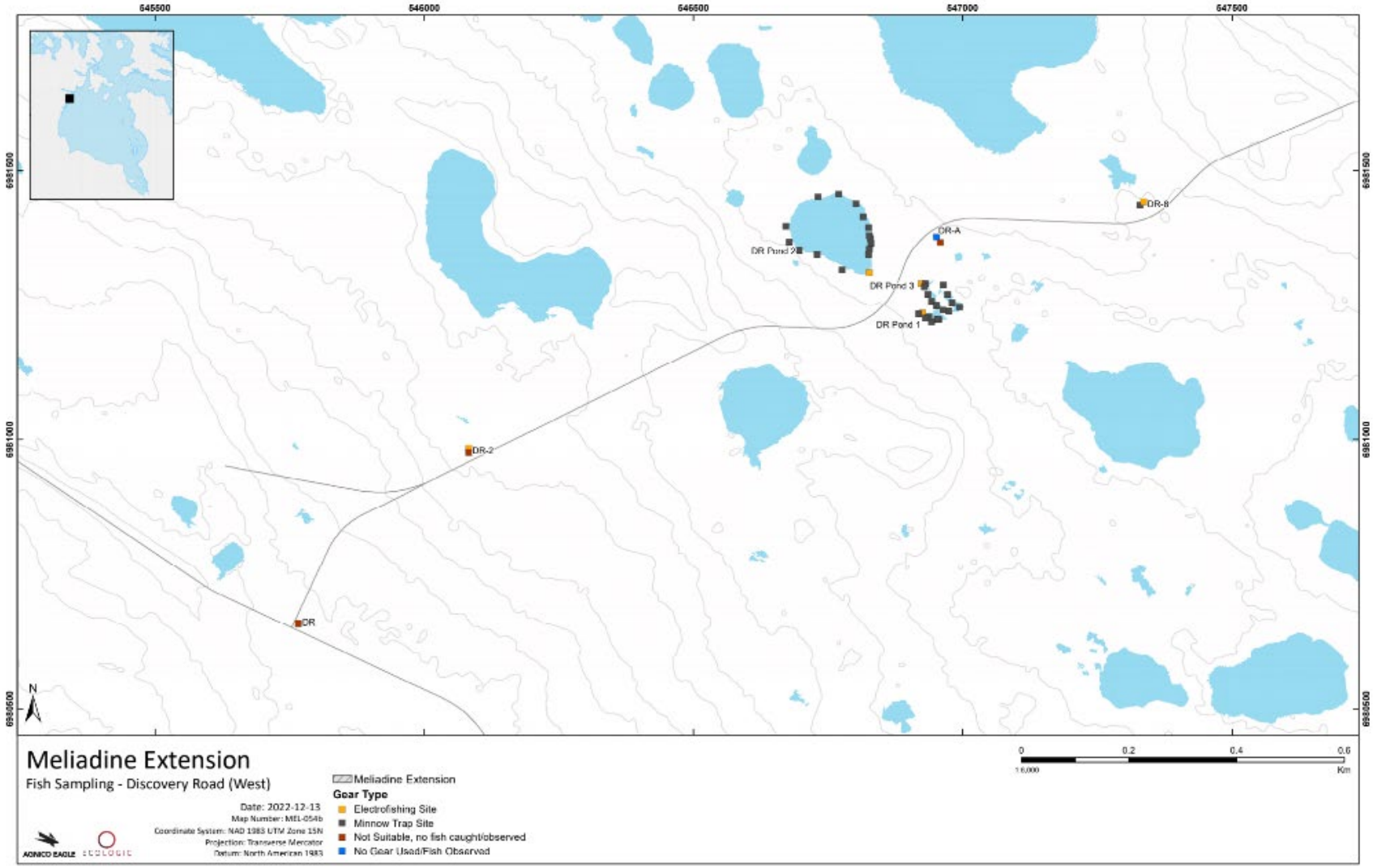


Figure 5-9 Fish Community Sampling Locations 2022- Discovery Rd Center

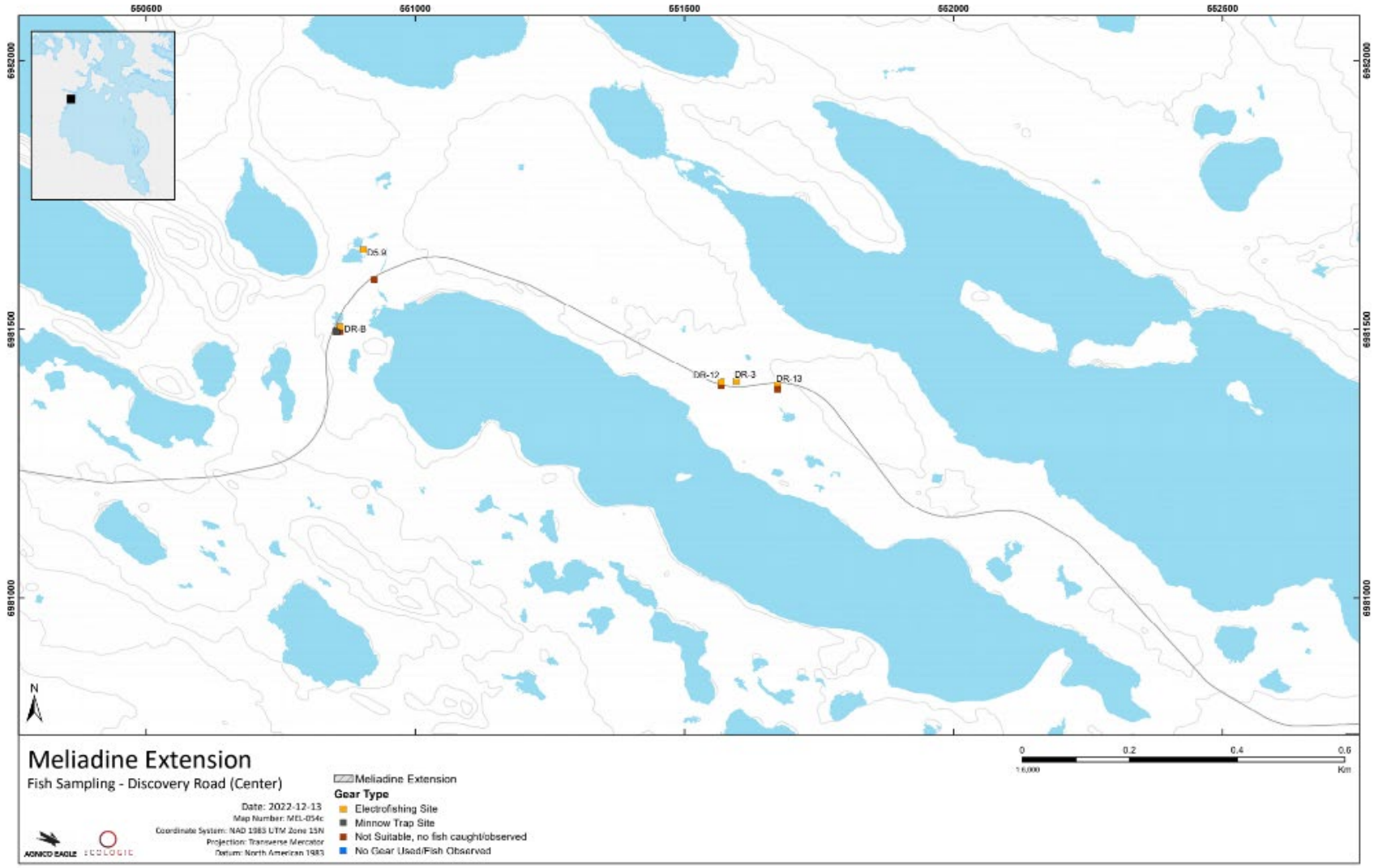
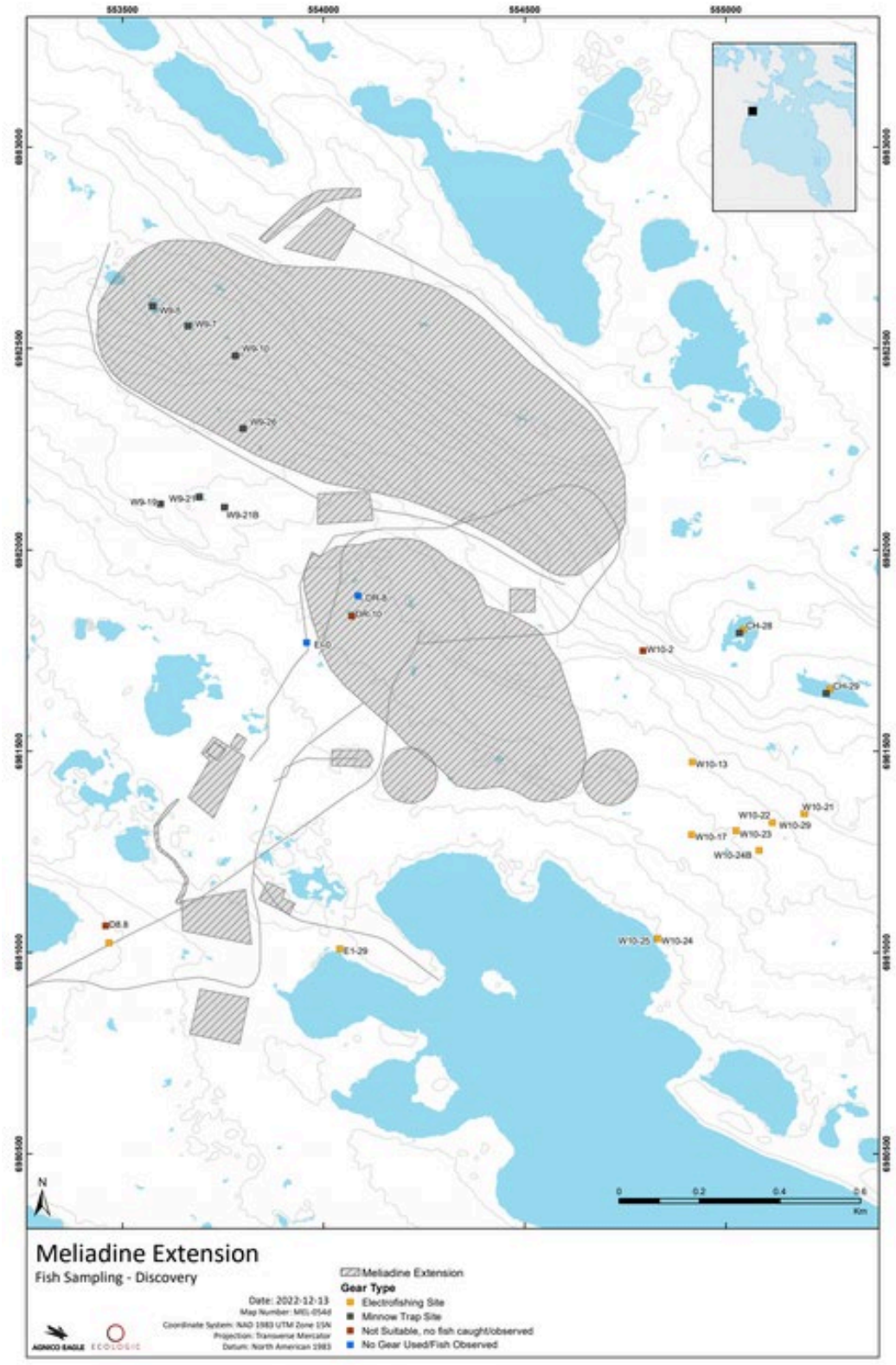


Figure 5-10: Fish Community Sampling Locations 2022- Discovery



5.2.2 Minnow Trapping

A total of 61 cylindrical minnow traps (43 cm long, 23 cm in diameter, with 6.5 mm mesh, entrance diameter 3 cm) were deployed to sample small-bodied fish in 15 lakes and ponds between July 25 and October 5, 2022 (Appendix A, Table A-6). Traps were baited with dry cat food and deployed along the shoreline within a representative range of habitat types to capture fish of different ages, and species with varying habitat preferences. Traps were immersed for approximately 24 hours (h) and retrieved on the following day.

5.2.3 Fish Metrics

All captured fish were immediately placed into a holding bin or bucket containing fresh water from the location of capture before being identified to species, enumerated, and given a unique sample number.

Fork length (or total length for Slimy Sculpin (*Cottus cognatus*) was measured to the nearest 1 mm with a measuring board and wet weight was measured using an electronic balance. Parasites or deformities, erosions, lesions and tumors (DELTs) or any other abnormalities observed were noted on the tally sheets.

5.3 Offsetting Site Reconnaissance

To support the continued development of two fisheries offsetting plans (Dewatering Site Ponds and Meliadine Extension), field work was undertaken between June and October, 2022 to collect reconnaissance data at seven candidate offsetting sites: KM 10, Nipissar Lake, Char River, Meliadine River, Suluppqugaliit River, Iquutuuq River and Pistol Bay.

Agnico Eagle consulted with the Kivaliq Inuit Association (KivIA) several times throughout 2022 and met on two occasions with KivIA in the field to assess four key offsetting sites of greatest interest to the community. Iquutuuq, Suluppqugaliit, Pistol Bay and the Char River were visited June13 -14 and July 27, 2022 by the KivIA and Agnico Eagle.

Some of the offsetting measures investigated in 2022 included the restoration of historic water levels; improvements to fish movement; improved connectivity between lakes; creation of fish spawning habitat; and pit lake restoration activities. Reconnaissance activities to assess some of these measures included habitat assessments, cross-sectional stream flow monitoring, aerial surveys using drone technology and fish community surveys.

5.4 Quality Assurance and Quality Control

Quality Assurance / Quality Control (QA/QC) was implemented throughout the field program to ensure accurate data collection and analysis. Field balances were calibrated prior to the beginning of the field program, kept free of excess water and sediment, and regularly tared to maintain accuracy. Field notes were transcribed into electronic spreadsheets and all transcriptions were checked visually against the field forms and any errors corrected.

6 RESULTS AND DISCUSSION

6.1 Fish Habitat

Fish habitat surveys were conducted from June 8 to October 5, 2022 in the following locations:

- 13 ponds and 3 streams within the A-Chain;
- 2 ponds and 15 streams in B-chain;
- 1 stream in the H-chain;
- 6 ponds and 2 streams in the Discovery Road (D series); and
- 55 ponds and 21 streams in the Discovery Area (E, W, CH-series).

Detailed habitat assessment data are presented in Appendix A, Table A-3 to Table A-5. Photographic logs of all stations can be viewed in Appendix B.

Table A-3 presents the dominant habitat type in each assessment reach, the type and permanence of any natural barriers to fish passage, and the overall fish habitat quality for stream habitat considered in the assessment. Overwintering habitat was assumed to be negligible as the depths of the streams assessed (i.e., < 2 m) mean that they freeze to the substrates in winter (Agnico Eagle 2014).

Similar to previous work that has been conducted by Golder (2012a,b) and ERM (2021b), watercourse habitat for fish was dominated by shallow runs; other habitat types encountered included riffles, pools and riffle/boulder garden combinations. High quality habitats occurred in pools and deeper run habitats that were present mainly in larger streams connecting the primary chains of lakes in each Peninsula basin. Coarse substrates and abundant instream cover in these larger streams provided suitable habitat for Arctic grayling spawning, rearing and migration.

Overall fish habitat quality was assessed for each waterbody and watercourse and are presented in Appendix A, Table A-4. Numerous ponds were also investigated to assess habitat suitability for fish. Ponds were predominantly shallow with substrates dominated by fines, and vegetation and contained poor to moderate fish habitat. Many of the ponds were shallow, isolated and lacked connectivity to other water features. Where fish were present, ninespine stickleback was the dominant species, which corresponds with the baseline (Golder, 2012 a,b) and more recent fish community studies (ERM, 2021b). Some fishless ponds contained moderate to high habitat quality. In contrast, habitat quality was rated low to moderate in many of the ponds where fish presence was confirmed. Regardless of the habitat potential ratings, ponds in close proximity to fish-bearing waterbodies (e.g., Meliadine Lake) had a higher likelihood to support small-bodied fish. This suggested that fish presence was more closely related to connectivity and proximity to fish-bearing waterbodies than to the quality of habitat encountered.

6.1.1 Habitat Quality (Ponds and Streams)

6.1.1.1 A-Chain

Habitat quality (Appendix A, Table A-5.) in the A-Chain streams and ponds was dominated by very shallow ponds and ephemeral features that were not suitable fish habitat. Three ponds (A-25, A-27, A2A) and one stream (A5-A19) were identified as having low habitat quality and Three ponds (A-28, A-33, A-34) were identified as having moderate to high quality fish habitat.

6.1.1.2 B-Chain

Habitat quality (Appendix A, Table A-5). in the B-Chain streams and ponds was dominated by shallow ponds that were not connected by a defined stream and ephemeral stream features. Stream channels in the late summer and fall appeared to be dominated by temporary overland flow of precipitation due to wind activity rather than by permanent channels between ponds. Approximately 44% of the ponds and streams were not suitable fish habitat; 36% were of low-quality habitat with some poor rearing and migration habitat only suitable for ninespine stickleback. One pond (B-39) and 1 stream (B5-B31) had moderate habitat quality for ninespine stickleback with two streams (B4-B45 and B5-B34) having high quality fish habitat for both ninespine stickleback and Arctic grayling.

6.1.1.3 H-Chain

Only one watercourse (H1-Mel Lake) was assessed in the H-Chain. The channel was fairly well defined and appeared to be a good candidate location for Arctic grayling spawning shoal enhancements. See Appendix A, Table A-5 for summary of results.

6.1.1.4 Discovery Road (D Series)

Approximately 40% of the ponds and streams along the discovery road (D series) that were assessed in 2022 had no suitable quality fish habitat. Of the remaining assessed ponds and streams, 30% had low quality fish habitat (D1.2, DP-27, DP-28 and DP-8) and 1 stream/channel (D1.2) that was marginally acceptable for rearing and migration; 10% had moderate ninespine Stickleback habitat (all occurred in one pond (DR-10)); and 20% had high quality habitat (all in DR5.9 and D8.8) that was good for both Arctic Grayling and ninespine stickleback spawning, rearing and migration. See Appendix A, Table A-5 for summary of results.

6.1.1.5 Discovery Area (E, W, CH-series)

Waterbodies in the Discovery area within the E, W and CH series (Appendix A, Table A-5) assessed in 2022 (~67%) were predominantly non-fish bearing and not suitable habitat for fish due to depth, substrate and lack of connectivity to other water features. A total of 2 streams and 2 ponds in the Discovery Area showed potential for high quality ninespine stickleback and Arctic grayling habitat; 1 stream (W9-26) showed potential for moderate quality ninespine stickleback habitat; and 9 streams and10 ponds showed the potential for low quality ninespine stickleback habitat.

Approximately 63% of the E-series waterbodies and watercourses comprised of small, shallow, ephemeral feature with no inlet or outlet with no discernable fish or fish habitat; 25% comprised of low quality habitat (stream E1-4 – both channels) suitable for ninespine stickleback; and 12% comprised of high quality ninespine stickleback habitat (stream E1-29). See Appendix A, Table A-5 for summary of results.

Twelve streams in the W-series (40%) exhibited low quality ninespine stickleback habitat and all others (60%) were predominantly non-fish bearing and unsuitable for fish habitat.

Three ponds and one stream were assessed in the CH-series (Appendix A, Table A-5). All three ponds were identified as shallow with low quality ninespine stickleback habitat with no Arctic grayling habitat. The stream (CH6-WC) was discontinuous and not connected to pond CH-6 and was identified as not suitable fish habitat.

6.2 Fish Community

Three fish species were captured in the surveyed lakes, ponds, and streams including: Arctic grayling, slimy sculpin, and ninespine stickleback.

Table A-6, Appendix A identifies the fish species captured in surveyed lakes and ponds based on all sampling methods (i.e., minnow trapping or electrofishing). Fish metrics are provided in Appendix A, Table A-7). Forty-one sites were sampled by single-pass electrofishing and 62 minnow traps were deployed in 16 waterbodies in 2022 (Appendix A, Table A-6 and Figure 5-7to Figure 5-10). A total of 131 fish were captured. Similar to previous studies, ninespine stickleback were the most widespread species comprising 86% of the total number of fish captured, followed by Arctic Grayling at 13%. Only one Slimy Sculpin was caught (<1%). The majority of the ninespine stickleback (~88%) and Arctic Grayling (100%) captured were young of the year, with only 13 ninespine stickleback and 1 Slimy Sculpin adults captured.

The presence and high abundance of ninespine stickleback in the lakes and ponds surveyed in 2022 relative to other species indicates that this species is widely distributed across the area and thus able to occupy a broad range of habitat types.

6.3 Offsetting Site Reconnaissance

To support the continued development of two fisheries offsetting plans (Dewatering Site Ponds and Meliadine Extension), field work was undertaken between June and October, 2022 to collect reconnaissance data at several candidate offsetting sites: Nipissar Lake, KM 10, and Meliadine River. Agnico Eagle also consulted with the Kivaliq Inuit Association (KivIA) several times throughout 2022 and met on two occasions with KivIA in the field to assess four key offsetting sites of greatest interest to the community. Iquutuuq, Suluppqugaliit, Pistol Bay and the Char River were visited June13 -14 and July 27,

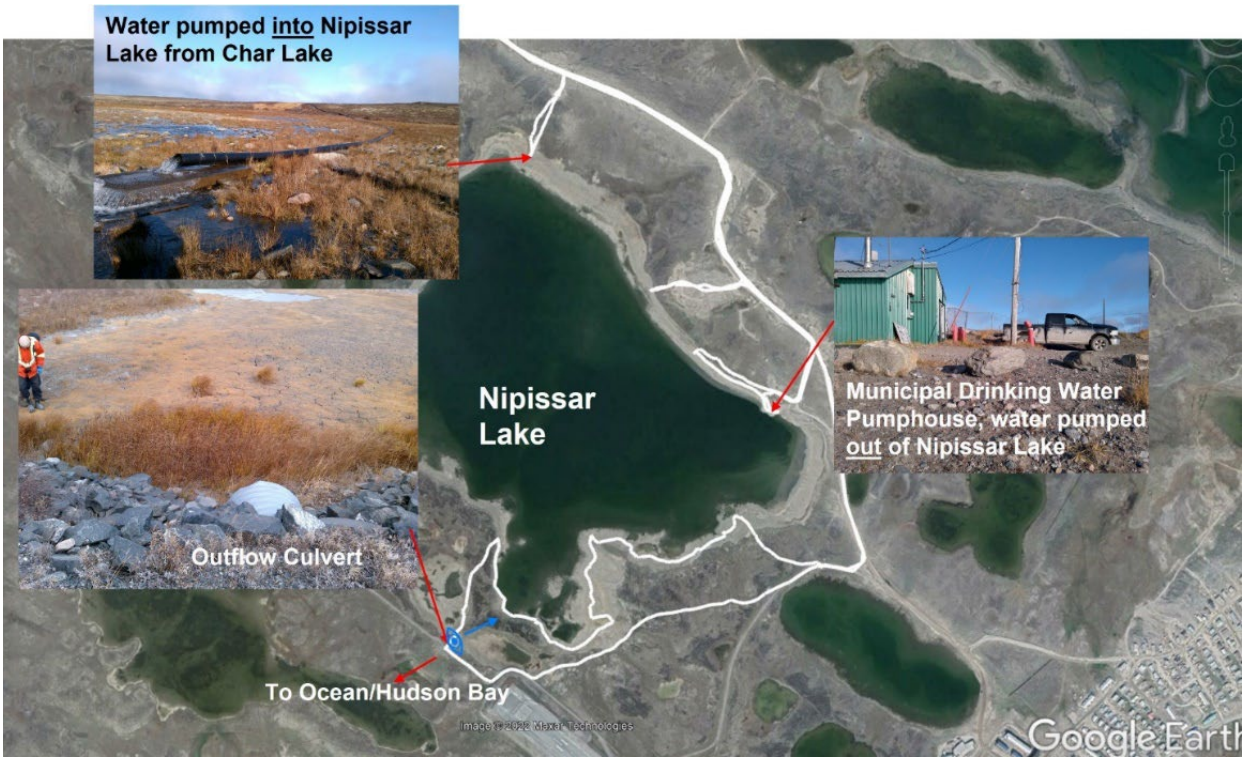
2022. A brief summary of the offsetting projects under consideration for inclusion in the offsetting plans are provided below.

6.3.1 Nipissar Lake

A reconnaissance survey was conducted on Nipissar Lake on September 25, 2022 and September 26, 2022 due to the interest by the Community to raise the lake to historic levels to support Arctic char. Field crews walked the perimeter of the south and western shorelines to characterize shoreline habitat, as well as to describe any outflow conditions. No staff gauge related to water level was found at the site. An outflow culvert was found in the southwest corner of the Lake, however, water had receded quite far from it and no water was flowing out of the lake other than drinking water taken by the community. A pipe bringing water into Nipissar Lake from Char Lake was also noted on the North/North-Eastern shoreline of Nipissar Lake. Almost the entirety (minus a very small patches) of the now exposed historic wetted shoreline is made up of Lake Trout spawning habitat (gravel/pebble/cobble/boulder). The only patch of sand substrate along the historic exposed shoreline observed was near the Municipal Pumping Station and this patch was quite limited in size (maybe 120m in length). Refilling Nipissar Lake to historic water levels could provide a large amount of spawning habitat for (gravel/pebble/cobble/boulder) spawners like Arctic Grayling and/or Lake Trout.

Figure 6-1 below shows an overview of the Area surveyed, the waterline as surveyed and images of the shoreline as observed. Additional photos are provided in Appendix B. The area not surveyed along the eastern shore appeared to be identical to the other shoreline surveyed, made of gravel, pebble, cobble and boulder type substrates.

Figure 6-1: Nippisar Lake Reconnaissance Survey - 2022



6.3.2 Kilometer 10

AWAR Kilometer 10 was assessed for potential Arctic grayling spawning habitat on June 13, 2022. Stickleback species and juvenile fish were observed downstream of the bridge. Overall, water levels were low and KivIA noted that levels were atypical for this time of year. The area under the bridge was very shallow presenting a possible barrier to fish movement between the two connecting waterbodies. KivIA indicated interest in collecting more data at this location to confirm presence/absence of species. Fish presence observed during Reconnaissance survey indicates promise for possible spawning pad construction. Depth of water and revisiting the area during higher flow conditions would be advised before moving ahead with offsetting plans. Minimal Community concerns were raised in this area since the steams have already been altered by the bridge and road construction work. This location also provides good access for mobile equipment, if required. Figure 5-5 shows the locations surveyed during the Reconnaissance work in 2022. Additional photos are provided in Appendix B.

6.3.3 Meliadine River

Meliadine River was assessed by members of the KivIA and Agnico Eagle on June 13, 2022 for Arctic grayling spawning habitat potential. Several locations were assessed beginning with the outlet of the lake

in the Iqalugaarjuup Nunanga Territorial Park (Elders Landing) that flows into the Meliadine River and then continued along the river in a westerly direction away from the Park where the AWAR crosses the river. The KivIA indicated that the spawning pads would need to be positioned downstream of drinking water collection areas due to the concern for sedimentation and impacts on drinking water quality. The Meliadine River is also a drinking water source for the community, therefore this was not considered an ideal or preferred site for the creation of spawning habitat. It was identified that locations further downstream closer to the outlet to Hudson Bay may be more suitable. Several construction constraints were identified such as machine accessibility into the park due to the terrain as well as this option would require authorization from the Government of Nunavut to be able to undertake construction within the Territorial Park as well as approval from the Hamlet of Rankin Inlet. Figure 6-3 and Figure 6-4 shows the Meliadine River Reconnaissance survey locations visited in 2022. Additional photos are provided in Appendix B.

Figure 6-2: Meliadine River Reconnaissance Iqalugaarjuup Nunanga Territorial Park (Elders Landing) - 2022

Figure 6-3: Meliadine River Reconnaissance - 2022

6.3.4 Char River

Char River was surveyed on June 13, 2022 and it was determined that this location could be suitable for both Arctic char and Arctic crayling pad installations for improvements in flow and connectivity. This location was identified as a good option for offsetting as the Community used to fish here until changes in flows and water levels resulted in fish declines. Lower Landing Lake feeds Char River, then it flows into Hudson Bay. Reconnaissance surveys were conducted from the mouth of the Char River into Hudson Bay to assess barriers to fish movement. Potential for improved fish passage was assessed where the channel could potentially be redirected through movement of in-stream rock to create a deeper and more direct channel. Consider manually digging channel with shovels and wheelbarrows. Potential grayling spawning pads near bridge, lake and weir area but would need to be positioned downstream of any drinking water collection areas. There was a possible small area for a spawning pad upstream of the AWAR. Downstream locations do not appear suitable with narrow, high banks. A small man-made weir, constructed by fishermen was identified downstream of the AWAR. There is interest from the KivIA to remove that structure to allow fish passage once again. Figure 5-6 shows the locations where Reconnaissance surveys were conducted along the Char River in 2022. Additional photos are provided in Appendix B.

6.3.5 Suluppquagaliit

At the Suluppquagaliit site, juvenile and adult sized Char were observed near the dispersed channels where there is a boulder field posing major obstacle to char migration from the ocean to lake Sulu, north of Hudson Bay. A proposed offsetting project would comprise of approximately 600 m of channel restoration activities which may include the following:

- Creating a 2m wide channel though the middle.
- Enhanced channel alignment to create a more defined channel through the boulders to allow easier fish passage to connecting lake from Hudson Bay.

Figure 6-2 shows the approximate location of the Suluppquagaliit Reconnaissance Survey. Additional photos are provided in Appendix B.

Figure 6-4: Suluppquagaliit Reconnaissance Survey - 2022

6.3.6 Pistol Bay

Pistol Bay was identified as another potential location for habitat offsetting. Previous surveys conducted in 2021 had already identified this area as a promising location for fish offsetting. On June 14, 2022 aerial

reconnaissance of Pistol Bay was conducted however snow and ice cover prevented the field crew from landing to further assess. Figure 6-3 shows the general location of the Reconnaissance in 2022. Additional photos are provided in Appendix B.

Figure 6-5: Pistol Bay Reconnaissance - 2022

6.3.7 Iquutuuq

A Reconnaissance aerial survey was also conducted for the Iquutuuq location on June 14, 2022 as the river was still iced up and the field crew was unable to safely assess on the ground. Habitat details and characteristics were impossible to clearly observe and assess for habitat offsetting potential. The KivIA indicated that barriers to fish migration were present in this location. Aerial surveys could not clearly identify the locations of the barriers to be able to obtain coordinates, return visit is proposed in this location. Iquutuuq had been assessed during previous field surveys and remains an area of interest for offsetting potential. Figure 6-4 shows the location of the Reconnaissance survey. Additional photos are provided in Appendix B.

Figure 6-6: Iquutuuq Reconnaissance Location - 2022

7 REFERENCES

Agnico Eagle (Agnico Eagle Mines Limited). 2014. Final Environmental Impact Statement (FEIS) - Meliadine Gold Project, Nunavut from: ftp://ftp.nirb.ca/02-REVIEWS/ACTIVE%20REVIEWS/11MN034-Agnico Eagle%20MELIADINE/2-REVIEW/09-FINAL%20EIS/FEIS.

ERM, 2021a. Meliadine Mine Expansion: Preliminary Evaluation of Fish Habitat Offsetting Options. Prepared for Agnico Eagle Mines Limited by ERM Consultants Canada Ltd.: Toronto, ON.

ERM. 2021b. Meliadine Extension Fish and Fish Habitat Field Program 2020-2021.

Golder Associates Ltd. 2012a. SD 7-1 Aquatics Baseline Synthesis Report, 1994 to 2009 – Meliadine Gold Project, Nunavut. Submitted to Agnico Eagle Mines Limited.

Golder Associates Ltd., 2012b. SD 7-2 2011 Aquatic Baseline Studies Meliadine Gold Project, Nunavut. Final Report.

Johnston, N. T. and P. A. Slaney. 1996. Fish Habitat Assessment Procedures. Watershed Technical Circular 8.

APPENDIX A • FISH AND FISH HABITAT DATA

Table A-1: Fishing Effort from 1997 to 2022 in the Meliadine Area Waterbodies

Waterbody Name	Waterbody Type	Year(s) Sampled	Confirmed Fish Community									Number of species
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB	
A1	Lake	1997, 2011, 2020	X	X	X			X	X	X	X	7
A10	Pond	2009, 2008						X				1
A12	Pond	2008						X				1
A13	Pond	2008						X				1
A17	Pond	1998						X				1
A18	Pond	2011						X				1
A19	Pond	2012, 2020						X				1
A1a		No Data										0
A2	Pond	1997, 2011, 2020						X			X	2
A20	Pond	2022										0
A21	Pond	2022										0
A22	Pond	2022										0
A23	Pond	2022										0
A24	Pond	2022										0
A25	Pond	2022										0
A26	Pond	2022						X				1
A27	Pond	2022										0
A28	Pond	2022						X				1
A3	Pond	2012, 2020						X				1
A30	Pond	2011						X				1
A31	Pond	2011, 2020						X				1
A33	Pond	2022										0
A34	Pond	Not Sampled						X				1
A35	Pond	2008										0
A37	Pond	2008						X				1
A38	Pond	2008										0
A39	Pond	2008, 2012						X				1
A4	Pond	2012, 2020						X				1
A40	Pond	2008, 2009, 2020						X				1
A41	Pond	2009										0
A44	Pond	2011						X				1
A45	Pond	2011						X				1
A46	Lake	2011						X				1
A49	Pond	2011						X				1
A5	Pond	1997, 2009, 2020						X				1
A50	Pond	2009, 2020						X				1
A51	Pond	2009, 2020						X				1
A52	Pond	2008, 2020						X				1
A53	Pond	2009						X				1
A54	Pond	1998, 2008						X				1
A55	Pond	1998						X				1

Table A-1: Fishing Effort from 1997 to 2022 in the Meliadine Area Waterbodies

Waterbody Name	Waterbody Type	Year(s) Sampled	Confirmed Fish Community									Number of species
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB	
A56	Pond	1998						X				1
A57	Pond	1998						X				1
A58	Pond	1998						X				1
A6	Lake	1997, 1998, 2009, 2020	X				X	X	X	X	X	6
A7	Pond	2011						X				1
A8	Lake	1997, 1998, 2020					X	X		X		3
A9	Pond	2008, 2021						X				1
B10	Pond	1998, 2008, 2009										0
B18	Pond	2012						X				1
B19	Pond	2012						X				1
B2	Lake	1997, 1998		X					X	X		3
B22	Pond	2022										0
B25	Pond	2009, 2020						X				1
B26	Pond	2009						X				1
B27	Pond	2009						X				1
B28	Pond	2009						X				1
B28a	Pond	2009						X				1
B29	Pond	2009										0
B30	Pond	2008, 2011, 2020						X				1
B31	Pond	2008, 2020						X				1
B32	Pond	2008, 2020, 2011						X				1
B33	Pond	2008, 2020										0
B33a	Pond	2009										0
B34	Lake	2011, 2020						X				1
B36	Pond	2011, 2020						X				1
B36	Pond	2020, 2011						X				1
B37	Pond	2011, 2020						X				1
B38	Pond	2011, 2020						X				1
B39	Pond	2022										0
B4	Lake	1997, 1998, 2011, 2020						X		X		2
B45	Lake	1997, 2011						X		X		2
B46	Lake	1997, 2011						X		X		2
B5	Lake	1997, 1998, 2020				X		X		X		3
B51	Pond	1997										0
B52	Lake	1997, 2011						X				1
B53	Lake	2011						X		X		2
B59	Lake	2012								X		1
B6	Lake	1997, 2008, 2020					X	X	X	X		4
B60	Lake	2012, 2020										0
B61	Pond	2011, 2020, 2012						X				1
B62	Pond	2011, 2012, 2020						X				1

Table A-1: Fishing Effort from 1997 to 2022 in the Meliadine Area Waterbodies

Waterbody Name	Waterbody Type	Year(s) Sampled	Confirmed Fish Community									Number of species
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB	
B63	Pond	2020						X				1
B69	Lake	2011		X			X	X		X		4
B7	Lake	1997, 1998, 2008, 2020				X		X	X	X		4
B8	Pond	2008, 2009						X				1
B9	Pond	1998, 2008, 2009										0
C10	Lake	2011						X				1
C6	Pond	2011						X				1
C7	Pond	2011						X			X	2
C9	Pond	2011						X				1
CH1	Lake	Not Sampled										0
CH28	Lake	2022										0
CH29	Lake	2022										0
CH6	Lake	2008		X		X				X		3
CHL	No Data	2008		X						X		2
Control	Lake	2011		X	X	X	X	X		X		6
D1	Lake	1997, 1998, 1999, 2000, 2009, 2011	X	X	X	X		X	X	X	X	8
D2	Pond	1997										0
D23	Lake	2011						X				1
D3		1997, 2011	X							X		2
D31	Pond	2021						X				1
D33	Pond	2021						X				1
D4	Pond	1997, 2011						X				1
D5	Lake	1997, 2011						X				1
D6	Pond	2011						X				1
D7	Lake	1997								X		1
D8	Lake	2011						X				1
DR Pond 1	Pond	2022										0
DR Pond 2	Pond	2022						X				1
DR Pond 3	Pond	2022						X				1
DR10	Pond	Not Sampled										0
DR12	Pond	2022										0
DR13	Pond	2022										0
DR2	Pond	2022										0
DR3	Pond	2022						X				1
DR8	Pond	2022										0
DRA	Pond	2022										0
DRB	Pond	2022										0
DRC	Pond	2022										0
E10	Pond	2020						X				1
E1-0	Pond	2022										0
E11	Pond	2020						X				1

Table A-1: Fishing Effort from 1997 to 2022 in the Meliadine Area Waterbodies

Waterbody Name	Waterbody Type	Year(s) Sampled	Confirmed Fish Community									Number of species
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB	
E12	Pond	2020						X				1
E3	Lake	2011		X	X			X				3
E4	Lake	2011, 2020						X	X	X		3
E5	Lake	2020						X				1
G1	Pond	2009						X				1
G2	Lake	1997, 2009						X				1
H1	Pond	2008, 2009										0
H10	Pond	2008, 2009						X				1
H11	Pond	2008, 2009										0
H12	Pond	2008, 2009										0
H13	Pond	2008, 2009						X				1
H13a	Pond	2009										0
H13d	Pond	2009										0
H14	Pond	2008, 2009										0
H14a	Pond	2009										0
H14b	Pond	2009										0
H14c	Pond	2009										0
H15	Pond	2008, 2009						X				1
H15a	Pond	2009										0
H15b	Pond	2009										0
H15c	Pond	2009										0
H15d	Pond	2009										0
H15e	Pond	2009										0
H15f	Pond	2009						X				1
H15g	Pond	2009						X				1
H15h	Pond	2009						X				1
H15i	Pond	2009										0
H15j	Pond	2009										0
H15k	Pond	2009										0
H15l	Pond	2009										0
H16	Pond	2008, 2009										0
H17	Pond	2008, 2009, 2011						X				1
H18	Pond	2008, 2009										0
H19	Pond	2008										0
H2	Pond	2008, 2009, 2020								X		1
H20	Pond	2008, 2011										0
H2a	Pond	2009										0
H3	Pond	2008, 2009, 2020										0
H4	Pond	2008, 2009, 2020						X				1
H5	Pond	2008, 2009, 2020						X				1
H5a	Pond	2009										0

Table A-1: Fishing Effort from 1997 to 2022 in the Meliadine Area Waterbodies

Waterbody Name	Waterbody Type	Year(s) Sampled	Confirmed Fish Community									Number of species
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB	
H5b	Pond	2009										0
H6	Pond	2008, 2009						X				1
H7	Pond	2008, 2009						X				1
H8	Pond	2008, 2009						X				1
H9	Pond	2008, 2009										0
HSL	Lake	2000		X					X			2
I1	Pond	2012										0
J1	Lake	2009, 2012						X				1
J2	Pond	2011, 2012						X				1
J3	Pond	2012										0
J4	Pond	2012						X				1
J5	Pond	2012										0
J6	Pond	2012, 2021										0
J7	Pond	2012						X				1
J8	Pond	2012						X				1
LML	Lake	1997, 1998, 1999, 2000	X	X	X				X	X		5
ML-E	Lake	1997, 1998	X	X	X	X	X		X	X	X	8
ML-S	Lake	1997, 1998	X	X	X	X			X	X	X	7
ML-W	Lake	1999, 2000	X	X	X	X			X	X		6
O2	Pond	2011	X					X				2
O4	Pond	2011						X				1
P2	Pond	2011						X				1
PAR	Lake	1998		X	X				X			3
W	Lake	2000		X					X			2
W1	Pond	2021				X		X				2
W10-13	Pond	2022										0
W10-17	Pond	2022										0
W10-2	Pond	2022										0
W10-21	Pond	2022										0
W10-22	Pond	2022										0
W10-23	Pond	2022										0
W10-24	Pond	2022										0
W10-24B	Pond	2022										0
W10-29	Pond	2022										0
W9-10	Pond	2022										0
W9-19	Pond	2022										0
W9-21	Pond	2022										0
W9-21B	Pond	2022										0
W9-5	Pond	2022										0

Table A-2: Fishing Effort from 1997 to 2022 in the Meliadine Area Watercourses

Waterbody Name	Waterbody Type	Year(s) Sampled	Confirmed Fish Community									Number of species
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB	
A0-1	Stream	1997, 1998	X	X		X	X	X		X	X	7
A1-2	Stream	1997, 1998, 2020	X	X				X		X	X	5
A19-A20	Stream	Not Sampled										0
A1-MEL	Stream	2020						X		X	X	3
A2-3	Stream	1997, 1998	X	X			X	X		X	X	6
A3-4	Stream	1997, 1998, 2020						X		X		2
A39-54	Stream	2000						X				1
A44-45	Stream	1998, 2000						X				1
A4-5	Stream	1997, 1998, 2020						X		X		2
A45-46	Stream	2008						X				1
A50-A5	Stream	2020										0
A52-A51	Stream	2020						X			X	2
A5-6	Stream	1997, 1998, 2009	X	X			X	X		X	X	6
A5-A19	Stream	2020, 2022						X				1
A6-7	Stream	1997, 1998, 2000, 2008, 2009					X	X	X	X	X	5
A6-A31	Stream	Not Sampled										0
A6-A44	Stream	Not Sampled										0
A6-A50	Stream	2020										0
A7-8	Stream	1997, 1998					X	X		X		3
A8-37	Stream	1998						X				1
A8-A40	Stream	1998, 2000						X				1
A8-A9	Stream	1998						X				1
B0-1	Stream	1997, 1998	X	X		X	X	X	X	X	X	8
B1-2	Strem	1997, 1998	X	X		X	X	X		X	X	7
B26-B25	Stream	Not Sampled										0
B30-6	Stream	2011					X	X				2
B30-B31	Stream	2011						X		X		2
B31-B32	Stream	Not Sampled										0
B36-B37	Stream	Not Sampled										0
B37-B38	Stream	Not Sampled										0
B3-B4	Stream	1997, 1998	X	X		X	X	X		X		6
B46-66	Stream	1997, 2000				X		X		X		3
B4-B2	Stream	2020						X		X	X	3
B4-B22	Stream	Not Sampled										0
B4-B36	Stream	1997					X	X				2
B4-B39	Stream	Not Sampled										0
B4-B44	Stream	2011						X				1
B4-B45	Stream	1997, 2011, 2022						X		X		2
B45-46	Stream	1997						X		X		2
B4-B5	Stream	1997, 1998, 2020				X	X	X		X		4
B51-52	Stream	1997						X		X		2
B52-53	Stream	1997						X				1
B52-75	Stream	2000						X				1
B53-54	Stream	1998, 2000						X				1
B59-B60	Stream	2022										0
B59-B62	Stream	2022										0
B5-B31	Stream	2020										0
B5-B31	Stream	2011, 2020					X	X		X		3
B5-B33	Stream	Not Sampled										0
B5-B34	Stream	2022						X				1
B5-B6	Stream	1997, 1998,					X	X		X		3
B60-B61	Stream	2022										0
B68-69	Stream	1997, 1998, 2000					X	X		X		3
B6-B30	Stream	2020										0

Table A-2: Fishing Effort from 1997 to 2022 in the Meliadine Area Watercourses

Waterbody Name	Waterbody Type	Year(s) Sampled	Confirmed Fish Community									Number of species
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB	
B6-B7	Stream	1997, 1998, 2020				X	X	X		X		4
B75-80	Stream	2000						X				1
B7-B25	Stream	Not Sampled										0
B7-B28	Stream	Not Sampled										0
B7-B8	Stream	1998						X				1
B8-B9	Stream	Not Sampled										0
B9-B10	Stream	Not Sampled										0
D0-1	Stream	1997, 1998, 2000	X	X	X	X	X	X	X	X	X	9
D1.2	Stream	2008						X				1
D1-2	Stream	1997					X	X		X	X	4
D3-4	Stream	1997						X				1
D4-5	Stream	1997						X				1
D4-D33	Stream	Not Sampled										0
D5.4	Stream	2012										0
D5.8	Stream	2008										0
D5.9	Stream	2022, 2009						X		X		2
D5-D6	Stream	1997						X				1
D6-7	Stream	1997						X				1
D8.8	Stream	2012, 2022					X	X		X		3
E1-29	Stream	2022						X				1
E4-5	Stream	2011						X				1
F0-1	Stream	1997		X			X	X		X	X	5
F5-6	Stream	1997						X				1
G0-1	Stream	1997, 2009		X				X			X	3
G1-2	Stream	1997						X				1
H0-1	Stream	2009, 2012						X		X		2
H1-2	Stream	2012						X				1
H1-H19	Stream	Not Sampled										0
H2-3	Stream	2012										0
H3-4	Stream	2012										0
H4-5	Stream	2012										0
H5-17	Stream	2009, 2012						X				1
HSL-W	Stream	1998, 2000		X		X	X	X		X		5
J0-1	Stream	2004						X				1
LML-MR	Stream	1998	X			X		X		X		4
M11.5	Stream	2008						X		X		2
M11.6	Stream	2008										0
M13.3	Stream	2008						X				1
M2.1	Stream	2008						X		X		2
M22.6	Stream	2008						X				1
M23.7	Stream	2008					X	X		X		3
M3.0	Stream	2008						X				1
M3.9	Stream	2008										0
M5.0	Stream	2008						X				1
M8.6	Stream	2008										0
ML-MR	Stream	1997, 1998	X	X			X	X		X	X	6
ML-PL	Stream	1998, 1999, 2000	X	X	X	X	X		X	X	X	8
MR-L	Stream	1997, 1998, 1999	X	X	X				X	X		5
MR-U	Stream	1997, 1999		X						X		2
W10-25	Stream	2022						X				1
W9-26	Stream	2022						X				1
W-LML	Stream	2000	X	X			X			X		4
W9-7	Stream	2022										0

Table A-3: Fish Habitat Assessed in 2022

Waterbody Name	Date	Start Time	End Time	Recon. Type	Zone	Starting Easting GPS Coordinates	Starting Northing GPS Coordinates	Ending Easting GPS Coord.	Ending Northing GPS Coord.	Collectors	Area	Habitat Type	Length	Mean Width	Min. Width	Max. Width	Mean Depth	Max Depth	Single Channel %	Double Channel %	Multiple Channel %	Dispersed Channel %	Riffle %	Run %	Pool %	Flat %	OM	Fi	Gr	Co	Bo	UC	BG	AV	Velocity	Notes
A19-A20	9/27/2022			Stream	15U	542508	6986558	-	-	CH/AK	0	RUN																								Currently not present, possibly ephemeral. Evidence of drill mud on slope of hill down from A20 to A19.
A-20	9/27/2022	10:05	10:35	Pond	15U	542573	6986791	-	-	CH/AK	0	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	Water is low, no visible outflow. Shoreline habitat composed of cobble, pebble, bedrock some boulder. Possible pond freezes to depth in winter, there is no connection to A19 all dried up. Not very deep ~1m deep in center.
A21	9/27/2022	-	-	Pond	15U	542292	6986546	-	-	CH/AK	0	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	Very shallow - 0.15m deep in center. Frozen to bottom in places nearshore. SUBSTRATE: mud. HABITAT: Tundra, riparian.
A22	9/27/2022	-	-	Pond	15U	542176	6986721	-	-	CH/AK	0	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	Shallow. 0.5-1m deep in center shoreline. HABITAT: mostly mud and much covered in algae? (red?) some cobble on shoreline.
A23	9/27/2022	-	-	Pond	15U	542176	6986721	-	-	CH/AK	0	POOL						0.3																		Very shallow/smallish pond. No connection really to other ponds which may explain the lack of fish if it dried up in the simmer or freezes to depth in winter. 0.30m deep in center, 0.10m around perimeter. SUBSTRATE: 90% muck, 10% cobble/rubble.
A24	9/27/2022	-	-	Pond	15U	542196	6986809	-	-	CH/AK	0	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	3 ponds: West pond possibly nearly flooded. SUBSTRATE: grass, mud/muck bottom . Middle pond mud bottom grass gringe. Evidence lt completely dried out recently (ground cracked). East pond mud bottom. All ~0.40m deep all small.
A25	9/27/2022	-	-	Pond	15U	542078	6986832	541507	6987385	CH/AK	0	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	pond is very shallow ~30cm. Muck shoreline, likely connects with A26 when water levels are high. Evidence pond dried up, ground cracked under water.
A26	9/27/2022	-	-	Pond	15U	542042	6986896	-	-	CH/AK	0	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	Cobble muck on west shoreline/ Grass & muck on south east north shorelines. Water could be lower than normal.
A27	9/27/2022	-	-	Pond	15U	542003	6986979	-	-	CH/AK	0	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	Larger and deeper >1m than previously surveyed ponds. Shocked perimeter same as precious ponds. Large areas of shore are deep mud/muck not a lot of newly flooded grasses as cobble shoreline. Signs water levels are low on the bank
A28	9/27/2022	-	-	Pond	15U	541922	6987193	-	-	CH/AK	0	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	Largest & deepest water body, north shore >1.5m deep right off bank. Shoreline consists of rubble/pebble/boulder in places but predominantly older flooded tundra/grasses. Deep mud area near shoreline in places
A2A	9/30/2022	-	-	Pond	15U	543437	6986186	-	-	CH/MM/AK	0	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	Connected to P/S (pond (south)). Rubble on one side, muck/old veg on other
A32	10/1/2022	-	-	Pond	15U	541230	6986693	-	-	CH/MM/AK	-	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	completely dry
A33	10/1/2022	-	-	Pond	15U	541522	6986714	-	-	CH/MM/AK	-	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	Some flooded vegetation along shoreline with pockets of cobble/boulder/rubble, some grasses as well; shoreline frozen; NSSB observed frozen on top of ice
A34	10/1/2022	-	-	Pond	15U	541389	6986825	-	-	CH/MM/AK	-	POOL	-	-	-	-	-	-	-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	shoreline frozen; some cobble/rubble shoreline with some flooded/decaying vegetation; connection to A33 likely in the spring; no fish observed
A5-A19	9/27/2022	-	-	Stream	15U	542618	6986443	542549	6986540	CH/AK	0																								1/2 VELOCITY / DEPTH <0.05 / 0.1. SUBSTRATE: grass. Braided channel, water ponding in between hemlocks in tundra. Couldn't quantify discharge as whole area flooded some flow in areas <0.05m/s - water too shallow to read.
A6-44	10/3/2022	-	-	Stream	15U	541583	6985602	-	-	CH/AK		FLAT							100	0	0	0	0	0	0	100	-	-	-	-	-	-	-	100	-	Flooded connection between ponds. Water may not be present during normal conditions - high winds ~70 km/hr blowing water from ponds down the channel. Channel appears to be dry as evidenced by long grasses throught the wetted area.
B22	10/4/2022	-	-	Pond	15U	527859	6987860			CH/AK		POOL							0	0	0	0	0	0	100	0	100	0	0	0	0	0	0	100	-	Shoreline very mucky/deep mud; partial habitat exists in channel inlet where grasses are flooded; small pond possibly deep - deep near shore; grassy areas flooded in some areas; efished but no fish caught
B25-26 E Channel	10/3/2022	-	-	Stream	15U	537273	6990312	-	-	CH/AK	-	FLAT	-	-	-	-	0.1	0.2	0	100	0	0	0	0	0	100	30	-	-	-	-	-	-	100	-	Two streams move downhill from B26 wetted area towards B25; East channel may be year round; mud/muck in deeper water but not in the grassy areas; flows not collected due to high winds
B25-26 W Channel	10/3/2022	-	-	Stream	15U	537346	6990361	-	-	CH/AK	-	FLAT	-	-	-	-	0.1	0.2	0	100	0	0	0	0	0	100	-	-	-	-	-	-	-	100	-	West channel appears more like rain puddles than a channel relative to the East Channel
B36-B37 stream	9/30/2022	-	-	Stream	15U	539591	6986764			CH/MM/AK	0																								Very shallow 2-5cm grass and tundra substrate. Channel meanders downhill from B37 to B36 following low lying areas of ground. Stream generally frozen and not deep enough to efish - no discernible flow observed as most areas frozen - no defined channel - mainly puddle from B37 overflow across low lying ground between the two ponds
B39	9/30/2022	-	-	Pond	15U	538156	6986741			CH/MM/AK	0	POOL																								Small but deeper (>1m) pond. Largely much some cobble, no decaying veg on edges
B4-22 N Channel	10/4/2022	-	-	Stream	15U	537985	6987792	-	-	CH/AK	-	FLAT	-	-	-	-	0	0.05		100	0	0	0	0	0	100	0	-	-	-	-	-	-	100	-	Two streams flow south from B22 eastward downhill. North channel ponds of puddles possibly from rain, channels may not be present year round; evidence of grass growing throughout the area with no mud/muck bottoms to suggest standing water; shallow, frozen pools
B4-22 S Channel	10/4/2022	-	-	Stream	15U	537915	6987738	-	-	CH/AK	-	FLAT	-	-	-	-	-	-		100	0	0	0	0	0	100	-	-	-	-	-	-	-	-	-	South Channel slightly wetter than north channel and may convey water throughout the year; water in channel is frozen
B4-B22	6/11/2022	13:00	13:30	Stream	15U	537985	6987790			HM/RM	0	FLAT																								Standing pools of water; no flow; undefined channel
B4-B39	6/11/2022	14:40	15:00	Stream	15U	538314	6986843	538235	6986763	HM/RM	0	FLAT																								Ephemeral stream; undefined, dry channel with pockets of pooled water; no flow
B4-B45	9/30/2022			Stream	15U	538910	6986471	538949	6986425	CH/MM/AK	696	FLAT	58	12			0.5																	0.142	cobble boulder channel
B5-33 N Channel	10/3/2022	-	-	Stream	15U	538403	6988475	-	-	CH/AK	-	FLAT	-	-	-	-	0.05	0.1	0	100	0	0	0	0	0	100	-	-	-	-	-	-	-	100	-	Wetted watercourse that meanders from B33 towards B5; frass substrate suggests channel is dry during the summer and may only be wet now because of September rains (Ernest - Community member)
B5-33 S Channel	10/3/2022	-	-	Stream	15U	538573	6988572	-	-	CH/AK	-	FLAT	-	-	-	-	0.05	0.1	0	100	0	0	0	0	0	100	-	-	-	-	-	-	-	100	-	Wetted watercourse that meanders from B33 towards B5; frass substrate suggests channel is dry during the summer and may only be wet now because of September rains (Ernest - Community member)
B5-34	10/2/2022	-	-	Stream	15U	539060	6987904	539077	6987898	CH/AK	-	FLAT	100	-	-	-	0.05	0.1	100	0	0	0	0	0	0	100	100	-	-	-	-	-	-	100	-	Fairly long channel; no discernable flow; grass substrate; > 1000 NSSB observed near channel at mouth of upstream pond (B5) ; shallow, mud substrate suggests could be wet year-round; great NSSB habitat at outlet of Pond (15 U 539077 6987898 B5)
B59-60	10/2/2022	-	-	Stream	15U	540365	6986303	-	-	CH/AK	-	POOL	-	-	-		0.05	0.1	100	0	0	0	0	0	85	15	-	-	-	25	-	-	-	75	-	Channel is very shallow series of pools between ponds; grass substrate; 5-10 cm deep; this channel is unlikely to be present in the summer and may only be wet during precipitation events ; no discernable flow
B59-62	10/2/2022	-	-	Stream	15U	540228	6986366	-	-	CH/AK	-	FLAT	-	-	-	-	0.025	0.05	100	0	0	0	0	0	0	100	20	0	0	0	0	-	-	85	-	Channel is series of pools between ponds; grass substrate in channel; no defined channel and no discernable flow; No fish observed or caught
B5-B31a	6/15/2022	15:30	16:30	Stream	15U	538107	6988785.624			HM/RM	2.8	RIF	4	0.70	0.30	1.40	0.22	0.28	0.00	0.00	0.00	0.00	90.00	10	0.00	0	10	20	30	40	0	30	20	10	0.782	Small bodied fish observed; cross-sectional data collected at B5-B31.
B5-B31b	6/15/2022	15:30	16:30	Stream	15U	538116	6988748.383			HM/RM	40	RUN	40	1.00	0.40	2.30	0.20	0.30	0.00	0.00	100.00	0.00	20	80	0	0	20	0	40	40	0	30	20	10	0.228	
B5-B31c	6/15/2022	15:30	16:30	Stream	15U	538116	6988741.543			HM/RM	4.2	RIF	6	0.70	0.40	1.00	0.15	0.20	0.00	0.00	100.00	0	70	30	0	0	20	0	30	40	10	20	10	10	0.464	
B5-B31d	6/15/2022	15:30	16:30	Stream	15U	538117	6988734.247			HM/RM	5.6	RIF	7	0.80	0.40	1.20	0.25	0.30	0.00	0.00	100	0	30	70	0	0	30	0	20	40	10	10	30	10	0.144	
B5-B31e	6/15/2022	15:30	16:30	Stream	15U	538114	6988721.327			HM/RM	11.7	RIF	13	0.90	0.50	1.00	0.15	0.28	0.00	0.00	100	0	80	20	0	0	30	0	20	40	10	10	30	10	0.157	
B5-B31f	6/15/2022	15:30	16:30	Stream	15U	538101	6988699.134			HM/RM	86	RUN	43	2.00	0.50	4.00	0.20	0.50	0.00	0.00	100	0	30	80	0	0	40	40	10	10	0	20	0	20	0.034	
B5-B31g	6/15/2022	15:30	16:30	Stream	15U	538091	6988695.03			HM/RM	10	RIF	10	1.00	0.60	1.80	0.15	0.22	0.00	0.00	100	0	80	20	0	0	10	10	20	50	10	20	10	10	0.118	
B5-B31h	6/15/2022	15:30	16:30	Stream	15U	538072	6988687.024			HM/RM	55	RUN	22	2.50	1.00	5.00	0.35	0.50	50.00	50.00	0	0	10	90	0	0	0	70	10	20	0	10	0	30	0.198	
B4-B34	6/11/2022	16:00	16:30	Stream	15U	539068	6987900			HM/RM	0	FLAT																								Undefined channel; pools of standing water; ephemeral stream; no flow; small bodied fish observed at outlet of B34 pond; school of small bodied fish observed at inlet of B5
B60-61	10/2/2022	-	-	Stream	15U	540556	6986252	-	-	CH/AK		FLAT	15	1	-	-	0.05	0.05	100	0	0	0	0	0	0	100	80	-	-	20	-	-	-	50	0.01	shallow stream; no discernable flow; mud/cobble substrate with grassy flooded habitat along margins.
B60-B61	6/12/2022	14:00	14:20	Stream	15U	540562	6986248			HM/RM		FLAT	13	0.80	0.70	1.00	0.30	0.40	0.00	100	0	0	0	0	0	100	60	0	0	40	0	20	0	10	-0.017	

Table A-3: Fish Habitat Assessed in 2022

Waterbody Name	Date	Start Time	End Time	Recon. Type	Zone	Starting Easting GPS Coordinates	Starting Northing GPS Coordinates	Ending Easting GPS Coord.	Ending Northing GPS Coord.	Collectors	Area	Habitat Type	Length	Mean Width	Min. Width	Max. Width	Mean Depth	Max Depth	Single Channel %	Double Channel %	Multiple Channel %	Dispersed Channel %	Riffle %	Run %	Pool %	Flat %	OM	Fi	Gr	Co	Bo	UC	BG	AV	Velocity	Notes
B7-25	10/3/2022	-	-	Stream	15U	537355	6990152	-	-	CH/AK	-	FLAT	-	-	-	-	0.2	0.4	100	0	0	0	0	0	0	100	60	-	-	-	40	-	-	-	-	Wind was blowing water down the channel from B25 to B7; evidence that parts of the channel remain wet year round (mud substrate); a few deeper pockets exist moving towards B7; more boulders present than other streams in area
B7-28	10/3/2022	-	-	Stream	15U	538142	6989757	-	-	CH/AK		FLAT/POOL							0	100	0	0	0	0	25	75	-	-	-	-	-	-	-	100	-	2 defined channels flow from B34 to B5; Channel is a series of depressions filled with water moving downstream towards B5; Deeper pools exist closer to B5 in lower lying areas; Grass substrate suggests channels were dry for most of summer.
B7-B25	6/11/2022	17:30	18:00	Stream	15U	537325	6990072			HM/RM	0	POOL/FLAT																								Undefined channel with small pools of standing water
B7-B28	6/11/2022	17:00	17:20	Stream	15U	538099	6989761			HM/RM	0	POOL/FLAT																								Undefined channel with intermittent pools of standing water
CH 28	7/31/2022	13:05	13:20	Pond	15U	555038	6981801	N/A	N/A	HM/RM	6317.79	POOL	106.90	59.10	n	85.10	0.10	0.22	n	n	n	n	n	n	n	n	20	20	30	15	15	n	20	n	n/a	Shallow; no inlet/outlet; varied substrate
CH-29	7/31/2022	14:15	14:45	Pond	15U	555254	6981652	N/A	N/A	HM/RM	7135.95	POOL	169.5	42.1	n	46.7	0.22	0.46	n	n	n	n	n	n	100	n	20	n	15	25	40	n	60	n	n/a	Shallow; varied substrate; CH-29 appears to flow into CHK LK when water levels are higher; current conditions observed dry outflow
CH-6	8/4/2022	8:30	9:00	Pond	15U	554658	6981157			HM/RM	0																								Dispersed channel eventually flows to CH-6 during high water events
CH6-WC	8/4/2022	8:30	8:50	Stream	15U	554653	6981162	554730	6981322	HM/RM	187.6	FLAT	268	0.7	0.6	6.5	0.07	0.11	n	n	10	90	n	90	n	80	55	25	5	10	5	15	5	15	0.150	Discontinuous and very dispersed channel, doesn't fully flow into CH6, not suitable for discharge. Return to EF?/YSI. A habitat map was drawn for this site
Char confluence with Hudson Bay	9/26/2022	-	-	Offsetting	15U	544120	6969614	-	-	CH	0																								1/2 DEPTH: 0.15. SUBSTRATE: gravel, pebble, Co, Bo. HABITAT TYPE/COMMENTS: multi channel through boulders.
Char River 1	6/13/2022			Offsetting	15U	543797	6969988	N/A	N/A	HM/RM	4200	RUN	60	70	0	70	0.2	0.56	100	0	0	0	30	70	0	0	0	10	45	30	15	10	30	0	0.509	Spawning potential; good access, lots of area
Char River WP 0014	9/26/2022	-	-	Offsetting	15U	544060	6969617	-	-	CH	0	POOL																								1/2 DEPTH: 0.5. SUBSTRATE: sandy
Char River WP 0015	9/26/2022	-	-	Offsetting	15U	544039	6969613	-	-	CH	0																								1/4 VELOCITY / DEPTH 0.021 / 0.5. 1/2 VELOCITY / DEPTH 0.01 / 0.25. 3/4 VELOCITY / DEPTH 0.002 / 0.15.
Char River WP 0016	9/26/2022	-	-	Offsetting	15U	543991	6969684	-	-	CH	0	RIF																								SUBSTRATE: gravel, pebble, Co, Bo
Char River WP 0017	9/26/2022	-	-	Offsetting	15U	544017	6969795	-	-	CH	0	RUN																								1/2 DEPTH 0.4. SUBSTRATE: sand.
Char River WP 0018	9/26/2022	-	-	Offsetting	15U	543919	6969840	-	-	CH	0																								1/2 VELOCITY / DEPTH 0.033 / 0.5. SUBSTRATE: Co, gravel, Bo. HABITAT TYPE/COMMENTS: algae covering rocks on bottom.
Char River WP 0019	9/26/2022	-	-	Offsetting	15U	543880	6969955	-	-	CH	0																								1/2 DEPTH 0.1
Char River WP 0020	9/26/2022	-	-	Offsetting	15U	543811	6969994	-	-	CH	0																								SUBSTRATE: Co, pebble, gravel substrate all across
Char River WP 0021	9/26/2022	-	-	Offsetting	15U	543754	6970073	-	-	CH	0																								1/2 DEPTH 0.5. SUBSTRATE: Co, pebble, gravel substrate all across
Char River WP 0022	9/26/2022	-	-	Offsetting	15U	543689	6970140	-	-	CH	0																								SUBSTRATE: Co, gravel, pebble, boulder. HABITAT TYPE/COMMENTS: st downstream of AWAR bridge.
Char. River 1- US	6/13/2022			Offsetting	15U	543994	6969730	N/A	N/A	HM/RM	0	RIF	60		8	14	0.2	0.36	100	0	0	0	90	10	0	0	0	0	25	45	30	10	80	0	.602 to 1.01	Willows and grasses; potential spawning habitat
Char. River 1-DS	6/13/2022			Offsetting	15U	543980	6969668	N/A	N/A	HM/RM	1000	RIF	50	20	-	-	0.1	0.3	0	0	0	100	90	10	0	0	0	10	30	40	20	10	30	0	.432 to 0.50	weir/barrier; KIA proposes physically removing weir
D1.2 - WB	6/17/2022	16:15	16:30	Pond	15U	546916	6981236	N/A	N/A	HM/RM	880	POOL	22	40	0	40	0.2	0.36	0	0	0	0	0	0	100	0	10	90	0	0	0	0	0	0		Small bodied fish observed
D1.2 - WC	6/17/2022	16:15	16:30	Stream	15U	546918	6981238	N/A	N/A	HM/RM	1920	FLAT	48	40	0	40	0.15	0.24	100	0	0	0	0	0	0	100	10	50	10	20	0	0	0	0		
D4-33	10/4/2022	-	-	Stream	15U	534831	6988916	-	-	CH/AK	-	FLAT	-	-	-	-	-	-	-	100	0	0	0	0	0	100	-	-	-	-	-	-	-	-	-	This stream was not visible or apparent and does not currently connect to D33 but may during the spring or years with high precipitation; almost all standing water was frozen; Unlikely that this stream flows year-round
D8.8a	7/28/2022	16:00	16:45	Stream	15U	553395	6981818			HM/RM	660	RUN	330	2	0.75	10	0.06	0.22	30	20	50	0	0	100	0	0	0	10	30	30	30	10	80	0	0.018	A habitat map was drawn for this site. Cross Sectional flow data collected in several locations on July 29, 2022
D8.8b	7/28/2022	16:00	16:45	Stream	15U	553514	6981533			HM/RM	345	POOL	15	23	13.5	30	0.12	0.2	0	0	0	0	0	0	100	0	20	40	0	-	40	0	30	0	0.000	
D8.8c	7/28/2022	16:00	16:45	Stream	15U	553620	6981394			HM/RM	696.6	FLAT	129	5.4	1.5	12	0.06	0.34	0	0	0	100	0	0	0	100	0	10	20	30	40	20	30	0	0.000	
D8.8d	7/28/2022	16:00	16:45	Stream	15U	553656	6981336			HM/RM	100	RUN	50	2	1.2	7.5	0.1	0.3	0	0	100	0	10	90	0	0	5	10	15	40	30	20	20	0	0.100	
DP-11	8/5/2022	10:45	11:00	Pond	15U	553984	6981778	N/A	N/A	HM/RM	495	POOL	45	11.0	4.5	13.0	0.20	0.24	n	n	n	n	n	n	100	n	75	25	n	n	n	n	n	n	n/a	A habitat map was drawn for this site
DP-12	8/2/2022	15:00	15:20	Pond	15U	554151	6981845	N/A	N/A	HM/RM	n	POOL	12.0	n	9.6	10.1	0.1	0.2	n	n	n	n	n	n	100	n	75	25	n	n	n	n	n	n	n/a	A habitat map was drawn for this site.
DP-13	8/2/2022	15:30	15:45	Pond	15U	554214	6981869	N/A	N/A	HM/RM	n	POOL	44.2	n	22.10	24.80	0.30	0.48	n	n	n	n	n	n	100	n	70	20	n	n	10	n	n	n	n/a	A habitat map was drawn for this site. Return for MT+YSI
DP-18a	8/3/2022	9:30	9:45	Pond	15U	554223	6981797			HM/RM	n	POOL	18.0	n	8.8	9.2	0.38	0.40	n	n	n	n	n	n	100	n	75	25	n	n	n	n	n	n	n/a	A habitat map was drawn for this site
DP-18b	8/3/2022	9:30	9:45	Pond	15U	554217	6981794			HM/RM	128	FLAT	128.0	1.0	0.20	2.10	0.04	0.16	80	n	n	20	n	25	n	75	75	25	n	n	n	5	n	15	n	
DP-19a	8/3/2022	8:50	9:00	Pond	15U	554326	6981861			HM/RM	n	POOL	n	n	9.9	15.0	0.20	0.40	n	n	n	n	n	n	100	n	75	15	n	n	10	n	n	n	n/a	Return for EF+MT
DP-19b	8/3/2022	8:50	9:00	Pond	15U	554321	6981856			HM/RM	n	FLAT	n	n	2.0	5	0.06	0.10	n	n	n	100	n	n	n	100	75	15	5	n	5	n	n	n	n/a	A habitat map was drawn for this site
DP-20	8/3/2022	12:30	12:45	Pond	15U	554321	6981818	N/A	N/A	HM/RM	n	POOL	17.1	n	16.10	16.50	0.32	0.40	n	n	n	n	n	n	100	n	85	15	n	n	n	n	n	n	n/a	A habitat map was drawn for this site
DP-21	8/3/2022	12:45	13:00	Pond	15U	554374	6981779	N/A	N/A	HM/RM	n	POOL	17.1	n	16.1	16.5	0.38	0.46	n	n	n	n	n	n	100	n	70	30	n	n	n	n	n	n	n/a	A habitat map was drawn for this site
DP-22	8/3/2022	13:00	13:15	Pond	15U	554403	6981779	N/A	N/A	HM/RM	n	POOL	10.4	n	4.9	6	0.08	0.22	n	n	n	n	n	n	100	n	70	30	n	n	n	n	n	n	n/a	A habitat map was drawn for this site
DP-24	8/3/2022	13:35	13:50	Pond	15U	554544	6981803	N/A	N/A	HM/RM	1285.2	POOL	50.4	25.5	15.0	n	0.20	0.24	n	n	n	n	n	n	100	n	10	40	10	30	10	n	10	n	n/a	A habitat map was drawn for this site
DP-24B	8/3/2022	13:45	14:00	Pond	15U	554534	6981784	N/A	N/A	HM/RM	n	POOL	14.6	n	10.5	10.7	0.2	0.28	n	n	n	n	n	n	100	n	70	30	n	n	n	n	n	n	n/a	A habitat map was drawn for this site
DP-25	8/3/2022	14:20	14:30	Pond	15U	554504	6981762	N/A	N/A	HM/RM	n	POOL	17.7	n	3.40	5.30	0.50	0.40	n	n	n	n	n	n	100	n	75	25	n	n	n	n	n	n	n/a	A habitat map was drawn for this site
DP-27a	8/3/2022	11:00	11:15	Pond	15U	554227	6981706			HM/RM	n	POOL	35.4	n	20.8	24.3	0.12	0.20	n	n	n	n	n	n	100	n	75	20	n	5	n	n	n	n	n/a	Return to MT
DP-27b	8/3/2022	11:00	11:15	Stream	15U	554224	6981702			HM/RM	n	FLAT	111	n	3.00	15	0.10	0.22	n	n	n	100	n	5	n	95	75	10	5	5	5	n	n	n	n/a	A habitat map was drawn for this site
DP-28a	8/3/2022	10:50	11:00	Pond	15U	554168	6981714			HM/RM	n	POOL	26.8	n	15.4	22.5	0.15	0.20	n	n	n	n	n	n	100	n	75	25	n	n	n	n	n	n	n/a	Return to MT
DP-28b	8/3/2022	10:50	11:00	Stream	15U	554207	6981699			HM/RM	96.3	FLAT	32.1	3	31.2	15.3	0.08	0.12	n	n	n	100	n	10	n	90	75	20	5	n	n	n	n	n	n/a	A habitat map was drawn for this site
DP-33	8/4/2022	9:30	9:45	Pond	15U	554608	6981491	N/A	N/A	HM/RM	n	POOL	19	n	4.2	5.2	0.25	0.44	n	n	n	n	n	n	100	n	65	30	n	n	5	n	n	n	n/a	A habitat map was drawn for this site
DP-36+37	8/4/2022	9:45	10:00	Pond	15U	554433	6981479	N/A	N/A	HM/RM	677.1	POOL	37	18.3	11.0	21.9	0.13	0.28	n	n	n	n	n	n	100	n	65	20	n	10	5	5	n	n	n/a	A habitat map was drawn for this site
DP-38	8/3/2022	11:45	12:00	Pond	15U	554314	6981437	N/A	N/A	HM/RM	n	POOL	36.0	n	18.3	38.3	0.18	0.34	n	n	n	n	n	n	100	n	75	20	n	n	5	n	n	n	n/a	A habitat map was drawn for this site

Table A-3: Fish Habitat Assessed in 2022

Waterbody Name	Date	Start Time	End Time	Recon. Type	Zone	Starting Easting GPS Coordinates	Starting Northing GPS Coordinates	Ending Easting GPS Coord.	Ending Northing GPS Coord.	Collectors	Area	Habitat Type	Length	Mean Width	Min. Width	Max. Width	Mean Depth	Max Depth	Single Channel %	Double Channel %	Multiple Channel %	Dispersed Channel %	Riffle %	Run %	Pool %	Flat %	OM	Fi	Gr	Co	Bo	UC	BG	AV	Velocity	Notes
DP-5	8/2/2022	14:00	14:20	Pond	15U	554076	6981928	N/A	N/A	HM/RM	n	POOL	21.6	n	13.6	15.9	0.2	0.46	n	n	n	n	n	n	100	n	100	n	n	n	n	n		n	n/a	A habitat map was drawn for this site
DP-8	8/2/2022	14:45	15:00	Pond	15U	554091	6981885	N/A	N/A	HM/RM	n	POOL	26.80	n	6.90	10.40	0.40	0.44	n	n	n	n	n	n	100	n	85	15	n	n	n	n	n	n	n/a	A habitat map was drawn for this site. Too soft for EF, consider MT
DP-9	8/2/2022	14:15	14:30	Pond	15U	554032	6981872	N/A	N/A	HM/RM	n	POOL	23.8	n	15.9	21.8	0.10	0.14	n	n	n	n	n	n	100	n	70	25	n	n	5	n	n	n	n/a	A habitat map was drawn for this site. Return for EF/YSI/MT. Not active inlet/outlet
DR-10	7/26/2022	16:45	17:00	Pond	15U	550686	6981247	N/A	N/A	HM/RM	200	POOL	20	10.0	2.0	12.0	0.10	0.22	n	n	n	n	n	n	100	n	78	20	n	1	1	n	n	n	n/a	A habitat map was drawn for this site. Too soft for EF, consider MT
DR-13	7/28/2022	13:40	14:00	Pond	15U	551670	6981392	-	-	HM/RM	208	POOL	40	5.2	5	7	0.24	0.3	0	0	0	0	0	0	100	0	40	60	0	0	0	0	0	30	0	A habitat map was drawn for this site
DR-2	7/27/2022	16:20	16:40	Pond	15U	546079	6980980	N/A	N/A	HM/RM	73.5	POOL	7	10.50	n	n	0.10	0.20	n	n	n	n	n	n	100	n	10	90	n	n	n	n	n	n	n/a	A habitat map was drawn for this site. Small and shallow seasonal feature.
DR5.9a	7/28/2022	11:15	12:00	DS Stream	15U	550957	6981546			HM/RM	256	FLAT	40	6.4	6	16	0.08	0.1	-	-	-	100	-	-	-	100	-	10	-	40	50	-	5	-	0.000	A habitat map was drawn for this site
DR5.9b	7/28/2022	11:15	12:00	US Stream	15U	550903	6981632			HM/RM	242	RUN	110	2.2	2	6.2	0.3	0.52	80	20	-	-	-	100	-	-	-	20	15	40	25	10	10	-	0.002	
DR-8	7/26/2022			Stream	15U	547333	6981438			HM/RM	100	POOL	12.5	8	7	9	0.2	0.24	-	-	-	-	-	-	100	-	79	20	-	1	-	-	-	-	-	Pond; Small Bodied Fish Observed
DR-A	7/26/2022	12:30	12:45	Pond	15U	546935	6981372			HM/RM	72	POOL	12	6	4	7	0.22	0.3	-	-	-	-	-	-	100	-	75	25	-	-	-	-	-	-	-	Pond; Small Bodied Fish Observed
DR-B	7/28/2022	11:00	11:10	Pond	15U	550857	6981501	N/A	N/A	HM/RM	528	POOL	32	16.5	n	n	0.10	0.20	n	n	n	n	n	n	100	n	n	95	n	5	n	10	n	n	n/a	
DR-C	7/28/2022	15:30	16:00	Pond	15U	553213	6980929	-	-	HM/RM	508.3	POOL	29.9	17	12	18	0.12	0.22	0	0	0	0	0	0	100	0	60	40	0	0	0	0	0	0	0	A habitat map was drawn for this site; too shallow and mucky to fish; no inlet/outlet
DRO-2	7/27/2022	16:20	16:40	Pond	15U	546079	6980980			HM/RM	73.5	POOL	7	10.5			0.1	0.2							100		10	90								
E1-29a	7/29/2022	14:15	15:00	Stream	15U	554036	6981005			HM/RM	268.4	RUN	122	2.2	0.32	7.3	0.06	0.3	85	15	0	0	0	100	0	0	50	20	0	20	10	10	10	5	0	Watercourse with series of runs, flats and pools; small bodied fish observed; watercourse flows into chickenhead lake
E1-29b	7/29/2022	14:15	15:00	Stream	15U	554000	6981125			HM/RM	15535	POOL	239	65	10	92	0.08	0.46	100	0	0	0	0	0	100	0	65	5	0	20	10	10	10	0	0	
E1-29c	7/29/2022	14:15	15:00	Stream	15U	553943	6981240			HM/RM	180	RUN	40	4.5	3	13	0.08	0.22	100	0	0	0	0	100	0	0	80	10	0	5	5	0	0	0	0	
E1-29d	7/29/2022	14:15	15:00	Stream	15U	553934	6981298			HM/RM	14.79	POOL	87	0.17	20	30	0.22	0.34	100	0	0	0	0	0	100	0	80	10	0	5	5	0	0	0	0	
E1-29e	7/29/2022	14:15	15:00	Stream	15U	553931	6981385			HM/RM	1710	FLAT	190	9	1.5	17.8	0.12	0.32	100	0	0	0	0	0	0	100	75	15	0	0	0	10	0	0	0	
E1-29f	7/29/2022	14:15	15:00	Stream	15U	553882	6981509			HM/RM	1536	RUN	256	6	0.5	27.5	0.1	0.22	70	0	30	0	0	80	0	20	50	20	10	10	0	10	0	0	0	
E1-29g	7/29/2022	14:15	15:00	Stream	15U	553809	6981559			HM/RM	3600	POOL	80	45	32	62	0.06	0.27	0	0	0	0	0	0	100	0	60	20	0	20	0	10	0	0	0	
E1-29h	7/29/2022	14:15	15:00	Stream	15U	553744	6981643			HM/RM	1050	RUN	105	10	3	20.5	0.1	0.2	100	0	0	0	0	100	0	0	90	0	0	10	0	0	0	0	0	
EI-0	8/4/2022	11:00	11:15	Pond	15U	553963	6981766	N/A	N/A	HM/RM	42	POOL	7	6.0	5.0	7	0.2	0.1	n	n	n	n	n	n	100	n	75	25	n	n	n	n	n	n	n/a	A habitat map was drawn for this site
EI-14	7/30/2022	14:15	14:30	Pond	15U	553832	6981277	N/A	N/A	HM/RM	13	POOL	n	13	11	17	1.1	0.14	n	n	n	n	n	n	100	n	80	10	n	10	n	n	n	n	n/a	Shallow, seasonal feature; no inlet/outlet; too shallow & mucky to fish
EI-20	7/30/2022	15:15	15:30	Pond	15U	553668	6981246	N/A	N/A	HM/RM	166.6	POOL	19.6	8.5	6.9	9.9	0.1	0.12	n	n	n	n	n	n	100	n	90	n	n	10	n	n	n	n	n/a	Small, ephemeral feature; no inlet/outlet; too mucky and shallow to fish
EI-21	7/30/2022	15:30	15:45	Pond	15U	553751	6981228	N/A	N/A	HM/RM	550	POOL	50	11	10.6	49	0.14	0.22	n	n	n	n	n	n	100	n	100	n	n	n	n	n	n	n	n/a	Ephemeral feature; no inlet/outlet; standing water; too shallow and mucky to fish
EI-23	7/30/2022	16:00	16:15	Pond	15U	553724	6981177	N/A	N/A	HM/RM	323.35	POOL	22.3	14.5	11.2	18.2	0.1	0.22	n	n	n	n	n	n	100	n	90	n	n	5	5		n	n	n/a	Standing water; no inlet/outlet; primarily organic matter; too shallow to fish
EI-4-ST1-a	8/2/2022	10:00	10:45	Stream	15U	553871	6981583			HM/RM		POOL	62	n	23.60	35.30	0.12	0.22	n	n	n	n	n	n	100	n	95	n	n	n	5	n	n	n	n/a	A habitat map was drawn for this site
EI-4-ST1-b	8/2/2022	10:00	10:45	Stream	15U	553913	6981640			HM/RM		RUN	68	3.2	2.20	16.50	0.10	0.32	20	n	80	n	n	100	n	n	40	10	30	10	10	5	15	n	n/a	Return to EF/YSI
EI-4-ST1-c	8/2/2022	10:00	10:45	Stream	15U	553963	6981707			HM/RM		POOL	17	n	29.10	38.00	0.06	0.08	n	n	n	n	n	n	100	n	20	30	15	10	25	n	15	n	n/a	
EI-4-ST2-a	8/2/2022	-	-	Stream	15U	553857	6981592			HM/RM	1504.2	RUN	654	2	0.2	19.0	0	0.4	10.0	10	60	20	n	100	n	n	40	10	30	10	10	5	30	n	see transect	A habitat map was drawn for this site
EI-4-ST2-b	8/2/2022	-	-	Stream	15U	553709	6982244			HM/RM	27.8	POOL	27.8	n	16.7	25.8	0	0.2	n	n	n	n	n	n	100	n	15	20	5	30	30	n	25	n	n/a	Note that beginning of DS pool was previously mapped for stream 1, so it is excluded for stream 2
H1-Mel Lk -1	10/3/2022	-	-	Offsetting	15U	540976	6989557	-	-	CH/AK		FLAT							0	0	100	0	0	0	0	100	-	-	-	-	-	-	-		-	A lot of water from H1 is being blown towards Mel Lake -1; channels are fairly well defined due to fairly steep slope; Possible candidate location for Arctic Grayling spawning pad if flows are good in spring
Mel-Rv-1	9/25/2022	-	-	Offsetting	15U	545288	6971259	-	-	CH	0	RUN	180-210m																						1/4 VELOCITY / DEPTH 0.216 / 0.40. 1/2 VELOCITY / DEPTH 0.211 / 0.35. 3/4 VELOCITY / DEPTH 0.102 / 0.25. SUBSTRATE: sand. Vegetation on west bank.
Mel-Rv-2	9/25/2022	-	-	Offsetting	15U	545699	6970825	-	-	CH	0																								1/2 VELOCITY / DEPTH 0.067 / 0.42. SUBSTRATE: 70% sand 30% boulder. HABITAT TYPE/COMMENTS: 300m long 130m wide.
Mel-Rv-3	9/25/2022	-	-	Offsetting	15U	544899	6971104	-	-	CH	0																								1/4 CROSS VELOCITY / DEPTH 0.019 / 0.15. 1/2 CROSS VELOCITY / DEPTH 0.021 / 0.1. 3/4 CROSS VELOCITY / DEPTH 0.019 / 0.1. SUBSTRATE: sand. HABITAT TYPE/COMMENTS: good potential for building grayling spawning hab.
Mel-Rv-4	9/25/2022	-	-	Offsetting	15U	544745	6971220	-	-	CH	0																								1/2 VELOCITY / DEPTH 0.044 / 0.3. 3/4 VELOCITY / DEPTH 0.04 / 0.2. COMMENTS: sand & boulder, some gravel at edges
Mel-Rv-5	9/25/2022	-	-	Offsetting	15U	544875	6971363	-	-	CH	0																								1/4 VELOCITY / DEPTH 0.017 / 0.1. 1/2 VELOCITY / DEPTH 0.039 / 0.1. 3/4 VELOCITY / DEPTH 0.025 / 0.2. COMMENTS: braided channel. Sand, boulder, some sand. Possibly good/ similar habitat for 100-150 downstream.
Mel-Rv-6	9/25/2022	-	-	Offsetting	15U	544916	6971418	-	-	CH	0																								no potential - habitat already exists
Mel-Rv-7	9/25/2022	-	-	Offsetting	15U	544802	6971491	-	-	CH	0																								no potential - habitat already exists
Mel-Rv-0	9/25/2022	-	-	Offsetting	15U	544785	6971609	-	-	CH	0																								1/4 VELOCITY/DEPTH 0.246 / 0.14. 1/2 VELOCITY / DEPTH 0.39 / 0.3. 3/4 VELOCITY / DEPTH 0.276 / 0.16. SUBSTRATE: Bo, Co, Peb, Gravel.
Km10_a	6/13/2022	-	-	Offsetting	15U	546645	6973119	N/A	N/A	HM/RM	0	POOL	490			150	0.3	0.66	100						100		10		20	40	30	10	20	10		580m from bridge to bank
Km10_b	6/13/2022	-	-	Offsetting	15U	546633	6973124			HM/RM	0	RUN	14.5		5.2	12.4	0.3	0.42	100				20	80			10		20	40	30	10	20	10	0.410	NSSB+Small fish observed
Km10_c	6/13/2022	-	-	Offsetting	15U	546621	6973131			HM/RM	0	POOL	580			430	0.45	0.6	100						100		10		20	40	30	10	20	10		Schools of fish observed
Meliadine Diffuser Area	9/24/2022	-	-	Offsetting	15U	542428	6989199	-	-	CH	0																								DEPTH 3.1m / 3.75m
Mel-Lk-1	9/24/2022	-	-	Offsetting	15U	540976	6989559	-	-	CH	0																								1/2 DEPTH 4.7m
Mel-Lk-2	9/24/2022	-	-	Offsetting	15U	543081	6987558	-	-	CH	0																								DEPTH: varies from 2.1m - 1.25m. SUBSTRATE: soft & boulder.

Table A-3: Fish Habitat Assessed in 2022

Waterbody Name	Date	Start Time	End Time	Recon. Type	Zone	Starting Easting GPS Coordinates	Starting Northing GPS Coordinates	Ending Easting GPS Coord.	Ending Northing GPS Coord.	Collectors	Area	Habitat Type	Length	Mean Width	Min. Width	Max. Width	Mean Depth	Max Depth	Single Channel %	Double Channel %	Multiple Channel %	Dispersed Channel %	Riffle %	Run %	Pool %	Flat %	OM	Fi	Gr	Co	Bo	UC	BG	AV	Velocity	Notes
Mel-Lk-3	9/24/2022	-	-	Offsetting	15U	543809	6987051	-	-	CH	0																									DEPTH: varies from 1m - 3m. SUBSTRATE: boulder, cobble, shoal, shoreline rubble-cobble.
Mel-Lk-4	9/24/2022	-	-	Offsetting	15U	544475	6986231	-	-	CH	0																									DEPTH: varies form 0.8m-2m. SUBSTRATE: rubble shore, looks shallow. Boulder, soft, cobble bottom.
Mel-Lk-5	9/24/2022	-	-	Offsetting	15U	544787	6985814	-	-	CH	0																									DEPTH 0.5-3.5m. SUBSTRATE: boulder, sand, soft bottom. Rubble, pebble, gravel, boulder shoreline.
Mel-Lk-6	9/24/2022	-	-	Offsetting	15U	545428	6985542	-	-	CH	0																									DEPTH: varies from 0.74m to 3m. SUBSTRATE: rubble, cobble, boulder shoreline. Boulder, soft bottom.
Nipissar Lk	10/1/2022	-	-	Offsetting	15U	544475	6966220	-	-	CH/MM/AK	-	POOL	Entire shoreline						-	-	-	-	0	0	100	0	-	-	-	-	-	-	-	-	-	walked entire shoreline of Nipissar Lake; Estimated ~ 16 ha of potential spawning habitat and108 ha of watered area if water is brought up to 2006 levels see photos SDC 1263 to DSC 13851
W10-12	7/31/2022	12:05	12:20	Pond	15U	555012	6981481	N/A	N/A	HM/RM	224.4	POOL	19	12.0	11.7	18.2	0.0	0.1	n	n	n	n	n	n	100	n	55	n	n	15	30	n	10	n	n/a	Standing water, no inlet/outlet; seasonal; organic matter dominant; not suitable for fishing
W10-13	7/31/2022	13:00	13:15	Pond	15U	554912	6981468	N/A	N/A	HM/RM	500.42	POOL	38	13.1	12.4	13.6	0.12	0.2	n	n	n	n	n	n	100	n	50	n	10	20	20	n	5	n	n/a	Shallow, ephemeral feature; no inlet/outlet; organic matter dominant with some cobble; standing water
W10-17	7/31/2022	11:15	11:30	Pond	15U	554910	6981288	N/A	N/A	HM/RM	126.1	POOL	13	9.7	6.7	13	0.20	0.22	n	n	n	n	n	n	100	n	95	n	n	n	5	n	n	n	n/a	Ephemeral feature; shallow, standing water; No inlet/outlet; not suitable for fishing
W10-2	8/4/2022	12:00	12:15	Pond	15U	554790	6981755	N/A	N/A	HM/RM	56	POOL	14.00	4.00	n	9.00	0.14	0.16	n	n	n	n	n	n	100	n	15	60	15	10	n	n	n	n	n/a	Algae growth present, a habitat map was drawn for this site
W10-21	7/31/2022	10:55	11:20	Pond	15U	555191	6981340	N/A	N/A	HM/RM	162	POOL	20	8.1	3.3	14.7	0.04	0.30	n	n	n	n	n	n	100	n	90	n	n	n	10	n	n	n	n/a	Ephemeral feature; standing water; No inlet/outlet
W10-24	7/31/2022	7:20	7:30	Pond	15U	555078	6981252	N/A	N/A	HM/RM	196.5	POOL	26.2	7.5	4.5	15.2	0.06	0.10	n	n	n	n	n	n	100	n	n	n	n	n	n	n	n	n	n/a	Very shallow, lots of organic matter; no inlet/outlet; standing water; ephemeral feature
W10-25a	7/31/2022	7:30	9:00	Stream	15U	554826	6981030			HM/RM	53.4	RUN	267	0.2	0.2	0.35	0.06	0.22	70	5	n	25	n	100	n	n	70	n	10	10	10	n	n	n	n/a	Series of Run/Pool/Run; flows into chicken head lake; shallow
W10-25b	7/31/2022	7:30	9:00	Stream	15U	554975	6981192			HM/RM	112.7	POOL	23	4.90	4.70	12.20	0.05	0.10	n	n	n	n	n	n	100	n	70	20	n	n	n	n	n	5	n/a	
W10-25c	7/31/2022	7:30	9:00	Stream	15U	554991	6981252			HM/RM	38.5	RUN	77	0.50	0.20	0.55	0.80	0.12	70	n	n	30	n	100	n	n	75	n	15	5	5	n	10	n	n/a	
W10-25d	7/31/2022	7:30	9:00	Stream	15U	555021	6981302			HM/RM	372.6	POOL	27	13.8	13.6	25.70	0.20	0.26	n	n	n	n	n	n	100	n	95	n	n	n	5	n	n	20	n/a	
W10-25e	7/31/2022	7:30	9:00	Stream	15U	555052	6981322			HM/RM	1854	RUN	412	4.5	0.2	28.20	0.04	0.12	n	15	70	15	n	100	n	n	20	40	n	30	10	n	5	n	n/a	
W10-25f	7/31/2022	7:30	9:00	Stream	15U	555201	6981549			HM/RM	1612	POOL	65	24.8	19.2	28.00	0.20	0.28	n	n	n	n	n	n	100	n	80	n	n	n	20	n	10	n	n/a	
W10-25g	7/31/2022	7:30	9:00	Stream	15U	555229	6981571			HM/RM	518.4	RUN	162	3.2	1.7	5.60	0.06	0.08	80	n	n	20	n	100	n	n	20	10	70	n	n	n	n	5	n/a	
W10-3	7/31/2022	14:35	14:50	Pond	15U	554912	6981871	N/A	N/A	HM/RM	390	POOL	39.0	10.0	n	16.0	0.10	0.18	n	n	n	n	n	n	100	n	95	n	n	n	5	n	n	n	n/a	Shallow; no inlet/outlet; not suitable fish habitat
W10-5	7/31/2022	13:45	14:00	Pond	15U	555016	6981715	N/A	N/A	HM/RM	n	POOL	19.8	n	13.1	18.9	0.12	0.18	n	n	n	n	n	n	100	n	100	n	n	n	n	n	n	n	n/a	Shallow, ephemeral feature; no inlet/outlet; 100% emergent vegetation
W10-ST1-a	8/3/2022	14:20	16:00	Stream	15U	554653	6981162	554728	6981670	HM/RM	21.6	RUN	36.0	0.6	0.4	0.30	0.14	0.20	100	n	n	n	n	100	n	n	70	10	n	10	10	n	10	n	0.023	Overland flow
W10-ST1-b	8/3/2022	14:20	16:00	Stream	15U	554654	6981184	554728	6981670	HM/RM	n	POOL	29.1	n	30.9	36.80	0.22	0.30	n	n	n	n	n	n	100	n	45	40	n	n	15	n	n	n	n/a	
W10-ST1-c	8/3/2022	14:20	16:00	Stream	15U	554657	6981200	554728	6981670	HM/RM	7.5	RUN	15.0	0.5	0.3	0.85	0.08	0.10	n	n	n	n	n	100	n	n	75	20	n	5	n	n	n	n	n/a	
W10-ST1-d	8/3/2022	14:20	16:00	Stream	15U	554658	6981210	554728	6981670	HM/RM	n	POOL	25.0	n	0.8	10.50	0.12	0.16	n	n	n	n	n	n	100	n	75	20	n	n	5	n	n	n	n/a	
W10-ST1-e	8/3/2022	14:20	16:00	Stream	15U	554677	6981356	554728	6981670	HM/RM	242.36	RUN	332.0	0.7	0.5	5.20	0.06	0.12	n	n	70	30	n	100	n	n	35	20	20	5	20	n	10	n	n/a	
W10-ST1-f	8/3/2022	14:20	16:00	Stream	15U	554700	6981534	554728	6981670	HM/RM	n	POOL	24.0	n	13.0	15.00	0.23	0.28	n	n	n	n	n	100	n	n	30	20	5	5	40	n	25	n	n/a	
W10-ST2-a	8/3/2022	14:20	16:00	Stream	15U	554655	6981148	554728	6981676	HM/RM	135	RUN	54.00	2.50	0.23	5.20	0.16	0.20	70	n	n	30	n	100	n	n	65	25	5	n	5	5	n	n	0.150	
W10-ST2-b	8/3/2022	14:20	16:00	Stream	15U	554660	6981176	554728	6981676	HM/RM	98	POOL	14.00	7.00	3.00	8.00	0.24	0.28	n	n	n	n	n	n	100	n	70	25	n	5	n	n	n	n	n/a	
W10-ST2-c	8/3/2022	14:20	16:00	Stream	15U	554664	6981184	554728	6981676	HM/RM	1748.5	FLAT	269.00	6.50	0.24	8.20	0.08	0.14	5	n	15	80	n	25	n	75	60	25	5	n	10	10	n	n	0.047	
W10-ST2-d	8/3/2022	14:20	16:00	Stream	15U	554735	6981449	554728	6981676	HM/RM	291.4	POOL	18.80	15.50	21.60	21.30	0.10	0.16	n	n	n	n	n	n	100	n	20	20	n	30	30	n	15	n	n/a	
W10-ST2-e	8/3/2022	14:20	16:00	Stream	15U	554734	6981469	554728	6981676	HM/RM	135	RUN	54.00	2.50	0.23	5.20	0.16	0.20	70	n	n	30	n	100	n	n	65	25	5	n	5	5	n	n	0.150	
W10-ST2-f	8/3/2022	14:20	16:00	Stream	15U	554739	6981515	554728	6981676	HM/RM	98	POOL	14.00	7.00	3.00	8.00	0.24	0.28	n	n	n	n	n	n	100	n	70	25	n	5	n	n	n	n	n/a	
W10-ST2-g	8/3/2022	14:20	16:00	Stream	15U	554738	6981529	554728	6981676	HM/RM	1748.5	RUN	269.00	6.50	0.24	8.20	0.08	0.14	5	n	15	80	n	25	n	75	60	25	5	n	10	10	n	n	0.047	
W10-ST2-h	8/3/2022	14:20	16:00	Stream	15U	554727	6981683	554728	6981676	HM/RM	291.4	POOL	18.80	15.50	11.60	21.30	0.10	0.16	n	n	n	n	n	n	100	n	20	20	n	30	30	n	15	n	n/a	
W9-10	8/1/2022	13:00	13:20	Pond	15U	553786	6982487	N/A	N/A	HM/RM	1617	POOL	147	11.0	n	14.70	0.18	0.30	n	n	n	n	n	n	100	n	20	10	10	20	40	n	10	n	n/a	Return to EF/MT. Seasonal feature of standing water. A habitat map was drawn for this site
W9-11-p	8/1/2022	10:45	11:30	Pond	15U	553805	6982305			HM/RM	n	POOL	21	n	13.5	16.50	0.10	0.14	n	n	n	100	n	n	100	n	70	20	5	5	n	n	n	n	n/a	
W9-11-st	8/1/2022	10:45	11:30	Stream	15U	553802	6982296			HM/RM	541.2	RUN	41	13.2	10.9	17.4	0.10	0.14	n	n	n	n	n	100	n	n	75	20	n	n	5	n	n	n	n/a	
W9-15	8/2/2022	8:00	8:15	Pond	15U	553582	6982156	N/A	N/A	HM/RM	n	POOL	8	n	6.0	8	0.1	0.2	n	n	n	n	n	n	100	n	100	n	n	n	n	n	n	n	n/a	Not suitable for fish. Cannot EF/MT. a habitat map was drawn for this site
W9-17	8/2/2022	8:30	8:45	Pond	15U	553629	6982190	N/A	N/A	HM/RM	n	POOL	7.5	n	8.6	11.2	0.08	0.14	n	n	n	n	n	n	100	n	100	n	n	n	n	n	n	n	n/a	Small seasonal feature. Soft and shallow. a habitat map was drawn for this site. Not suitable to EF/MT because of depth and substrate
W9-19	8/2/2022	8:15	8:30	Pond	15U	553600	6982119	N/A	N/A	HM/RM	n	POOL	20	n	5.2	6.2	0.3	0.42	n	n	n	n	n	n	100	n	95	n	n	n	5	n	n	n	n/a	Return to EF/MT. Seasonal feature. a habitat map was drawn for this site
W9-21	8/2/2022	8:45	9:00	Pond	15U	553696	6982135	N/A	N/A	HM/RM	n	POOL	38.5	n	21.1	22.40	0.10	0.14	n	n	n	n	n	n	100	n	100	n	n	n	n	n	n	n	n/a	A habitat map was drawn for this site. Return to MT/ySI. Too soft to EF, very small
W9-21B	8/2/2022	9:00	9:15	Pond	15U	553759	6982111	N/A	N/A	HM/RM	n	POOL	26.2	n	14.1	15.6	0.46	0.5	n	n	n	n	n	n	100	n	100	n	n	n	n	n	n	n	n/a	A habitat map was drawn for this site. Return to MT/EF/YSI. Deeper pond
W9-26-a	8/1/2022	10:45	11:30	Stream	15U	553802	6982309			HM/RM	1125.6	RUN	536	2.1	0.22	5.50	0.08	0.22	100	n	n	n	n	90	n	10	50	15	15	10	10	n	n	10	n/a	Observed 6 dead NSSB. Return to MT/YSI/EF
W9-26-b	8/1/2022	10:45	11:30	Stream	15U	553716	6982355			HM/RM	160	POOL	16	10.0	9.90	11.00	0.20	0.22	n	n	n	n	n	n	100	n	100	n	n	n	n	n	n	n	n/a	
W9-26-c	8/1/2022	10:45	11:30	Stream	15U	553695	6982361			HM/RM	378	RUN	84	4.5	0.32	15.00	0.06	0.20	30.0	n	n	30	n	100	n	n	50	50	n	n	n	n	n	n	n	n/a	A habitat map was drawn for this site
W9-30	8/1/2022	10:10	10:20	Pond	15U	554054	6982236	N/A	N/A	HM/RM	n	POOL	26	n	7.7	15.4	0.20	0.30	n	n	n	n	n	n	100	n	10	25	20	30	15	n	n	n	n/a	Varied sediment under standing water. A habitat map was drawn for this site. Return to EF/MT
W9-32	8/1/2022	9:00	9:10	Pond	15U	554603	6982022	N/A	N/A	HM/RM	n	POOL	20	n	5.6	7.0	0.10	0.14	n	n	n	n	n	n	100	n	75	10	15	n	n	n	n	n	n/a	Return to EF/MT. Seasonal feature. a habitat map was drawn for this site. Shallow, standing water.

Table A-3: Fish Habitat Assessed in 2022

Waterbody Name	Date	Start Time	End Time	Recon. Type	Zone	Starting Easting GPS Coordinates	Starting Northing GPS Coordinates	Ending Easting GPS Coord.	Ending Northing GPS Coord.	Collectors	Area	Habitat Type	Length	Mean Width	Min. Width	Max. Width	Mean Depth	Max Depth	Single Channel %	Double Channel %	Multiple Channel %	Dispersed Channel %	Riffle %	Run %	Pool %	Flat %	OM	Fi	Gr	Co	Bo	UC	BG	AV	Velocity	Notes
W9-32B	8/1/2022	9:20	9:30	Pond	15U	554622	6981993	N/A	N/A	HM/RM	n	POOL	23	n	13.6	n	0.14	0.33	n	n	n	n	n	n	100	n	30	20	45	n	5	n	n	n	n/a	A habitat map was drawn for this site
W9-33	8/1/2022	9:40	9:50	Pond	15U	554637	6981897	N/A	N/A	HM/RM	n	POOL	18	n	4.3	7.7	0.10	0.16	n	n	n	n	n	n	100	n	15	40	35	n	n	n	n	n	n/a	Standing water, no inlet/outlet. A habitat map was drawn for this site
W9-35	8/1/2022	8:30	8:45	Pond	15U	554486	6982333	N/A	N/A	HM/RM	n	POOL	34	n	13.1	15	0.20	0.24	n	n	n	n	n	n	100	n	90	n	5	n	5	n	n	n	n/a	Bottom too soft for EF, return to MT. A habitat map was drawn for this site
W9-43	8/1/2022	8:00	8:15	Pond	15U	554248	6982564	N/A	N/A	HM/RM	n	POOL	26	n	8.2	20.5	0.06	0.10	n	n	n	n	n	n	100	n	50	10	n	n	40	n	20	n	n/a	Too shallow to EF+MT. Standing water, seasonal feature. A habitat map was drawn for this site.
W9-5	8/2/2022	14:45	15:00	Pond	15U	553580	6982609	N/A	N/A	HM/RM	n	POOL	44	n	27.3	33	0.12	0.16	n	n	n	n	n	n	100	n	30	20	20	20	10	n	n	n	n/a	Return to EF/MT. A habitat map was drawn for this site
W9-7	8/1/2022	14:00	14:45	Pond	15U	553656	6982550			HM/RM	362.5	POOL	25	14.5	n	19.8	0.16	0.22	n	n	n	n	n	n	100	n	65	10	n	n	25	n	10	n	n/a	Return to EF/MT. A habitat map was drawn for this site. Photos beginning down
W9-7-a	8/1/2022	14:00	14:45	Stream	15U	553668	6982561			HM/RM	n	RUN	97	n	0.26	6.50	0.10	0.14	90	n	n	10	n	100	n	n	75	20	n	n	5	n	n	5	n/a	
W9-7-b	8/1/2022	14:00	14:45	Stream	15U	553687	6982570			HM/RM	2148.3	POOL	63	34.10	n	42.80	0.10	0.20	n	n	n	n	n	n	100	n	40	5	5	20	30	n	10	n	n/a	
W9-7-c	8/1/2022	14:00	14:45	Stream	15U	553696	6982575			HM/RM	n	RUN	27	n	6.00	8.00	0.08	0.14	100	n	n	n	n	100	n	n	75	20	n	n	5	n	n	n	n/a	
W9-7-d	8/1/2022	14:00	14:45	Stream	15U	553713	6982583			HM/RM	n	POOL	32	n	28.60	33.60	0.28	0.30	n	n	n	n	nn	n	100	n	9	5	n	n	5	n	n	10	n/a	
W9-7-e	8/1/2022	14:00	14:45	Stream	15U	553719	6982586			HM/RM	n	FLAT	49	n	3.50	4.60	0.12	0.22	90	n	n	10	n	n	n	100	80	10	n	5	5	n	n	10	n/a	
WP0010	9/25/2022	-	-	Stream	15U	545399	6971123	-	-	CH	0	end of run																							SUBSTRATE: sand 90-95% some boulder 5-10%. HABITAT TYPE/COMMENTS: End of run.
WP007	9/25/2022	-	-	Stream	15U	544943	6971495	-	-	CH	0																									SUBSTRATE: Co, Gravel, Pebble, Bo. HABITAT TYPE/COMMENTS: good existing habitat.
WP008	9/25/2022	-	-	Stream	15U	545008	6971444	-	-	CH	0	RUN	125m																							1/2 VELOCITY / DEPTH 0.197 / 0.3
WP009	9/25/2022	-	-	Stream	15U	545165	6971381	-	-	CH	0																									1/2 VELOCITY / DEPTH 0.111 / 0.2. SUBSTRATE: sand.

Table A-4: Water Velocity Readings Collected in Select Watercourses in 2022

Waterbody Name	Date	Start Time	End Time	Zone	Easting GPS Coordinates	Northing GPS Coordinates	Collectors	Stream/WB	Transect	Depth	Velocity (m/s) 60%	Bo	Co	Gr	Sd	Si	Cl	Comments
DR-5.9	7/28/2022	11:30	12:00	15V	550920	6981596	HM/RM	DR-5.9	L-US	0.22	0.01	-	5	55	20	20	0	
DR-5.9	7/28/2022	11:30	12:00	15V	550920	6981596	HM/RM	DR-5.9	MID	0.1	0.006	-	5	55	20	20	0	
DR-5.9	7/28/2022	11:30	12:00	15V	550920	6981596	HM/RM	DR-5.9	R-US	0.14	-0.001	-	5	55	20	20	0	
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	1	0.36	0.22	30	30	30	0	10	0	
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	2	0.72	0.25	30	30	30	0	10	0	
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	3	10.8	0.12	30	40	15	0	10	0	
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	4	1.44	0.8	30	20	40	0	10	0	flowmate behind rock
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	5	1.8	0.22	30	20	30	10	10	0	flowmate behind rock
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	6	2.16	0.1	30	20	30	10	10	0	
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	7	2.52	0.1	30	20	30	10	10	0	
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	8	2.88	0.1	30	20	30	10	10	0	flowmate behind rock
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	9	3.24	0.1	30	20	30	10	10	0	flowmate behind rock
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	10	3.84	0.12	30	20	30	10	10	0	flowmate in vegetation
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	11	4.2	0.1	70	20	30	15	10	0	
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	12	4.56	0.14	15	25	25	10	25	0	
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	13	4.92	0.16	15	25	25	10	25	0	Back Channel
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	14	5.28	0.16	15	25	25	10	25	0	Back Channel
D8.8	7/29/2022			15V	553392	6981820	HM/RM	D8.8	15	5.64	0.12	15	25	25	10	25	0	Back Channel
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	1	0.02	0	-	-	-	-	-	-	In organic matter
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	2	0.06	0.01	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	3	0.06	0.006	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	4	0.1	0.004	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	5	0.1	-0.02	-	-	-	-	-	-	very windy lots of organic matter
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	6	0.1	-0.01	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	7	0.16	0	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	8	0.16	0	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	9	0.14	0	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	10	0.18	0	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	11	0.2	0	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	12	0.22	0.01	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	13	0.22	0	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	14	0.22	0	-	-	-	-	-	-	
EI-29	7/30/2022			15V	554036	6981005	HM/RM	EI-29	15	0.18	0	-	-	-	-	-	-	on top of rocks
EI-4	8/2/2022	n	n	15V	553864	6981587	HM/RM	E1-4 (STREAM 2)	L-US	0.06	0.017	0	0	0	0	0		ww=1.1, 100% organic matter
EI-4	8/2/2022	n	n	15V	553864	6981587	HM/RM	E1-4 (STREAM 2)	MID	0.1	0.086	0	0	75	25	0	0	
EI-4	8/2/2022	n	n	15V	553864	6981587	HM/RM	E1-4 (STREAM 2)	R-US	0.08	0.057	0	0	0	0	0	0	100% organic matter
DR Pond 2	9/28/2022			15U	546920	6981287	CH	DR Pond 2	1	0.16	0.312	-	-	-	-	-	-	2m wide

Table A-5: Fish Habitat Quality Rankings, 2022

Waterbody Name	Dominant Habitat Type	Barriers/Obstructions		Ninespine Stickleback			Arctic Grayling			Overall Habitat Quality Ranking	Comments
		Type	Perm/Temp	Spawning	Rearing	Migration	Spawning	Rearing	Migration		
A19-A20	RUN	OF	T	N	N	N	N	N	N	None	Currently not present, possibly ephemeral. Evidence of drill mud on slope of hill down from A20 to A19.
A-20	POOL	SP; NC; EF	P	N	N	N	N	N	N	None	Water is low, no visible outflow. Shoreline habitat composed of cobble, pebble, bedrock some boulder. Possible pond freezes to depth in winter, there is no connection to A19 all dried up. Not very deep ~1m deep in center.
A21	POOL	SP; NC; EF	P	N	N	N	N	N	N	None	Very shallow - 0.15m deep in center. Frozen to bottom in places nearshore. SUBSTRATE: mud. HABITAT: Tundra, riparian.
A22	POOL	SP; NC; EF	P	N	N	N	N	N	N	None	Shallow. 0.5-1m deep in center shoreline. HABITAT: mostly mud and much covered in algae? (red?) some cobble on shoreline.
A23	POOL	SP; NC; EF	P	N	N	N	N	N	N	None	Very shallow/smallish pond. No connection really to other ponds which may explain the lack of fish if it dried up in the simmer or freezes to depth in winter. 0.30m deep in center, 0.10m around perimeter. SUBSTRATE: 90% muck, 10% cobble/rubble.
A24	POOL	SP; NC; EF	T	N	N	N	N	N	N	None	3 ponds: West pond possibly nearly flooded. SUBSTRATE: grass, mud/muck bottom . Middle pond mud bottom grass gringe. Evidence It completely dried out recently (ground cracked). East pond mud bottom. All ~0.40m deep all small.
A25	POOL	SP;	P	N	N	F	N	N	N	Low	pond is very shallow ~30cm. Muck shoreline, likely connects with A26 when water levels are high. Evidence pond dried up, ground cracked under water.
A26	POOL	SP	P	N	N	N	N	N	N	None	Cobble muck on west shoreline/ Grass & muck on south east north shorelines. Water could be lower than normal.
A27	POOL	None	P	N	F	N	N	N	N	Low	Larger and deeper >1m than previously surveyed ponds. Shocked perimeter same as precious ponds. Large areas of shore are deep mud/muck not a lot of newly flooded grasses as cobble shoreline. Signs water levels are low on the bank
A28	POOL	None	P	G	G	G	N	F	F	Moderate to High	Largest & deepest water body, north shore >1.5m deep right off bank. Shoreline consists of rubble/pebble/boulder in places but predominantly older flooded tundra/grasses. Deep mud area near shoreline in places
A2A	POOL	None	P	F	F	F	N	N	N	Low	Connected to P/S (pond (south)). Rubble on one side, muck/old veg on other
A32	POOL	D	T	N	N	N	N	N	N	None	completely dry
A33	POOL	None	P	G	G	G	N	N	N	Moderate	Some flooded vegetation along shoreline with pockets of cobble/boulder/rubble, some grasses as well; shoreline frozen; NSSB observed frozen on top of ice
A34	POOL	None	P	G	G	G	N	N	N	Moderate	shoreline frozen; some cobble/rubble shoreline with some flooded/decaying vegetation; connection to A33 likely in the spring; no fish observed
A5-A19	FLAT	OF;EF	T	N	F	F	N	N	N	Low	1/2 VELOCITY / DEPTH <0.05 / 0.1. SUBSTRATE: grass. Braided channel, water ponding in between hemlocks in tundra. Couldn't quantify discharge as whole area flooded some flow in areas <0.05m/s - water too shallow to read.
A6-44	FLAT	OF; EF; DC	T	N	N	N	N	N	N	None	Flooded connection between ponds. Water may not be present during normal conditions - high winds ~70 km/hr blowing water from ponds down the channel. Channel appears to be dry as evidenced by long grasses throught the wetted area.
B22	POOL	None	P	N	F	F	N	N	N	Low	Shoreline very mucky/deep mud; partial habitat exists in channel inlet where grasses are flooded; small pond possibly deep - deep near shore; grassy areas flooded in some areas; efished but no fish caught
B25-26 E Channel	FLAT	None	P	N	N	P	N	N	N	Low	Two streams move downhill from B26 wetted area towards B25; East channel may be year round; mud/muck in deeper water but not in the grassy areas; flows not collected due to high winds
B25-26 W Channel	FLAT	OF;EF	T	N	N	N	N	N	N	None	West channel appears more like rain puddles than a channel relative to the East Channel
B36-B37	FLAT	OF; EF	T	N	N	P	N	N	N	Low	Very shallow 2-5cm grass and tundra substrate. Channel meanders downhill from B37 to B36 following low lying areas of ground. Stream generally frozen and not deep enough to efish - no discernible flow observed as most areas frozen - no defined channel - mainly puddle from B37 overflow across low lying ground between the two ponds
B39	POOL	None	P	P	F	F	N	N	N	Moderate	Small but deeper (>1m) pond. Largely much some cobble, no decaying veg on edges
B4-22 N Channel	FLAT	OF; EF	T	N	N	N	N	N	N	None	Two streams flow south from B22 eastward downhill; North channel ponds or puddles possibly from rain, channels may not be present year round; evidence of grass growing throughout the area with no mud/muck bottoms to suggest standing water; shallow, frozen pools
B4-22 S Channel	FLAT	None	P	N	N	P	N	N	N	Low	South Channel slightly wetter than north channel and may convey water throughout the year; water in channel is frozen
B4-B22	POOL/FLAT	EF	T	N	N	N	N	N	N	None	Standing pools of water; no flow; undefined channel
B4-B39	POOL/FLAT	EF;NC	T	N	N	N	N	N	N	None	Ephemeral stream; undefined, dry channel with pockets of pooled water; no flow
B4-B45	FLAT	EF	T	G	G	G	G	G	G	High	cobble boulder channel
B5-33 N Channel	FLAT	OF; EF	T	N	N	N	N	N	N	None	Wetted watercourse that meanders from B33 towards B5; grass substrate suggests channel is dry during the summer and may only be wet now because of September rains (Ernest - Community member)
B5-33 S Channel	FLAT	OF; EF	T	N	N	N	N	N	N	None	Wetted watercourse that meanders from B33 towards B5; grass substrate suggests channel is dry during the summer and may only be wet now because of September rains (Ernest - Community member)
B5-34	FLAT/POOL	None	P	P	G	G	N	N	N	High	Fairly long channel; no discernable flow; grass substrate; > 1000 NSSB observed near channel at mouth of upstream pond (B5) ; shallow, mud substrate suggests could be wet year-round; great NSSB habitat at outlet of Pond (15 U 539077 6987898 B5)
B59-60	FLAT/POOL	OF;EF;SP	T	N	N	N	N	N	N	None	Channel is very shallow series of pools between ponds; grass substrate; 5-10 cm deep; this channel is unlikely to be present in the summer and may only be wet during precipitation events ; no discernable flow
B59-62	FLAT/POOL	OF;EF;SP	T	N	N	N	N	N	N	None	Channel is series of pools between ponds; grass substrate in channel; no defined channel and no discernable flow; No fish observed or caught
B5-B31	RIF/RUN	None	P	P	F	G	N	N	N	Moderate	Small bodied fish observed; cross-sectional data collected at B5-B31 but not sure at which station
B5-B34	POOL/FLAT	EF; SP	T	N	P	F	N	N	N	Low	Undefined channel; pools of standing water; ephemeral stream; no flow; small bodied fish observed at outlet of B34 pond; school of small bodied fish observed at inlet of B5
B60-B61	FLAT	EF; OF	T	N	N	N	N	N	N	None	shallow stream; no discernable flow; mud/cobble substrate with grassy flooded habitat along margins.
B7-B25	FLAT	EF;OF	T	N	N	P	N	N	N	Low	Wind was blowing water down the channel from B25 to B7; evidence that parts of the channel remain wet year round (mud substrate); a few deeper pockets exist moving towards B7; more boulders present than other streams in area
B7-B25	POOL	None	P	N	P	P	N	N	N	Low	Undefined channel with small pools of standing water

Table A-5: Fish Habitat Quality Rankings, 2022

Waterbody Name	Dominant Habitat Type	Barriers/Obstructions		Ninespine Stickleback			Arctic Grayling			Overall Habitat Quality Ranking	Comments
		Type	Perm/Temp	Spawning	Rearing	Migration	Spawning	Rearing	Migration		
B7-B28	POOL	None	P	N	P	P	N	N	N	Low	Undefined channel with intermittent pools of standing water
B7-B28	FLAT	EF;OF	T	N	N	P	N	N	N	Low	2 defined channels flow from B34 to B5; Channel is a series of depressions filled with water moving downstream towards B5; Deeper pools exist closer to B5 in lower lying areas; Grass substrate suggests channels were dry for most of summer.
CH-28	POOL	NC; SP	P	N	N	P	N	N	N	Low	Shallow; no inlet/outlet; varied substrate
CH-29	POOL	SP	P	P	P	P	N	N	N	Low	Shallow; varied substrate; CH-29 appears to flow into CHK LK when water levels are higher; current conditions observed dry outflow
CH-6	POOL	SP	P	P	P	P	N	N	N	Low	Dispersed channel eventually flows to CH-6 during high water events
CH6-WC	FLAT	NC, EF	T	N	N	N	N	N	N	None	Discontinuous and very dispersed channel, doesn't fully flow into CH6, not suitable for discharge. Return to EF/YSI. A habitat map was drawn for this site
D1.2 - WB	POOL	None	P	P	P	P	N	N	N	Low	Small bodied fish observed
D1.2 - WC	FLAT	None	P	N	P	P	N	N	N	Low	
D4-33	FLAT	EF	T	N	N	N	N	N	N	None	This stream was not visible or apparent and does not currently connect to D33 but may during the spring or years with high precipitation; almost all standing water was frozen; Unlikely that this stream flows year-round
D8.8	RUN	None	P	P	F	G	F	F	G	High	A habitat map was drawn for this site. Cross Sectional flow data collected in several locations on July 29, 2022
D8.8	POOL	None	P	F	F	G	N	F	G	High	
D8.8	FLAT	None	P	P	F	G	F	F	G	High	
DP-11	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-12	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site.
DP-13	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site. Return for MT+YSI
DP-18	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-18	FLAT	SP	P	N	N	N	N	N	N	None	
DP-19	POOL	None	P	P	P	P	N	N	N	None	Return for EF+MT
DP-19	FLAT	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-20	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-21	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-22	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-24	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-24B	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-25	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-27	POOL	None	P	P	P	P	N	N	N	Low	Return to MT
DP-27	FLAT	None	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-28	POOL	None	P	P	P	P	N	N	N	Low	Return to MT
DP-28	FLAT	None	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-33	POOL	None	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-36+37	POOL	None	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-38	POOL	None	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-5	POOL	None	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
DP-8	POOL	None	P	N	P	P	N	N	N	Low	A habitat map was drawn for this site. Too soft for EF, consider MT
DP-9	POOL	NC	P	N	N	N	N	N	N	None	A habitat map was drawn for this site. Return for EF/YSI/MT. Not active inlet/outlet
DR-10	POOL	None	P	N	P	P	N	N	N	Low	A habitat map was drawn for this site. Too soft for EF, consider MT
DR-13	POOL	None	P	F	F	F	N	N	N	Moderate	A habitat map was drawn for this site
DR-2	POOL	SP; EF	T	N	N	N	N	N	N	None	A habitat map was drawn for this site. Small and shallow seasonal feature.
DR5.9	FLAT	None	P	F	F	G	G	G	G	High	NSSB and ARGR captured
DR5.9	RUN	None	P	F	F	G	G	G	G	High	NSSB and ARGR captured
DR-8	POOL	None	P	P	P	P	N	N	N	Low	Pond; Small Bodied Fish Observed
DR-A	POOL	None	P	P	P	P	N	N	N	Low	Pond; Small Bodied Fish Observed
DR-B	POOL	None	P	N	N	N	N	N	N	None	
DR-C	POOL	SP; NC	P	N	N	N	N	N	N	None	A habitat map was drawn for this site; too shallow and mucky to fish; no inlet/outlet
DRO-2	POOL	None	P	N	N	N	N	N	N	None	
E1-29	RUN	None	P	F	G	G	N	N	N	High	Watercourse with series of runs, flats and pools; small bodied fish observed; watercourse flows into chickenhead lake
E1-29	POOL	None	P	F	G	G	N	N	N	High	
E1-29	FLAT	None	P	F	G	G	N	N	N	High	
EI-0	POOL	None	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
EI-14	POOL	SP;EF;NC	T	N	N	N	N	N	N	None	Shallow, seasonal feature; no inlet/outlet; too shallow & mucky to fish
EI-20	POOL	SP;EF;NC	T	N	N	N	N	N	N	None	Small, ephemeral feature; no inlet/outlet; too mucky and shallow to fish
EI-21	POOL	SP;EF;NC	T	N	N	N	N	N	N	None	Ephemeral feature; no inlet/outlet; standing water; too shallow and mucky to fish
EI-23	POOL	SP;EF;NC	T	N	N	N	N	N	N	None	Standing water; no inlet/outlet; primarily organic matter; too shallow to fish
EI-4 (Stream 1)	POOL	None	P	N	P	P	N	N	N	Low	A habitat map was drawn for this site

Table A-5: Fish Habitat Quality Rankings, 2022

Waterbody Name	Dominant Habitat Type	Barriers/Obstructions		Ninespine Stickleback			Arctic Grayling			Overall Habitat Quality Ranking	Comments
		Type	Perm/Temp	Spawning	Rearing	Migration	Spawning	Rearing	Migration		
EI-4 (Stream 1)	RUN	None	P	N	N	P	N	N	N	Low	Return to EF/YSI
EI-4 (Stream 2)	RUN	None	P	N	N	P	N	N	N	Low	A habitat map was drawn for this site
EI-4 (Stream 2)	POOL	None	P	N	P	P	N	N	N	Low	Note that beginning of DS pool was previously mapped for stream 1, so it is excluded for stream 2
H1-Mel Lk -1	FLAT	None	P	F	F	G	G	F	G	High	A lot of water from H1 is being blown towards Mel Lake -1; channels are fairly well defined due to fairly steep slope; Possible candidate location for Arctic Grayling spawning pad if flows are good in spring
W10-12	POOL	SP;NC; EF	P	N	N	N	N	N	N	None	Standing water, no inlet/outlet; seasonal; organic matter dominant; not suitable for fishing
W10-13	POOL	SP;NC; EF	P	N	N	N	N	N	N	None	Shallow, ephemeral feature; no inlet/outlet; organic matter dominant with some cobble; standing water
W10-17	POOL	SP;NC; EF	P	N	N	N	N	N	N	None	Ephemeral feature; shallow, standing water; No inlet/outlet; not suitable for fishing
W10-2	POOL	SP;NC; EF	P	N	N	N	N	N	N	None	Algae growth present, a habitat map was drawn for this site
W10-21	POOL	SP;NC; EF	P	N	N	N	N	N	N	None	Ephemeral feature; standing water; No inlet/outlet
W10-24	POOL	SP;NC; EF	P	N	N	N	N	N	N	None	Very shallow, lots of organic matter; no inlet/outlet; standing water; ephemeral feature
W10-25	RUN	None	P	P	P	P	N	N	N	Low	Series of Run/Pool/Run; flows into chicken head lake; shallow
W10-25	POOL	SP	P	P	P	P	N	N	N	Low	
W10-3	POOL	SP; NC	P	N	N	N	N	N	N	None	Shallow; no inlet/outlet; not suitable fish habitat
W10-5	POOL	SP; EF; NC	T	N	N	N	N	N	N	None	Shallow, ephemeral feature; no inlet/outlet; 100% emergent vegetation
W10-(Stream 1)	RUN	OF	T	N	N	N	N	N	N	None	Overland flow
W10-(Stream 1)	POOL	None	P	N	N	N	N	N	N	None	
W10- (Stream 2)	RUN	None	P	N	N	N	N	N	N	None	
W10- (Stream 2)	POOL	None	P	N	N	N	N	N	N	None	
W10-(Stream 2)	FLAT	None	P	N	N	N	N	N	N	None	
W9-10	POOL	EF; SP	T	N	N	N	N	N	N	None	Return to EF/MT. Seasonal feature of standing water. A habitat map was drawn for this site
W9-11	POOL	None	P	N	N	N	N	N	N	None	
W9-11	RUN	None	P	N	N	N	N	N	N	None	
W9-15	POOL	SP	P	N	N	N	N	N	N	None	Not suitable for fish. Cannot EF/MT. a habitat map was drawn for this site
W9-17	POOL	SP	P	N	N	N	N	N	N	None	Small seasonal feature. Soft and shallow. a habitat map was drawn for this site. Not suitable to EF/MT because of depth and substrate
W9-19	POOL	SP; EF	T	N	N	N	N	N	N	None	Return to EF/MT. Seasonal feature. a habitat map was drawn for this site
W9-21	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site. Return to MT/ySI. Too soft to EF, very small
W9-21B	POOL	None	P	N	N	P	N	N	N	Low	A habitat map was drawn for this site. Return to MT/EF/YSI. Deeper pond
W9-26	RUN	None	P	N	N	P	N	N	N	Low	Observed 6 dead NSSB. Return to MT/YSI/EF
W9-26	POOL	None	P	F	F	P	N	N	N	Moderate	
W9-30	POOL	None	P	P	P	P	N	N	N	Low	Varied sediment under standing water. A habitat map was drawn for this site. Return to EF/MT
W9-32	POOL	SP; EF	T	N	P	P	N	N	N	Low	Return to EF/MT. Seasonal feature. a habitat map was drawn for this site. Shallow, standing water.
W9-32B	POOL	SP	P	N	N	N	N	N	N	None	A habitat map was drawn for this site
W9-33	POOL	SP; NC	P	N	N	N	N	N	N	None	Standing water, no inlet/outlet. A habitat map was drawn for this site
W9-35	POOL	SP	P	N	N	N	N	N	N	None	Bottom too soft for EF, return to MT. A habitat map was drawn for this site
W9-43	POOL	SP; EF	T	N	N	N	N	N	N	None	Too shallow to EF+MT. Standing water, seasonal feature. A habitat map was drawn for this site.
W9-5	POOL	None	P	N	P	P	N	N	N	Low	Return to EF/MT. A habitat map was drawn for this site
W9-7	POOL	None	P	P	P	P	N	N	N	Low	Return to EF/MT. A habitat map was drawn for this site. Photos beginning down
W9-7	RUN	None	P	N	N	P	N	N	N	Low	
W9-7	FLAT	None	P	N	N	P	N	N	N	Low	
WP0010	end of run	None	P	F	F	F	F	F	F	Moderate	SUBSTRATE: sand 90-95% some boulder 5-10%. HABITAT TYPE/COMMENTS: End of run.
WP007	RUN	None	P	F	F	F	F	F	F	Moderate	SUBSTRATE: Co, Gravel, Pebble, Bo. HABITAT TYPE/COMMENTS: good existing habitat.
WP008	RUN	None	P	F	F	F	F	F	F	Moderate	1/2 VELOCITY / DEPTH 0.197 / 0.3
WP009	RUN	None	P	F	F	F	F	F	F	Moderate	1/2 VELOCITY / DEPTH 0.111 / 0.2. SUBSTRATE: sand.

Notes:

Barrier Types: OF = Overland Flow; D = dry; SP=Shallow Pond; NC= No Connectivity; EF = Ephemeral Feature

Habitat Quality Ranking: N = None; P = Poor; F = Fair; G = Good

Table A-6: Fishing Data Reconnaissance Survey - 2022

GENERAL INFORMATION											SAMPLING LOCATIONS AND WATER CHEMISTRY						ELECTROFISHER			NETS and TRAPS										
Waterbody Name	Gear Type	Project Name	DATE	Time Started	Collectors	GPS Zone	GPS Easting	GPS Northing	Surface Conditions	Weather Conditions	Depth (m)	Length (m)	pH	Dissolved Oxygen (mg/L)	Water Temp. (oC)	Conductivity (µS/cm)	Length (m)	Settings	Seconds	Type	Hauls (#)	Set Time	Set Date	lift time	lift Date	Net Length	Smallest Mesh Size	Largest Mesh Size	Min. Depth	Max. Depth	Comments
A-20	EF	Meliadine Extension	9/27/22	10:05	CH/AK	15U	542573	6986791	calm, rippled	overcast	1m	perimeter ~450m	7.9	16.87	0.2	1330	perimeter ~450m	40Hz, 250V	1350	-	-	-	-	-	-	-	-	-	-	Efish shore out 5-10m toward center where muck/sand starts. No fish caught
A21	EF	Meliadine Extension	9/27/22	-	CH/AK	15U	542292	6986546	-	-	0.15m	-	7.82	13.49	1.2	390	-	40Hz, 250V	300	-	-	-	-	-	-	-	-	-	-	No fish - no visible connection to other ponds. Possible connection dried up.
A22	EF	Meliadine Extension	9/27/22	-	CH/AK	15U	542271	6986634	-	-	0.5-1m	-	7.95	13.8	0.2	390	-	40Hz, 250V	1217	-	-	-	-	-	-	-	-	-	-	Fished down toward A19 and did not catch fish. Possibly fish can't get up to this pond in dry years, pond likely freezes to bottom in winter.
A23	EF	Meliadine Extension	9/27/22	-	CH/AK	15U	542176	6986721	-	-	0.10-0.30m	-	-	-	-	-	-	40Hz, 250V	500	-	-	-	-	-	-	-	-	-	-	No fish caught; shallow, small pond; no connection to downstream ponds
A24	EF	Meliadine Extension	9/27/22	-	CH/AK	15U	542196	6986809	-	-	0.40m	-	8.12	14.6	1.9	352.3	-	40Hz, 250V	1252	-	-	-	-	-	-	-	-	-	-	No fish caught - pond does not appear connected currently to anything else - likely freeze to bottom in winter.
A25	EF	Meliadine Extension	9/27/22	-	CH/AK	15U	541507	6987385	-	-	0.30m	-	8.08	14.04	3.8	394.9	-	40Hz, 250V	500	-	-	-	-	-	-	-	-	-	-	No fish caught; pond is very shallow with muck shoreline - likely connects to A-26 when water levels are higher
A26	EF	Meliadine Extension	9/27/22	-	CH/AK	15U	542042	6986896	-	-	>1m	-	8.04	14.96	1.8	310.9	-	40Hz, 250V	1306	-	-	-	-	-	-	-	-	-	-	Fish caught
A27	EF	Meliadine Extension	9/27/22	-	CH/AK	15U	542003	6986979	-	-	>1m	-	-	-	-	-	-	40Hz, 250V	1384	-	-	-	-	-	-	-	-	-	-	Fish caught
A28	EF	Meliadine Extension	9/27/22	-	CH/AK	15U	541922	6987193	-	-	>1.5m	-	8.1	14.45	3.3	337.3	-	40Hz, 250V	2604	-	-	-	-	-	-	-	-	-	-	Fish caught
A2A	EF	Meliadine Extension	9/30/22	-	CH/MM/AK	15U	543437	6986186	-	-	-	-	7.13	15.78	0	800.2	-	40Hz, 150V	1140	-	-	-	-	-	-	-	-	-	-	Fish caught
A33	O	Meliadine Extension	10/1/2022	-	CH/AK	15U	541522	6986714	rippled	windy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NSSB observed frozen on top of ice ; pond frozen unable to fish
A5-19	EF	Meliadine Extension	9/27/22	8:05	CH/AK	15U	542549	6986540	-	overcast, cold	20/30cm	fished approx. 600m of puddles	8.32	16.98	0.2	990	-	40Hz, 250V	435	-	-	-	-	-	-	-	-	-	-	fish caught
B22	EF	Meliadine Extension	10/4/2022	-	CH/AR	15U	527859	6987860	rippled	windy	-	-	7.28	14.1	0.7	291.9	-	40Hz, 250V	500	-	-	-	-	-	-	-	-	-	-	No fish caught; flooded, small pond; possibly deep; potential to be NSSB habitat
B39	EF	Meliadine Extension	9/30/22	-	CH/MM/AK	15U	538242	6986772	-	-	>1m	-	7.23	14.56	0.5	299.5	-	40Hz, 250V	906	-	-	-	-	-	-	-	-	-	-	No fish caught
B4-45	EF	Meliadine Extension	9/30/22	-	CH/MM/AK	15U	537985	6987790	-	-	0.5m	-	7.28	14.18	1.5	182.6	-	40Hz, 250V	676	-	-	-	-	-	-	-	-	-	-	Fish caught/observed
B5-34	EF	Meliadine Extension	10/2/2022	-	CH/AR	15U	539077	6987898	-	windy	0.05	~100m	7.22	12.63	2.9	350.2	-	40Hz, 250V	600	-	-	-	-	-	-	-	-	-	-	Long channel; no discernable flow; >1000 YOY NSSB observed at mouth of upstream pond, no fish caught in the stream but US pond great NSSB habitat
B59-60	EF	Meliadine Extension	10/2/2022	-	CH/AK	15U	540365	6986303	-	windy	0.05 to 0.1	-	7.6	14.2	2.3	255.6	-	40Hz, 250V	100	-	-	-	-	-	-	-	-	-	-	Watercourse is very shallow series of puddles down to next pond; grass substrate; No fish caught
B59-62	EF	Meliadine Extension	10/2/2022	-	CH/AK	15U	540228	6986366	-	windy	-	-	7.22	5.23	1.5	801.9	-	40Hz, 250V	200	-	-	-	-	-	-	-	-	-	-	Channel is just series of small pools; grass substrate; undefined channel with no discernable flow; no fish caught
B60-61	EF	Meliadine Extension	10/2/2022	-	CH/AK	15U	540556	6986252	-	windy	0.05	~15m	7.23	16.72	1.6	527.2	-	40Hz, 250V	400	-	-	-	-	-	-	-	-	-	-	substrate is grass with some cobble; No fish caught
CH-28	EF	Meliadine Extension	8/4/22	14:30	HM/RM	15U	555038	6981798	rippled	Sunny, windy	-	-	7.23	8.2	17.1	125.5	400	40Hz, 650V	390	-	-	-	-	-	-	-	-	-	-	No fish caught
CH-28	MT-1	Meliadine Extension	8/4/22	14:20	HM/RM	15U	555038	6981798	rippled	Sunny, windy	-	-	7.23	8.2	17.1	125.5	-	-	-	Minnow Traps	1	14:30								No fish caught
CH-28	MT-2	Meliadine Extension	8/4/22	14:25	HM/RM	15U	555038	6981798	rippled	Sunny, windy	-	-	7.23	8.2	17.1	125.5	-	-	-	Minnow Traps	1	14:25								No fish caught
CH-29	EF	Meliadine Extension	8/4/22	14:45	HM/RM	15U	555254	6981649	rippled	Sunny, windy	-	-	7.43	8.68	12.1	57.2	-	40Hz,650V	620.1	-	-	-	-	-	-	-	-	-	-	No fish caught
CH-29	MT-1	Meliadine Extension	8/4/22	14:30	HM/RM	15U	555254	6981649	rippled	Sunny, windy	-	-	7.43	8.68	12.1	57.2	-	-	-	Minnow Traps	1	15:00								No fish caught
CH-29	MT-2	Meliadine Extension	8/4/22	14:45	HM/RM	15U	555254	6981649	rippled	Sunny, windy	-	-	7.43	8.68	12.1	57.2	-	-	-	Minnow Traps	1	14:45								No fish caught
D5.9	N	Meliadine Extension	7/28/22	11:30	HM/RM	15U	550920	6981596	Rippled	Cloudy, windy	0.3	-	8.07	5.82	20.1	108.2	-	-	-	-	-	-	-	-	-	-	-	-	-	Water crossing location; channel goes from single to double; run with low velocity
D5.9	EF	Meliadine Extension	8/5/22	11:45	HM/RM	15U	550900	6981644	Calm	Sunny	-	-	6.48	5.46	15.4	133.7	230	40Hz, 650v	337.7	-	-	-	-	-	-	-	-	-	-	No fish caught
D8.8	N	Meliadine Extension	7/28/22	16:00	HM/RM	15U	553454	6981071	-	Sunny	-	-	7.4	7.55	19.4	89.9														Single/double/braided steam
D8.8	EF	Meliadine Extension	7/30/22	9:30	HM/RM	15U	553462	6981020	Rippled	Cloudy, windy	-	-	7.4	7.55	19.4	89.9	150.2	40Hz, 650v	360.1	-	-	-	-	-	-	-	-	-	-	No fish caught
DR	N	Meliadine Extension	7/27/22	16:50	HM/RM	15U	545763	6980662	-	Sunny	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	Ephemeral feature; series of small puddles of standing, turbid water; no inlet or outlet; no habitat for fish
DR-10	N	Meliadine Extension	7/26/22	16:45	HM/RM	15U	554066	6981841	Rippled	Sunny, windy	0.4	-	7.08	5.6	23.1	91.8	-	-	-	-	-	-		-	-	-	-	-	-	Series of puddles of standing water; very shallow; ephemeral features
DR-12	N	Meliadine Extension	7/28/22	13:00	HM/RM	15U	551565	6981399	Rippled	Cloudy, windy	-	-	Too shallow for WQ	Too shallow for WQ	Too shallow for WQ	Too shallow for WQ	-	-	-	-	-	-	-	-	-	-	-	-	-	Standing water; ephemeral feature; no inlet or outlet; too shallow to fish or collect water quality data; predominantly fines; no visible fish or fish habitat
DR-12	EF	Meliadine Extension	8/5/22	13:30	HM/RM	15U	551565	6981399	Calm	Sunny	-	50	-	-	-	-	50	40Hz, 650v	77.1	-	-	-	-	-	-	-	-	-	-	No fish captured or observed
DR-13	EF	Meliadine Extension	7/28/22	14:20	HM/RM	15U	551670	6981393	Rippled	Cloudy, windy	-	25	7.8	7.59	14.7	189.4	25	40Hz, 650v	119.6	-	-	-	-	-	-	-	-	-	-	No fish caught; 10 small bodied fish observed; only able to fish from edge - bottom too soft
DR-13	N	Meliadine Extension	7/28/22	13:40	HM/RM	15U	551670	6981392	Rippled	Cloudy, windy	-	-	7.8	7.59	14.7	189.4	-	-	-	-	-	-	-	-	-	-	-	-	-	Small, shallow ephemeral pond; undefined channel into tundra from outflow; no visible fish or fish habitat
DR-2	EF	Meliadine Extension	7/27/22	16:20	HM/RM	15U	546079	6980981	Calm	Sunny	-	110	5.78	6.26	11.8	168.2	110	40Hz, 650v	315.1	-	-	-	-	-	-	-	-	-	-	No fish obs.; extremely shallow, soft substrate with organic matter; not suitable for MTs
DR-2	N	Meliadine Extension	7/27/22	16:00	HM/RM	15U	546079	6980980	Calm	Sunny	-	7	7.24	9.4	26.2	293.2	-	-	-	-	-	-	-	-	-	-	-	-	-	Small, shallow ephemeral feature; no inlet or outlet
DR-3	EF	Meliadine Extension	8/5/22	14:00	HM/RM	15U	551593	6981400	Calm	Sunny	-	-	-	-	-	-	40	40Hz, 650v	70.5	-	-	-	-	-	-	-	-	-	-	conditions not ideal for E-fishing; 50-60 SBF observed; 5 NSSB caught
DR-8	O	Meliadine Extension	7/26/22	14:20	HM/RM	15U	554091	6981882	Rippled	Sunny, windy	-	-	7.05	0.07	20.7	283.5	-	-	-	-	-	-		-	-	-	-	-	-	Small, shallow pond of standing water; Small bodied fish observed; no inlet or outlet, ephemeral feature
DR-8	MT1	Meliadine Extension	7/28/22	13:25	HM/RM	15U	547333	6981439	Calm	Sunny	0.2	-	6.7	7.04	12	248.2				Minnow Traps	1	13:25	7/27/2022	13:00	7/28/2022	-	-	-	-	Soft sediments; no fish caught
DR-8	EF	Meliadine Extension	8/5/22	9:35	HM/RM	15U	547333	6981439	Calm	Sunny	0.2	90	6.7	7.04	12	248.2	90	40Hz, 650V	221.6	-	-	-	-	-	-	-	-	-	-	No fish caught or obs; extremely soft substrate dangerous to EF in some areas
DR-A	O	Meliadine Extension	7/26/22	12:30	HM/RM	15U	546955	6981373	Rippled	Sunny, windy	0.3	-	6.87	5.8	22.7	276.7	-	-	-	-	-	-	-	-	-	-	-	-	-	small, shallow pond; ephemeral feature; no inlet or outlet; small bodied fish observed
DR-A	N	Meliadine Extension	8/5/22	9:25	HM/RM	15U	546955	6981370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	returned to E-fish and feature is dry; unable to EF or MT
DR-B	N	Meliadine Extension	7/28/22	10:50	HM/RM	15U	550857	6981500	Rippled	Sunny, windy	-	-	8.2	87.5	19.4	222.1	-	-	-	-	-	-	-	-	-	-	-	-	-	Small, shallow pond, no inlet/outlet
DR-B	MT-1	Meliadine Extension	8/5/22	11:24	HM/RM	15U	550857	6981501	Calm	Sunny										Minnow Traps		11:24	8/5/2022	11:30	8/6/2022	-	-	-	-	no fish caught

Table A-6: Fishing Data Reconnaissance Survey - 2022

GENERAL INFORMATION										SAMPLING LOCATIONS AND WATER CHEMISTRY						ELECTROFISHER			NETS and TRAPS										
Waterbody Name	Gear Type	Project Name	DATE	Time Started	Collectors	GPS Zone	GPS Easting	GPS Northing	Surface Conditions	Weather Conditions	Depth (m)	Length (m)	pH	Dissolved Oxygen (mg/L)	Water Temp. (oC)	Conductivity (µS/cm)	Length (m)	Settings	Seconds	Type	Hauls (#)	Set Time	Set Date	lift time	lift Date	Net Length	Smallest Mesh Size	Largest Mesh Size	Min. Depth	Max. Depth	Comments
DR-B	MT-2	Meliadine Extension	8/5/22	11:20	HM/RM	15U	550857	6981498	-	-	-	-					-	-	-	Minnow Traps	-	11:20	8/5/2022	11:45	8/6/2022	-	-	-	-	-	No fish caught
DR-B	EF	Meliadine Extension	8/5/22	10:45	HM/RM	15U	550857	6981501	-	-	0.2	130	6.62	7.2	16.3	184.5	130	40Hz, 650V	189.5							-	-	-	-	-	extremely soft sediment; shallow; no fish caught or observed
DR-B	MT-1	Meliadine Extension	8/5/22	11:17	HM/RM	15U	550857	6981498	-	-	0.2	-	6.62	7.2	16.3	184.5	-	-	-	Minnow Traps	-	11:17	8/5/2022	11:17	8/6/2022	-	-	-	-	-	extremely soft sediment; shallow; no fish caught or observed
DR-C	O	Meliadine Extension	7/28/22	15:30	HM/RM	15U	553213	6980924	Rippled	Cloudy, windy	-	-	7.65	3.14	20.8	291.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Shallow pond, no inlet/outlet observed; small bodied fish observed
E1-29	EF	Meliadine Extension	7/29/22	14:15	HM/RM	15U	554036	6981005	-	Sunny	-	-	7.32	8.56	18.9	96.8	148	40Hz, 650v	326.1	-	-	-	-	-	-	-	-	-	-	-	Caught ~48 NSSB
EI-0	O	Meliadine Extension	8/4/22	11:00	HM/RM	15U	553963	6981765	rippled	Sunny, windy	-	-	6.27	7.96	15.6	129.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SBF observed
DR Pond 1	EF	Meliadine Extension	9/26/22	16:30	CH	15U	546922	6981232	wavy	very windy	0.1 to 0.4	entire perimeter	7.1	12.22	5.9	168.1	entire perimeter	40Hz, 250v	906s	-	-	-	-	-	-	-	-	-	-	-	No fish caught
DR Pond 1	MT22	Meliadine Extension	9/26/22	16:30	CH	15U	546967	6981245	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 1	MT23	Meliadine Extension	9/26/22	16:30	CH	15U	546978	6981244	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 1	MT24	Meliadine Extension	9/26/22	16:30	CH	15U	546984	6981259	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 1	MT25	Meliadine Extension	9/26/22	16:30	CH	15U	546976	6981273	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 1	MT26	Meliadine Extension	9/26/22	16:30	CH	15U	546998	6981250	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 1	MT27	Meliadine Extension	9/26/22	16:30	CH	15U	546959	6981227	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 1	MT28	Meliadine Extension	9/26/22	16:30	CH	15U	546956	6981228	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 1	MT29	Meliadine Extension	9/26/22	16:30	CH	15U	546946	6981223	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 1	MT30	Meliadine Extension	9/26/22	16:30	CH	15U	546941	6981232	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 1	MT31	Meliadine Extension	9/26/22	16:30	CH	15U	546935	6981229	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 1	MT32	Meliadine Extension	9/26/22	16:30	CH	15U	546922	6981238	wavy	very windy	0.1 to 0.4	-	7.1	12.22	5.9	168.1	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Small pond much bottom with finger of grass - shallow ~0.4m deep. Part of pond on cull side was very shallow ~0.10m deep and appeared to be newly flooded.
DR Pond 2	EF	Meliadine Extension	9/26/22	16:30	CH	15U	546823	6981307	wavy	high wind, overcast	0.5m to 0.6m	entire perimeter of pond	6.95	13.61	5.1	169.2	entire perimeter of pond	40Hz, 250v	1210s	-	-	-	-	-	-	-	-	-	-	-	1 NSSB Adult captured
DR Pond 2	MT15	Meliadine Extension	9/26/22	16:30	CH	15U	546829	6981348	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT14	Meliadine Extension	9/26/22	16:30	CH	15U	546830	6981357	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT13	Meliadine Extension	9/26/22	16:30	CH	15U	546833	6981368	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT12	Meliadine Extension	9/26/22	16:30	CH	15U	546832	6981378	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT11	Meliadine Extension	9/26/22	16:30	CH	15U	546830	6981383	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT10	Meliadine Extension	9/26/22	16:30	CH	15U	546829	6981397	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT9	Meliadine Extension	9/26/22	16:30	CH	15U	546819	6981418	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT8	Meliadine Extension	9/26/22	16:30	CH	15U	546805	6981442	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT7	Meliadine Extension	9/26/22	16:30	CH	15U	546773	6981460	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT6	Meliadine Extension	9/26/22	16:30	CH	15U	546735	6981454	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT5	Meliadine Extension	9/26/22	16:30	CH	15U	546675	6981400	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT4	Meliadine Extension	9/26/22	16:30	CH	15U	546682	6981371	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT3	Meliadine Extension	9/26/22	16:30	CH	15U	546780	6981319	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT2	Meliadine Extension	9/26/22	16:30	CH	15U	546733	6981349	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 2	MT1	Meliadine Extension	9/26/22	16:30	CH	15U	546700	6981356	wavy	high wind, overcast	0.16m	-	6.95	13.61	5.1	169.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	9/28/2022	-	-	-	-	-	Channel shallow ~15cm deep. Evidence it was dry at some point
DR Pond 3	EF	Meliadine Extension	9/26/22	16:30	CH	15U	546920	6981287	rippled	windy	0.5m to 0.6m	entire perimeter	7.08	12.01	6.1	168.2	entire perimeter	40Hz, 250v	400s	-	-	-	-	-	-	-	-	-	-	-	No fish caught
DR Pond 3	MT16	Meliadine Extension	9/26/22	16:30	CH	15U	546968	6981291	rippled	windy	0.16m	-	7.08	12.01	6.1	168.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	-	-	-	-	-	-	Appears to be part of channel that needed to be investigated. Up to 0.5-0.6m deep mostly a deeper channel (also width than a pond). Muck bottom

Table A-6: Fishing Data Reconnaissance Survey - 2022

GENERAL INFORMATION											SAMPLING LOCATIONS AND WATER CHEMISTRY						ELECTROFISHER			NETS and TRAPS									
Waterbody Name	Gear Type	Project Name	DATE	Time Started	Collectors	GPS Zone	GPS Easting	GPS Northing	Surface Conditions	Weather Conditions	Depth (m)	Length (m)	pH	Dissolved Oxygen (mg/L)	Water Temp. (oC)	Conductivity (µS/cm)	Length (m)	Settings	Seconds	Type	Hauls (#)	Set Time	Set Date	lift time	lift Date	Net Length	Smallest Mesh Size	Largest Mesh Size	Min. Depth	Max. Depth	Comments
DR Pond 3	MT17	Meliadine Extension	9/26/22	16:30	CH	15U 546920 6981287	546935	6981294	rippled	windy	0.16m	-	7.08	12.01	6.1	168.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	-	-	-	-	-	-	Appears to be part of channel that needed to be investigated. Up to 0.5-0.6m deep mostly a deeper channel (also width than a pond). Muck bottom
DR Pond 3	MT18	Meliadine Extension	9/26/22	16:30	CH	15U 546920 6981287	546933	6981287	rippled	windy	0.16m	-	7.08	12.01	6.1	168.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	-	-	-	-	-	-	Appears to be part of channel that needed to be investigated. Up to 0.5-0.6m deep mostly a deeper channel (also width than a pond). Muck bottom
DR Pond 3	MT19	Meliadine Extension	9/26/22	16:30	CH	15U 546920 6981287	546939	6981273	rippled	windy	0.16m	-	7.08	12.01	6.1	168.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	-	-	-	-	-	-	Appears to be part of channel that needed to be investigated. Up to 0.5-0.6m deep mostly a deeper channel (also width than a pond). Muck bottom
DR Pond 3	MT20	Meliadine Extension	9/26/22	16:30	CH	15U 546920 6981287	546946	6981261	rippled	windy	0.16m	-	7.08	12.01	6.1	168.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	-	-	-	-	-	-	Appears to be part of channel that needed to be investigated. Up to 0.5-0.6m deep mostly a deeper channel (also width than a pond). Muck bottom
DR Pond 3	MT21	Meliadine Extension	9/26/22	16:30	CH	15U 546920 6981287	546955	6981253	rippled	windy	0.16m	-	7.08	12.01	6.1	168.2	-	-	-	Minnow Traps	1	16:30	9/26/2022	15:30	-	-	-	-	-	-	Appears to be part of channel that needed to be investigated. Up to 0.5-0.6m deep mostly a deeper channel (also width than a pond). Muck bottom
W10-13	EF	Meliadine Extension	8/6/22	15:00	HM/RM	15U	554912	6981468	Calm	Sunny	-	-	6.3	1.53	18.6	83.1	100	40Hz, 650v	380.7	-	-	-	-	-	-	-	-	-	-	No fish caught or obs.
W10-17	EF	Meliadine Extension	8/6/22	14:10	HM/RM	15U	554910	6981288	Calm	Sunny	-	-	6.56	4.47	20.8	122.3	60	40Hz, 650v	N	-	-	-	-	-	-	-	-	-	-	No fish obs.
W10-2	N	Meliadine Extension	8/4/22	12:00	HM/RM	15U	554790	6981754	rippled	Sunny, windy	-	-	6.68	8.24	15.5	71.1	-	-	-	-	-	-	-	-	-	-	-	-	-	Algae growth present
W10-21	EF	Meliadine Extension	8/7/22	15:15	HM/RM	15U	555191	6981340	Calm	Sunny	-	-	5.92	4.38	21.5	346.1	50	40Hz, 250v	95.1	-	-	-	-	-	-	-	-	-	-	No fish obs., too soft too continue efishing
W10-22	EF	Meliadine Extension	8/7/22	15:10	HM/RM	15U	555111	6981319	Calm	Sunny	0.3	60	5.77	0.29	21.8	269.6	60	40Hz, 250V	242	-	-	-	-	-	-	-	-	-	-	No fish caught or obs
W10-23	EF	Meliadine Extension	8/7/22	14:30	HM/RM	15U	555021	6981298	Calm	Sunny	0.4	30	5.08	1.11	21.9	663	30	40Hz, 250V	92.8	-	-	-	-	-	-	-	-	-	-	No fish caught or obs
W10-24	EF	Meliadine Extension	8/7/22	12:10	HM/RM	15U	554826	6981030	Calm	Sunny	0.3	150	5.67	2.8	19.4	1593	150	40Hz, 250V	633.1	-	-	-	-	-	-	-	-	-	-	No fish caught or obs
W10-24B	EF	Meliadine Extension	8/7/22	12:30	HM/RM	15U	555078	6981249	Calm	Sunny	0.2	60	5.87	5.07	20	1540	60	40Hz, 250V	110	-	-	-	-	-	-	-	-	-	-	No fish caught
W10-25	EF	Meliadine Extension	8/7/22	12:50	HM/RM	15U	554826	6981030	Calm	Sunny	0.3	44	6.86	7.75	19.1	107.8	410	40Hz, 650V	716	-	-	-	-	-	-	-	-	-	-	Very shallow, dispersed channel. Lots of vegetation
W10-29	EF	Meliadine Extension	8/7/22	15:15	HM/RM	15U	555191	6981340	Calm	Sunny	0.2	50	5.92	4.38	21.5	346.1	50	40Hz, 250V	95.1	-	-	-	-	-	-	-	-	-	-	No fish caught, substrate too soft to continue e-fishing
W9-10	MT1	Meliadine Extension	8/6/22	10:25	HM/RM	15U	553786	6982487	Calm	Sunny	-	-	6.36	7.29	14.5	119.7	-	-	-	Minnow Traps	1	10:25	8/6/2022	10:15 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-10	MT2	Meliadine Extension	8/6/22	10:27	HM/RM	15U	553786	6982487	Calm	Sunny	-	-	6.36	7.29	14.5	119.7	-	-	-	Minnow Traps	1	10:27	8/6/2022	10:15 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-10	MT3	Meliadine Extension	8/6/22	10:30	HM/RM	15U	553786	6982487	Calm	Sunny	-	-	6.36	7.29	14.5	119.7	-	-	-	Minnow Traps	1	10:30	8/6/2022	10:15 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-19	MT1	Meliadine Extension	8/6/22	9:55	HM/RM	15U	553600	6982119	Calm	Sunny	-	-	6.02	1.88	13.1	77.2	-	-	-	Minnow Traps	1	9:55	8/6/2022	9:55 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-19	MT2	Meliadine Extension	8/6/22	9:55	HM/RM	15U	553600	6982119	Calm	Sunny	-	-	6.02	1.88	13.1	77.2	-	-	-	Minnow Traps	1	9:55	8/6/2022	9:55 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-19	MT3	Meliadine Extension	8/6/22	10:10	HM/RM	15U	553600	6982119	Calm	Sunny	-	-	6.02	1.88	13.1	77.2	-	-	-	Minnow Traps	1	10:10	8/6/2022	9:15 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-21	MT1	Meliadine Extension	8/6/22	9:15	HM/RM	15U	553696	6982135	Calm	Sunny	-	-	6.25	4.12	12.8	66.1	-	-	-	Minnow Traps	1	9:15	8/6/2022	9:45 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-21	MT2	Meliadine Extension	8/6/22	9:15	HM/RM	15U	553696	6982135	Calm	Sunny	-	-	6.25	4.12	12.8	66.1	-	-	-	Minnow Traps	1	9:15	8/6/2022	9:45 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-21	MT3	Meliadine Extension	8/6/22	9:15	HM/RM	15U	553696	6982135	Calm	Sunny	-	-	6.25	4.12	12.8	66.1	-	-	-	Minnow Traps	1	9:15	8/6/2022	9:45 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-21B	MT1	Meliadine Extension	8/6/22	9:30	HM/RM	15U	553759	6982111	Calm	Sunny	-	-	6.19	4.75	13.2	92	-	-	-	Minnow Traps	1	9:30	8/6/2022	9:40 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-21B	MT2	Meliadine Extension	8/6/22	9:30	HM/RM	15U	553759	6982111	Calm	Sunny	-	-	6.19	4.75	13.2	92	-	-	-	Minnow Traps	1	9:30	8/6/2022	9:40 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-21B	MT3	Meliadine Extension	8/6/22	9:30	HM/RM	15U	553759	6982111	Calm	Sunny	-	-	6.19	4.75	13.2	92	-	-	-	Minnow Traps	1	9:30	8/6/2022	9:40 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-26	MT1	Meliadine Extension	8/6/22	10:10	HM/RM	15U	553805	6982305	Calm	Sunny	-	-	6.06	1.79	12.9	153.11	-	-	-	Minnow Traps	1	10:10	8/6/2022	9:15 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-26	MT2	Meliadine Extension	8/6/22	10:10	HM/RM	15U	553805	6982305	Calm	Sunny	-	-	6.06	1.79	12.9	153.11	-	-	-	Minnow Traps	1	10:10	8/6/2022	9:15 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-26	MT3	Meliadine Extension	8/6/22	10:10	HM/RM	15U	553805	6982305	Calm	Sunny	-	-	6.06	1.79	12.9	153.11	-	-	-	Minnow Traps	1	10:10	8/6/2022	9:15 (following day)	8/7/2022	-	-	-	-	-	Fish caught/ 2 NSSB
W9-5	MT1	Meliadine Extension	8/6/22	11:05	HM/RM	15U	553580	6982609	Calm	Sunny	-	-	6.87	7.48	15.6	123	-	-	-	Minnow Traps	1	11:05	8/6/2022	10:40 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-5	MT2	Meliadine Extension	8/6/22	11:07	HM/RM	15U	553580	6982609	Calm	Sunny	-	-	6.87	7.48	15.6	123	-	-	-	Minnow Traps	1	11:08	8/6/2022	10:40 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-5	MT3	Meliadine Extension	8/6/22	11:10	HM/RM	15U	553580	6982609	Calm	Sunny	-	-	6.87	7.48	15.6	123	-	-	-	Minnow Traps	1	11:09	8/6/2022	10:40 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-5	MT4	Meliadine Extension	8/6/22	11:12	HM/RM	15U	553580	6982609	Calm	Sunny	-	-	6.87	7.48	15.6	123	-	-	-	Minnow Traps	1	11:12	8/6/2022	10:40 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-7	MT1	Meliadine Extension	8/6/22	10:50	HM/RM	15U	553668	6982561	Calm	Sunny	-	-	6.68	5.53	13.6	105	-	-	-	Minnow Traps	1	10:50	8/6/2022	10:25 (following day)	8/7/2022	-	-	-	-	-	No fish caught
W9-7	MT2	Meliadine Extension	8/6/22	10:45	HM/RM	15U	553668	6982561	Calm	Sunny	-	-	6.68	5.53	13.6	105	-	-	-	Minnow Traps	1	10:45	8/6/2022	10:25 (following day)	8/7/2022	-	-	-	-	-	No fish caught

Table A-7: Fish Metrics for Reconnaissance Survey in 2022

Waterbody Name	Gear Type	Project Name	Start Date:	Collectors:	Fish Number	Total Length (cm)	Weight (g)	Age Class (YOY / Adult)	Common Name	Taxonomic Name	Comments
A-20	EF	Meliadine Extension	9/27/2022	CH/AK	0	N	N	N	N	N	No fish caught, possible pond freezes to depth in winter there is no connection to A19 all dried up
A21	EF	Meliadine Extension	9/27/2022	CH/AK	0	N	N	N	N	N	No fish - no visible connection to other ponds. Possible connection dried up.
A22	EF	Meliadine Extension	9/27/2022	CH/AK	0	N	N	N	N	N	Fished down toward A19 and did not catch fish. Possibly fish can't get up to this pond in dry years, pond likely freezes to bottom in winter.
A23	EF	Meliadine Extension	9/27/2022	CH/AK	0	N	N	N	N	N	No fish caught
A24	EF	Meliadine Extension	9/27/2022	CH/AK	0	N	N	N	N	N	No fish caught
A25	EF	Meliadine Extension	9/27/2022	CH/AK	0	N	N	N	N	N	No fish caught
A26	EF	Meliadine Extension	9/27/2022	CH/AK	1	6.5	1.7	ADULT	NSSB	*Pungitius pungitius*	Caught in grass. Saw 1 other fish but didn't catch it.
A27	EF	Meliadine Extension	9/27/2022	CH/AK	1	5	0.9	ADULT	NSSB	*Pungitius pungitius*	Captured over decaying grasses
A28	EF	Meliadine Extension	9/27/2022	CH/AK	1	6.5	1.8	ADULT	NSSB	*Pungitius pungitius*	
A28	EF	Meliadine Extension	9/27/2022	CH/AK	1	5.5	0.9	ADULT	NSSB	*Pungitius pungitius*	
A28	EF	Meliadine Extension	9/27/2022	CH/AK	1	2.5	0.1	YOY	NSSB	*Pungitius pungitius*	
A2A	EF	Meliadine Extension	9/30/2022	CH/MM/AK	1	5.5	-	ADULT	NSSB	*Pungitius pungitius*	all stickle observed in much/old decaying grass
A2A	EF	Meliadine Extension	9/30/2022	CH/MM/AK	20 observed	2.5	-	YOY	NSSB	*Pungitius pungitius*	all stickle observed in much/old decaying grass
A33	O	Meliadine Extension	10/1/2022	CH/AR	1	N	N	N	N	N	1 frozen/dead NSSB observed on ice
A5-19	EF	Meliadine Extension	9/27/2022	CH/AK	1	2.5	0.3	YOY	NSSB	*Pungitius pungitius*	
A5-19	EF	Meliadine Extension	9/27/2022	CH/AK	2	7	2.4	ADULT	NSSB	*Pungitius pungitius*	
A5-19	EF	Meliadine Extension	9/27/2022	CH/AK	3	2.5	0.3	YOY	NSSB	*Pungitius pungitius*	
A5-19	EF	Meliadine Extension	9/27/2022	CH/AK	4	2.5	0.3	YOY	NSSB	*Pungitius pungitius*	
A5-19	EF	Meliadine Extension	9/27/2022	CH/AK	5	2.2	0.1	YOY	NSSB	*Pungitius pungitius*	
A5-19	EF	Meliadine Extension	9/27/2022	CH/AK	6	3	0.3	YOY	NSSB	*Pungitius pungitius*	
B22	EF	Meliadine Extension	10/4/2022	CH/AR	0	N	N	N	N	N	No fish caught
B39	EF	Meliadine Extension	9/30/2022	CH/MM/AK	0	N	N	N	N	N	No fish caught
B4-45	EF	Meliadine Extension	9/30/2022	CH/MM/AK	100 observed	N	N	YOY	NSSB	*Pungitius pungitius*	
B4-45	EF	Meliadine Extension	9/30/2022	CH/MM/AK	1	7	-	ADULT	NSSB	*Pungitius pungitius*	
B4-45	EF	Meliadine Extension	9/30/2022	CH/MM/AK	1	9	-	fingerling	ARGR	*Thymallus arcticus*	
B5-34	EF	Meliadine Extension	10/2/2022	CH/AR	>1000	N	N	N	N	N	> 1000 YOY NSSB observed at upstream pond
B59-60	EF	Meliadine Extension	10/2/2022	CH/AR	0	N	N	N	N	N	No fish caught
B59-62	EF	Meliadine Extension	10/2/2022	CH/AR	0	N	N	N	N	N	No fish caught
B60-61	EF	Meliadine Extension	10/2/2022	CH/AR	0	N	N	N	N	N	No fish caught
CH-28	EF	Meliadine Extension	8/4/2022	HM/RM	0	N	N	N	N	N	No fish caught
CH-29	EF	Meliadine Extension	8/4/2022	HM/RM	0	N	N	N	N	N	No fish caught
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	1	5.8	1.2	YOY	NSSB	*Pungitius pungitius*	
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	2	6	3.6	YOY	NSSB	*Pungitius pungitius*	
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	3	5.7	2.3	YOY	ARGR	*Thymallus arcticus*	
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	4	4.3	2.2	YOY	ARGR	*Thymallus arcticus*	
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	5	3.4	0.6	YOY	NSSB	*Pungitius pungitius*	
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	6	2.7	N	YOY	NSSB	*Pungitius pungitius*	Too small to weigh
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	7	5.8	2	YOY	ARGR	*Thymallus arcticus*	
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	8	2.4	N	YOY	NSSB	*Pungitius pungitius*	Too small to weigh
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	9	2.8	N	YOY	NSSB	*Pungitius pungitius*	Too small to weigh
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	10	2.5	0.6	YOY	NSSB	*Pungitius pungitius*	
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	11	2.6	0.1	YOY	NSSB	*Pungitius pungitius*	
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	12	2.7	N	YOY	NSSB	*Pungitius pungitius*	Too windy to weigh
D5.9	EF	Meliadine Extension	8/5/2022	HM/RM	13	2.5	0.1	YOY	NSSB	*Pungitius pungitius*	
D5.9	MT1	Meliadine Extension	8/5/2022	HM/RM	14	2.4	0.1	YOY	NSSB	*Pungitius pungitius*	
D5.9	MT2	Meliadine Extension	8/5/2022	HM/RM	15	2.5	0.2	YOY	NSSB	*Pungitius pungitius*	
D5.9	MT3	Meliadine Extension	8/5/2022	HM/RM	16	2.6	0.1	YOY	NSSB	*Pungitius pungitius*	
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	1	4.5	1.8	ADULT	SLSC	*Cottus cognatus*	
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	2	4.1	1.9	YOY	ARGR	*Thymallus arcticus*	
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	3	3.5	1	YOY	ARGR	*Thymallus arcticus*	
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	4	3.1	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	5	3.5	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	6	3.6	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	7	2.5	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	8	2.9	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	9	3	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	10	2.9	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	11	2.9	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	12	3.6	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	13	3.5	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	14	3.5	N	YOY	ARGR	*Thymallus arcticus*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	15	2.5	N	YOY	NSSB	*Pungitius pungitius*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	16	2.2	N	YOY	NSSB	*Pungitius pungitius*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	17	2.8	N	YOY	NSSB	*Pungitius pungitius*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	18	2	N	YOY	NSSB	*Pungitius pungitius*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	19	2.3	N	YOY	NSSB	*Pungitius pungitius*	Too windy to weigh
D8.8	EF	Meliadine Extension	7/30/2022	HM/RM	20	1.8	N	YOY	NSSB	*Pungitius pungitius*	Too windy to weigh
Disco Road Pond 1	EF	Meliadine Extension	9/26/2022	CH	1	8	2.4	Adult	NSSB	*Pungitius pungitius*	
Disco Road Pond 1	MT22	Meliadine Extension	9/26/2022	CH	1	5.5	1.4	Adult	NSSB	*Pungitius pungitius*	
Disco Road Pond 1	MT23	Meliadine Extension	9/26/2022	CH	0						

Table A-7: Fish Metrics for Reconnaissance Survey in 2022

Waterbody Name	Gear Type	Project Name	Start Date:	Collectors:	Fish Number	Total Length (cm)	Weight (g)	Age Class (YOY / Adult)	Common Name	Taxonomic Name	Comments
Disco Road Pond 1	MT24	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 1	MT25	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 1	MT26	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 1	MT27	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 1	MT28	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 1	MT29	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 1	MT30	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 1	MT31	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 1	MT32	Meliadine Extension	9/26/2022	CH	1	7	1.9	Adult	NSSB	*Pungitius pungitius*	
Disco Road Pond 2	MT15	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT14	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT13	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT12	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT11	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT10	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT9	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT8	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT7	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT6	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT5	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT4	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT3	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT2	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 2	MT1	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 3	EF	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 3	MT16	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 3	MT17	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 3	MT18	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 3	MT19	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 3	MT20	Meliadine Extension	9/26/2022	CH	0						
Disco Road Pond 3	MT21	Meliadine Extension	9/26/2022	CH	0						
DR	N	Meliadine Extension	7/27/2022	HM/RM	0	N	N	N	N	N	Not appropriate fish habitat
DR-10	O	Meliadine Extension	7/26/2022	HM/RM	1	N	N	N	N	N	Not fished during this visit; 1 small bodied fish observed
DR-12	EF	Meliadine Extension	8/5/2022	HM/RM	0	N/A	N/A	N/A	N/A	N/A	No fish caught
DR-13	EF	Meliadine Extension	8/5/2022	HM/RM	10	-	-	-	small bodied fish	-	No fish caught but 10 SBF observed
DR-2	EF	Meliadine Extension	8/5/2022	HM/RM	0	N/A	N	N	N	N/A	No fish caught or observed
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	1	3.3	0.7	YOY	NSSB	*Pungitius pungitius*	
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	2	2.5	0.3	YOY	NSSB	*Pungitius pungitius*	
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	3	3	0.42	YOY	NSSB	*Pungitius pungitius*	
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	4	3.1	0.41	YOY	NSSB	*Pungitius pungitius*	
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	5	2.6	0.31	YOY	NSSB	*Pungitius pungitius*	
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	50-60				small bodied fish		50-60 SBF observed
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	1	3.3	0.7	YOY	NSSB	*Pungitius pungitius*	
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	2	2.5	0.3	YOY	NSSB	*Pungitius pungitius*	
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	3	3	0.42	YOY	NSSB	*Pungitius pungitius*	
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	4	3.1	0.41	YOY	NSSB	*Pungitius pungitius*	
DR-3	EF	Meliadine Extension	8/5/2022	HM/RM	5	2.6	0.31	YOY	NSSB	*Pungitius pungitius*	
DR-8	O	Meliadine Extension	7/26/2022	HM/RM	1	N	N	N	N	N	Small bodied fish observed
DR-8	EF	Meliadine Extension	8/5/2022	HM/RM	0	N/A	N	N	N		No fish caught
DR-8	EF	Meliadine Extension	8/5/2022	HM/RM	0	-	-	-	-	-	No fish caught
DR-A	O	Meliadine Extension	7/26/2022	HM/RM	1	N	N	N	N	N	Small bodied fish observed
DR-B	EF	Meliadine Extension	8/5/2022	HM/RM	0	N/A	N	N	N		No fish caught
DR-B	MT-1	Meliadine Extension	8/5/2022	HM/RM	0	N/A	N	N	N		No fish caught
DR-B	MT-2	Meliadine Extension	8/5/2022	HM/RM	0	N/A	N	N	N		No fish caught
DR-B	MT-3	Meliadine Extension	8/5/2022	HM/RM	0	-	-	-	-	-	No fish caught
DR-C	O	Meliadine Extension	7/28/2022	HM/RM	1	N	N	N	N	N	Not fished during this visit; 1 small bodied fish observed
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	1	1.8	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	2	2.2	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	3	2.3	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	4	2.5	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	5	2.2	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	6	2.2	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	7	2.2	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	8	2.8	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	9	2.8	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	10	3.2	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	11	3.5	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	12	2.5	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	13	3	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	14	2.4	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	15	2.5	-	YOY	NSSB	*Pungitius pungitius*	

Table A-7: Fish Metrics for Reconnaissance Survey in 2022

Waterbody Name	Gear Type	Project Name	Start Date:	Collectors:	Fish Number	Total Length (cm)	Weight (g)	Age Class (YOY / Adult)	Common Name	Taxonomic Name	Comments
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	16	3	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	17	2.4	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	18	2.2	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	19	2.1	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	20	2	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	21	3.5	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	22	2.5	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	23	2.2	-	YOY	NSSB	*Pungitius pungitius*	
E1-29	EF	Meliadine Extension	7/29/2022	HM/RM	23	-	6.1	YOY	NSSB	*Pungitius pungitius*	23 additional NSSB captured; weighed in a batch (23 individuals)
EI-0	O	Meliadine Extension	8/4/22	HM/RM	1	N	N	N	N	N	Small bodied fish observed, not captured
W10-13	EF	Meliadine Extension	8/6/2022	HM/RM	0	N/A	N	N	N	N/A	No fish caught
W10-17	EF	Meliadine Extension	8/6/2022	HM/RM	0	N/A	N	N	N	N/A	No fish caught
W10-2	N	Meliadine Extension	8/4/22	HM/RM	0	N	N	N	N	N	No fish caught; algae growth
W10-21	EF	Meliadine Extension	8/7/22	HM/RM	0	N	N	N	N	N	No fish caught, substrate too soft to continue e-fishing
W10-22	EF	Meliadine Extension	8/7/22	HM/RM	0	N	N	N	N	N	No fish caught
W10-23	EF	Meliadine Extension	8/7/2022	HM/RM	0	N	N	N	N	N	No fish caught
W10-23	EF	Meliadine Extension	8/7/22	HM/RM	0	N	N	N	N	N	No fish caught
W10-24	EF	Meliadine Extension	8/7/22	HM/RM	0	N	N	N	N	N	No fish caught
W10-24B	EF	Meliadine Extension	8/7/22	HM/RM	0	N	N	N	N	N	No fish caught
W10-25	EF	Meliadine Extension	8/7/22	HM/RM	1	5.4	1.3	N	NSSB	*Pungitius pungitius*	
W10-29	EF	Meliadine Extension	8/7/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-10	MT3	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-10	MT1	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-10	MT2	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-19	MT3	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-19	MT1	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-19	MT2	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-21	MT3	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-21	MT1	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-21	MT2	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-21B	MT3	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-21B	MT1	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-21B	MT2	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-26	MT1	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-26	MT2	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-26	MT3	Meliadine Extension	8/7/22	HM/RM	4	4.9	0.7	Adult	NSSB	*Pungitius pungitius*	
W9-26	MT2	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-26	MT3	Meliadine Extension	8/7/22	HM/RM	4	4.9	0.7	Adult	NSSB	*Pungitius pungitius*	
W9-26	MT3	Meliadine Extension	8/7/22	HM/RM	5	4.7	0.7	Adult	NSSB	*Pungitius pungitius*	
W9-5	MT1	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-5	MT2	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-5	MT3	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-5	MT4	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-7	MT1	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught
W9-7	MT2	Meliadine Extension	8/6/22	HM/RM	0	N	N	N	N	N	No fish caught

APPENDIX B • PHOTO LOG

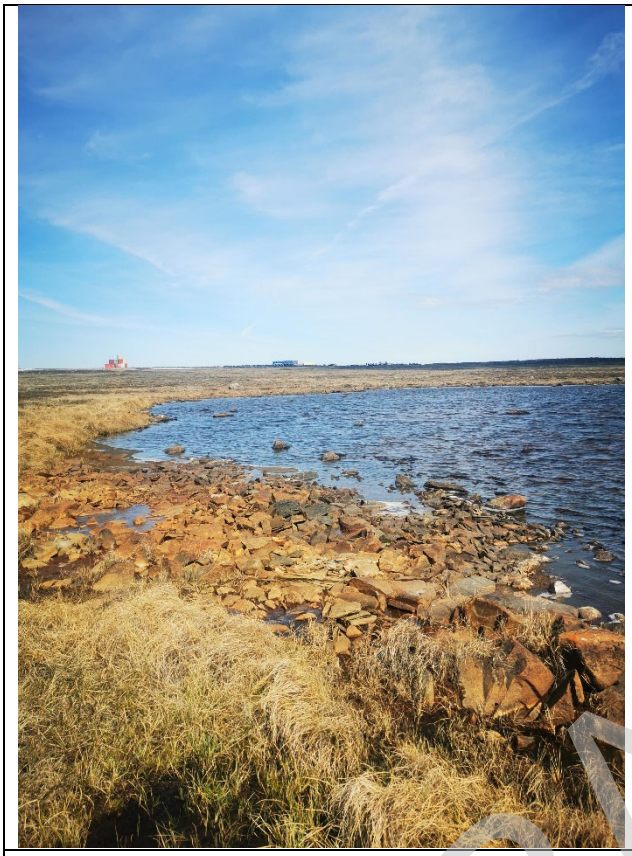


Photo B-1: Facing East at B26-B25 stream looking at shoreline of B25, June, 2022.	Photo B-2: Facing North at standing water in B26-B25 stream, June, 2022.

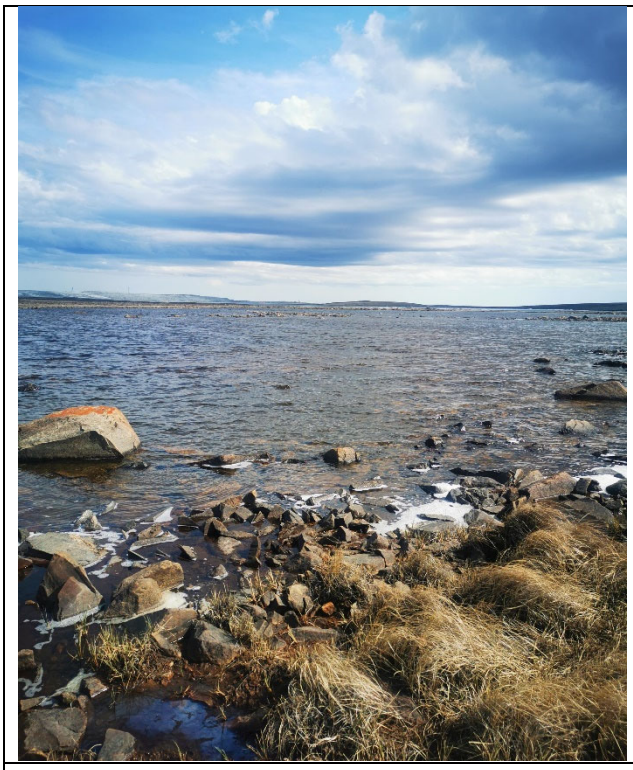


Photo B-3: Facing South at B26-25 stream looking at shoreline of B25, June, 2022.

Photo B-4: Facing West at standing water in B26-25 stream, June, 2022.

Facing West at dry B31-B32 channel, looking at B31. June 15th, 2022.

Facing South at dry B31-B32 channel June 15th, 2022.

	
Facing North at dry B31-B32 channel. June 15th, 2022.	Facing East at dry B31-B32 channel. June 15th, 2022.

B31 facing downstream to B5. June 15th, 2022.

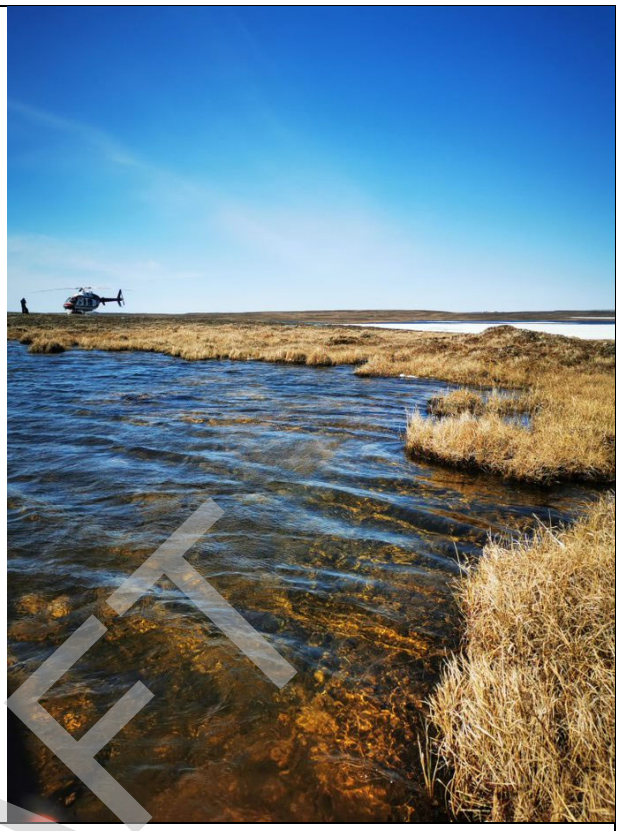
Facing East looking at the shoreline of B4 with B4-B22 channel observed on right. June 11th, 2022

Facing West looking upstream at standing water in B4-B22 channel. June 11th, 2022.

Facing South looking at shoreline of B22. June 11th, 2022.

Facing North looking with shore of B4 with undefined channel at outlet. June 11th, 2022.

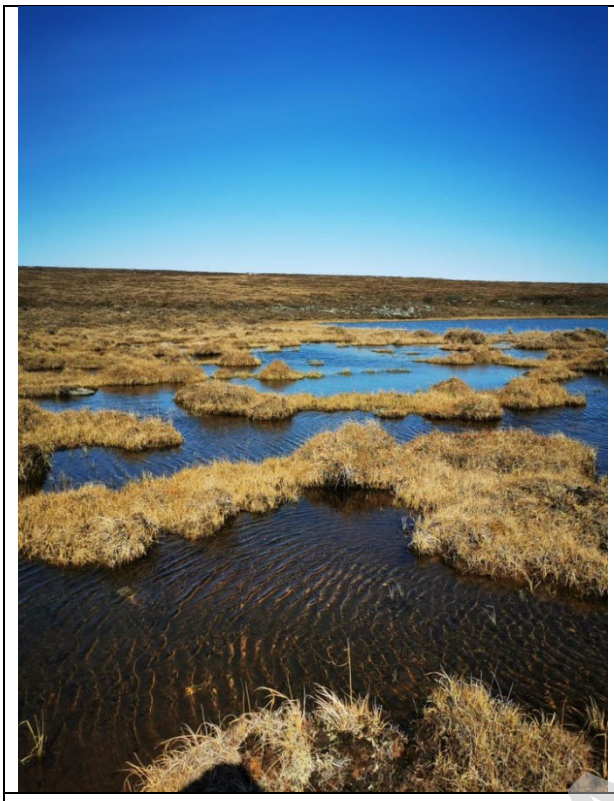
Facing East looking downstream towards B4 at dry B4-B39 channel. June 11th, 2022.



Facing North standing in B39 facing outlet towards B4. June 11th, 2022.

Facing South looking upstream of dry channel leading to B39 in background. June 11th, 2022.

Facing Southwest at inlet of dry channel in B4. June 11th, 2022.

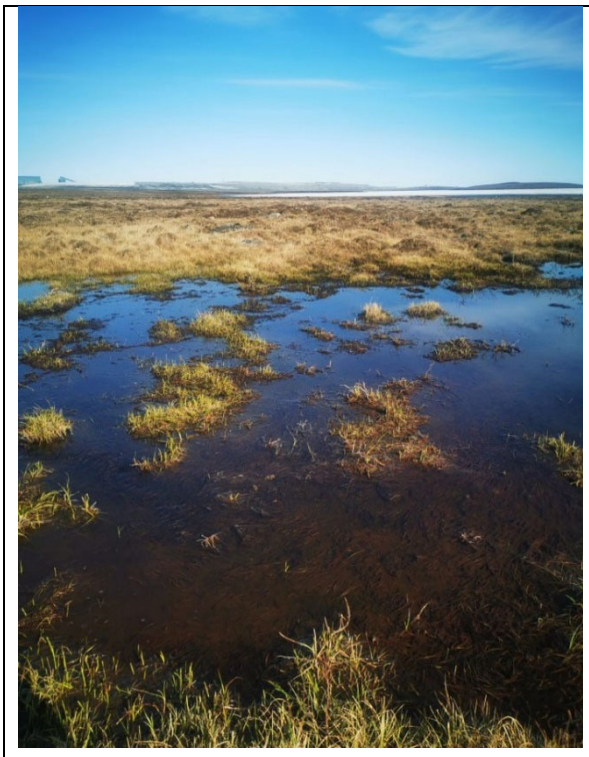


Facing North looking downstream at inlet to B34, with pools of standing water in undefined B5-B34 channel. June 11th, 2022.

Facing West looking downstream towards B5. June 11th, 2022.

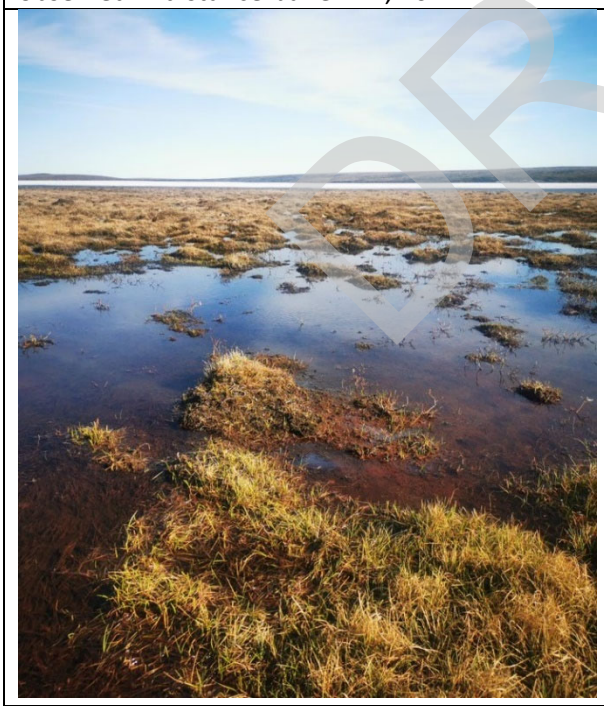
Facing East at inlet of B5 with standing water of B5-B34 channel. June 11th, 2022.

Facing South at B5 inlet facing B34 pond. Standing water of B5-B34 not pictured. June 11th, 2022.

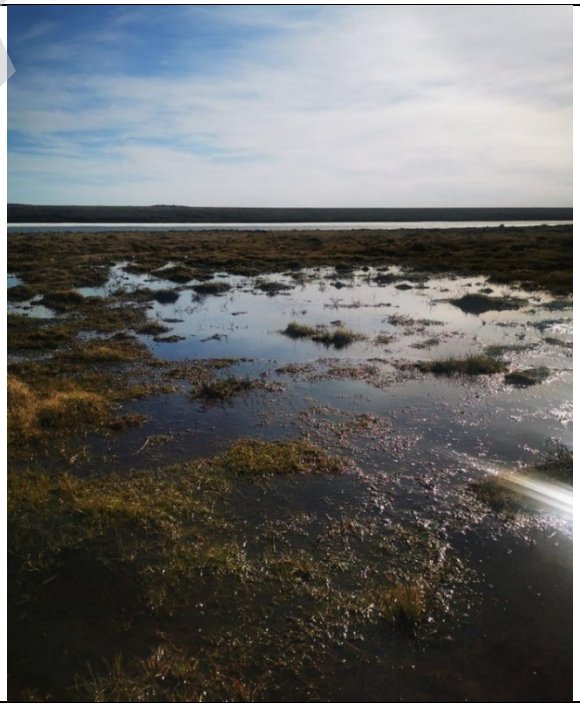


Facing East with standing water of undefined B7-B25 channel and B7 in background. Meliadine site observed in distance. June 11th, 2022.

Facing North standing in inlet of B25 looking at B25. Meliadine site observed in distance. June 11th, 2022.



Facing South standing in inlet of B25 looking towards B7. June 11th, 2022.



Facing West looking at standing water of B7-B25 undefined channel with B7 in background. June 11th, 2022.

Facing East looking at B7-B28 channel with B28 channel in background. June 11th, 2022

Facing North looking at standing water of B7-B28 channel. June 11th, 2022.

Facing south looking downstream in B7-B28 channel towards B7. June 11th, 2022.

Facing West looking at standing water of B7-B28 channel with B7 in background. June 11th, 2022.

APPENDIX D • OFFSETTING AND CONTINGENCY OPTIONS

TECHNICAL MEMORANDUM

DATE January 13, 2023 **Project No.** 22565973

TO Manon Turmel
Agnico Eagles Mines Inc.

CC Laurence Bonin, Edward Malindzak

FROM Cameron Stevens and Alison Loeppky **EMAIL cameron.stevens@wsp.com**

ARCTIC CHAR PRODUCTIVITY MODEL FOR THE PISTOL BAY FALLS OFFSET MEASURE

This memorandum provides a summary of modelling projections for Arctic Char, *Salvelinus alpinus*, productivity under various 'passability' scenarios at Pistol Bay Falls, including baseline and post-enhancement scenarios that improve upstream migration success following the removal or modification of the Pistol Bay Falls barrier. The potential increase in fish production from improved access to spawning, rearing, and overwintering habitat above the Pistol Bay Falls barrier was modelled by applying literature derived statistics on the life history of Arctic Char (i.e., fecundity rates, survival rates, and carrying capacity) to project the age structure and growth rate of the population. Fish production was then estimated by linking the calculated abundance per age class with mean weights at age. Results from the modelling will help inform future increases in the productivity of the Arctic Char fishery and determine whether offsetting objectives can be achieved for the Meliadine Extension Project offsetting plan.

SCOPING-LEVEL BARRIER EVALUATION

The falls are located at the transition from the freshwater to marine environment, 70 km south of the Meliadine watershed, where Inuit knowledge identified a potential barrier to upstream passage of fish during low flows (Photo 1). As described for other river systems in the Arctic (Power and Barton 1987; Sabina 2017), outlet flow conditions can vary during the open water season, decline through the summer, vary annually in response to precipitation accumulation, and vary through the day at the freshwater-marine interface as tides fluctuate. It is assumed that dynamic nature of the flow conditions at the falls significantly affects the navigability of the falls for anadromous Arctic Char such that that passability of the falls (i.e., the proportion of fish that are able to pass through the falls while migrating upstream) is reduced under low flow conditions and that migration conditions are exacerbated when the downstream estuary is at low tide. Although this technical memorandum does not quantitatively evaluate barrier passability, it is assumed that Pistol Bay Falls represents both a partial barrier and temporary barrier to upstream passage of fish for the purposes of modelling potential gains in fish production. Partial barriers can block movements of a proportion of the population that are weaker swimmers or reduce access during specific migration windows (reviewed in Kemp and O'Haney 2010). Temporary barriers can delay migration, having significant impacts on survival through elevated energetic costs and predation risk and disruption of key life cycle events (Kemp and O'Haney 2010; Thorstad et al. 2008). The effects of waterfalls on upstream passage of fish have been previously described for other salmonid species, such as Atlantic Salmon (*Salmo salar*; reviewed in Thorstad et al. 2008). An initial characterizations of flow conditions for passage of fish

are summarized below, based on site investigations conducted in summer 2020 and a desktop analysis of regional hydrological data.

To characterize the flow regime at Pistol Bay Falls, Water Survey of Canada (WSC) station data (No. 06NC001) were used as an analogue. The watershed area statistics were derived using available shapefiles for 1:50,000 watercourse and waterbodies, where total watershed area = 93.2 km^2, waterbody area within the watershed = 33.8 km^2, and watershed upland cover = 59.4 km^2. Flow regimes (mean monthly flows and peak annual flows for return periods of 2 to 20 years) were then derived for the falls by prorating flows from Station 06NC001. Results are summarized in Table 1. For example, a below average return period of 1-in-10 years during the month of August (overlapping with the predicted peak period of the spawning migration) is characterized by a discharge of 1.90 m^3/s, a 43% reduction in average flows for that month. It is assumed that the benefits of the proposed offset measure at the falls would be maximized under low-flow conditions.

Photo 1: View of the Pistol Bay Falls Under Low Tide Conditions

Table 1: Modelled Flow Regime at Pistol Bay Falls

Return Period	Monthly Discharge (m^3/s)						
	June	July	August	September	October	November	December
20-year Wet	12.193	10.182	5.189	5.390	2.002	0.518	0.033
10-year Wet	8.764	9.225	4.769	4.567	1.842	0.446	0.029
5-year Wet	6.027	8.102	4.265	3.711	1.642	0.367	0.024
2-year Median	3.283	6.113	3.314	2.419	1.242	0.242	0.015
Average	4.272	6.338	3.325	2.674	1.237	0.260	0.015
5-year Dry	2.143	4.439	2.381	1.479	0.831	0.143	0.007
10-year Dry	1.845	3.739	1.901	1.095	0.620	0.099	0.003
20-year Dry	1.684	3.268	1.508	0.822	0.455	0.066	0.001

The effects of tides on the height of falls were visually assessed based on camera data collected by Agnico Eagle during summer 2022. At low tide, the bedrock-controlled falls are approximately 2-m high, with the drop split between two main levels (or steps) of approximately 1 to 1.5 m, each presenting a potential jumping barrier (Photo 2). High tide inundates the lower step of the falls by approximately 1 m depending on the magnitude of the tide (Photo 2). At high water (i.e., during spring freshet) the falls may be characterized by large cascades (rather than a large vertical drop) with no obvious step pools and although such conditions may create a velocity barrier for some fish, the spring freshet period does not coincide with the typical upstream spawning migration window for Arctic Char in the region (e.g., Meliadine River; Golder 2012). At low water (i.e., late summer into early fall), the structure of the falls can become two main steps with the lower step being a vertical drop and the upper step characterized by both a vertical drop and chutes, depending on the flow path. The length of the upper chutes run the riverbanks, ranging from 3 to 5 m in fluvial length. Under low flows, passabilty of the falls would be reduced because of the effects of the vertical drop and shallow water on jumping ability of migrating fish. Of note, large Arctic Char were visually identified navigating the falls during early August 2020 (Photo 2).

Photo 2: Comparison of High Tide (Top Photo) and Low Tide (Bottom Photo) Inundation at Pistol Bay Falls and Estuary (Note the Arctic Char in the middle of the bottom image)

FISH PRODUCTION MODEL

At present, the Pistol Bay Falls likely pose at least a partial barrier to Arctic Char passage. Initial baseline spawning run sizes were estimated based on known run sizes in the Meliadine River system. In that system, maximum Arctic Char run sizes are 1,292 individuals from three years of aquatic baseline studies conducted from 1997-1999 (Golder 2012). Meliadine Lake provides 14,036 ha of potential habitat, which is six-times larger than the 1,880 ha of estimated useable area for spawning, rearing, and overwintering above Pistol Bay Falls. Useable habitat includes the five inter-connected lakes immediately upstream of the falls, each ranging from 23 to 1,573 ha in area (Golder 2014). As such, we estimated the maximum run size to be 215 individuals at carrying capacity and full access to upstream spawning, rearing, and overwintering habitat. Given Pistol Bay Falls may act as a partial barrier to upstream movement of Arctic Char, only a proportion of the population that are stronger swimmers are able to ascend the falls, which we estimated as 30% of maximum potential run size (i.e., carry capacity), or a reduced run size of 65 adult fish successfully migrating upstream. To calculate the potential gains in production following removal of the barrier or modification to the falls, two post-enhancement hypothetical scenarios were investigated where now 70% (151 migrating adults) and 90% (194 migrating adults) of the migratory spawning population are able to pass the falls and access the upstream habitats. These spawning population sizes were used to calculate age-structure and annual production using the Leslie Matrix model.

LESLIE MATRIX MODEL

The Leslie matrix model (Leslie 1945) is a commonly used age-structured population model that projects the age class distribution and growth rate of a species population in a particular habitat (e.g., Horst 1977, Caswell 2001, Worthington et al. 2011). The model accounts for age-structure by considering that different life stages have specific characteristics, which reflect species vital rates at a particular age (e.g., survival rate and fecundity). The inputs used for the Leslie Matrix modelling are presented in Table 2. Current life history vital rates for the Arctic Char stock near Pistol Bay Falls were not available, therefore, model inputs were derived from relevant literature. Mean weight- and length-at-age were obtained from a survey conducted between August 13 and September 10, 1948, in the Wilson River system and Hudson Bay at Term Point, which is located approximately 30 km south of Pistol Bay (Sprules 1952). Lengths and weights for age 0-3 years were not recorded for this population, thus, variables for these early year classes were conservatively estimated based on literature for Arctic Char reared in an aquaculture setting (Nilsson et al 2016). Fecundity and survival rates for this population were not reported in the survey, therefore, inputs for these variables were extrapolated from studies on anadromous Arctic Char populations in the Southern Baffin Island region (e.g., Power et al., 2005; Loewen et al. 2010; Caza-Allard et al. 2020; Harris et al. 2020). Where data specific to Arctic Char could not be identified, published literature on a diversity of salmonid species was used to supplement any knowledge gaps and provide the most reliable model predictions as possible (e.g., Shearer 1961; Kennady and Strange 1981; Barlaup and Moen 2001). Analytical projections from the matrix model include stable age distribution and population growth rate with the assumption that the environment is constant over time.

Arctic Char in this region reach maturity at 10-13 years of age or at a mean size range of 532-641 mm (Loewen et al. 2010). The proportion of mature fish within age classes was conservatively estimated based on estimates in Sprules (1952) and Loewen et al. (2010), supplemented with reported rates for other salmonid species**.** Fecundity was modelled for each mature age class by using the fecundity-fork length relationship derived by Power et al. (2005) for multiple populations of anadromous Arctic Char including stocks in the Southern Baffin Island region. Once mature, average fecundity increased with fork length equating to 4,139 to 11,251 eggs per female for fish aged 10 to 22 years of age (Power et al. 2005). Observations made by Sprules (1952) suggest the Arctic Char in this region likely spawn every second year, which is not uncommon for Arctic fishes. As such, fecundity was reduced in the Leslie Matrix Model to account for biennial spawning.

Age-specific survival rates were used to estimate the abundance of each age class for the population at, or near carrying capacity (Table 2). For an anadromous population near Cambridge Bay, Nunavut, annual survival of adult fish >400 mm (i.e., >6 years of age) was 79-88% over a 6-year acoustic telemetry study (Caza-Allard et al. 2020). Annual survival rates were observed to be higher for veteran migrants, therefore, we used the higher range of survival for fish once maturity was reached and individuals had two spawning seasons at 13 years. Data on survival rates for younger age classes were limited for Arctic Char populations in the Canadian Arctic, thus, a study that examined survival of juvenile Arctic Char following smoltification and first sea-migration in Norway was used to supplement information for fish aged 3 to 6 years (Jensen et al. 2019; Table 2). Hatching success was assumed to be 30%, which is within the mid range of results reported by Atse et al. (2002) where egg survival to hatch for Arctic Char ranged from 15% to 60% when parents were reared under varying conditions during gametogenesis. This is similar to the hatching success observed for salmonid species in an aquaculture setting (range of 6% to 98%; reviewed in Barlaup and Moen 2001). Survival from egg stage to age-1 was estimated to be 4%, which is within the lower range of survival for young-of-year salmonids (Shearer 1961; Kennady and Strange 1981). Survival rates for remaining age classes were conservatively estimated based on reported rates for other salmonid species. Sensitivity analyses identified that modelled growth rate and age structure were most sensitive to changes in young-of-year (YOY) and age-1 survival.

Table 2: Summary of Arctic Char Life History Inputs for Modelling Production

Age / Stage	Length (mm)[a]	Weight (g)[a]	Survival Rate[b]	Probability of Maturity[c]	Eggs per Spawning Female[d]
Egg-1	50	15	1.2%	0.00	0
1-2	135	31	10%	0.00	0
2-3	185	95	10%	0.00	0
3-4	230	200	15%	0.00	0
4-5	318	340	42%	0.00	0
5-6	381	680	52%	0.00	0
6-7	408	910	60%	0.00	0
7-8	445	104	79%	0.00	0
8-9	468	1,216	79%	0.00	0
9-10	494	1,533	79%	0.00	0
10-11	522	1,701	79%	0.78	4,139
11-12	565	2,218	79%	0.94	4,928
12-13	602	2,835	88%	1.00	5,666
13-14	637	3,026	88%	1.00	6,432
14-15	635	3,348	88%	1.00	6,386
15-16	669	3,589	88%	1.00	7,162
16-17	679	3,742	88%	1.00	7,423
17-18	787	5,253	88%	1.00	10,304
18-19	749	5,443	88%	1.00	9,228
19-20	783	5,556	88%	1.00	10,185
20-21	812	5,935	88%	1.00	11,033
21-22	841	6,314	88%	1.00	11,919
22-23	819	7,258	88%	1.00	11,251

a) Sprules (1952) was used for lengths and weights for age classes that were available. Loewen et al (2010), Nilsson et al (2016), and Harris et al (2020) were used to supplement data for age classes that were not recorded in Sprules (1952).

b) Sources include Atse et al (2002), Jensen et al (2019), and Caza-Allard et al (2020).

c) Sources include Sprules (1952) and Loewen et al (2010). Where data for specific ages was not available, probability of sexual maturity was estimated based on data for other salmonid species.

d) Modelled based on fecundity-length relationship developed by Power et al. (2005).

YOY = young-of-year; - = not applicable.

Predicted Production Gains

Using the modelled age structure of the baseline population, the standing stock biomass and annual production estimates were calculated by multiplying the abundance of each age class by average weight-at-age (Table 3). The post-breeding census baseline total for all age classes, whereby 30% of mature Arctic Char are able to successfully migrate upstream, was 261,136 fish (50% females, 50% males) with the majority of the population consisting of the YOY age-class. The population size and structure at equilibrium translates to 3,976 kg in annual fish production.

To project the increase in annual production of Arctic Char post-removal of the barrier or modification of Pistol Bay Falls, theoretical increases in successful upstream passage of migrating Arctic Char were modelled including 70%, and 90% passability (Figure 1). Under a scenario of 70% successful migration rate, the Pistol Bay population size has the potential to approach 606,640 individuals, amassing 9,236 kg in annual production. A further increase to 90% successful migration equates to a population size of 779,392 individuals. This increase in population size would result in an annual biomass production of 11,866 kg.

Upon establishment of the Arctic Char population following modification of the Pistol Bay Falls barrier and improved access to 1,880 ha of spawning, rearing, and overwintering habitat, total cumulative production over a 20-year period has the potential to increase biomass from 79,517 kg (pre-modification) to up to 237,329 kg (post-modification). Indeed, biomass gains may be higher if the watershed above Pistol Bay Falls becomes established as relatively productive habitat, providing a source of immigrants for adjacent populations in the area.

Table 3: Predicted Standing Stock Biomass and Annual Biomass Production for Arctic Char Under Hypothetical Baseline Conditions Prior to Removal or Modification of Pistol Bay Falls where an Estimated 30% of the Systems Carrying Capacity (65 Adult Fish) Successfully Migrate

Age Class (years)	Age Structure Proportion	No. of Fish	No. of Spawners	Mean Individual Weight (kg)	Standing Stock Biomass (kg)	Annual Production (kg)
Age 0	0.982987	256,768	0	0.015	3,852	3,852
Age 1	0.014672	3,767	0	0.03	118	61
Age 2	0.001825	469	0	0.09	44	30
Age 3	0.000227	58	0	0.20	12	6
Age 4	0.000042	11	0	0.34	4	2
Age 5	0.000022	6	0	0.68	4	2
Age 6	0.000014	4	0	0.91	3	1
Age 7	0.000011	3	0	1.04	3	0
Age 8	0.000010	3	0	1.22	3	0
Age 9	0.000010	3	0	1.53	4	1
Age 10	0.000010	3	2	1.70	4	0
Age 11	0.000010	3	2	2.22	6	1
Age 12	0.000010	3	3	2.84	7	2
Age 13	0.000010	2	2	3.03	7	0
Age 14	0.000011	3	3	3.35	9	1
Age 15	0.000012	3	3	3.59	11	1
Age 16	0.000013	3	3	3.74	12	0
Age 17	0.000014	4	4	5.25	19	5
Age 18	0.000015	4	4	5.44	21	1
Age 19	0.000017	4	4	5.56	24	0
Age 20	0.000018	5	5	5.94	28	2
Age 21	0.000020	5	5	6.31	32	2
Age 22	0.000022	6	6	7.26	40	5
Sum Total					**4,266**	**3,976**

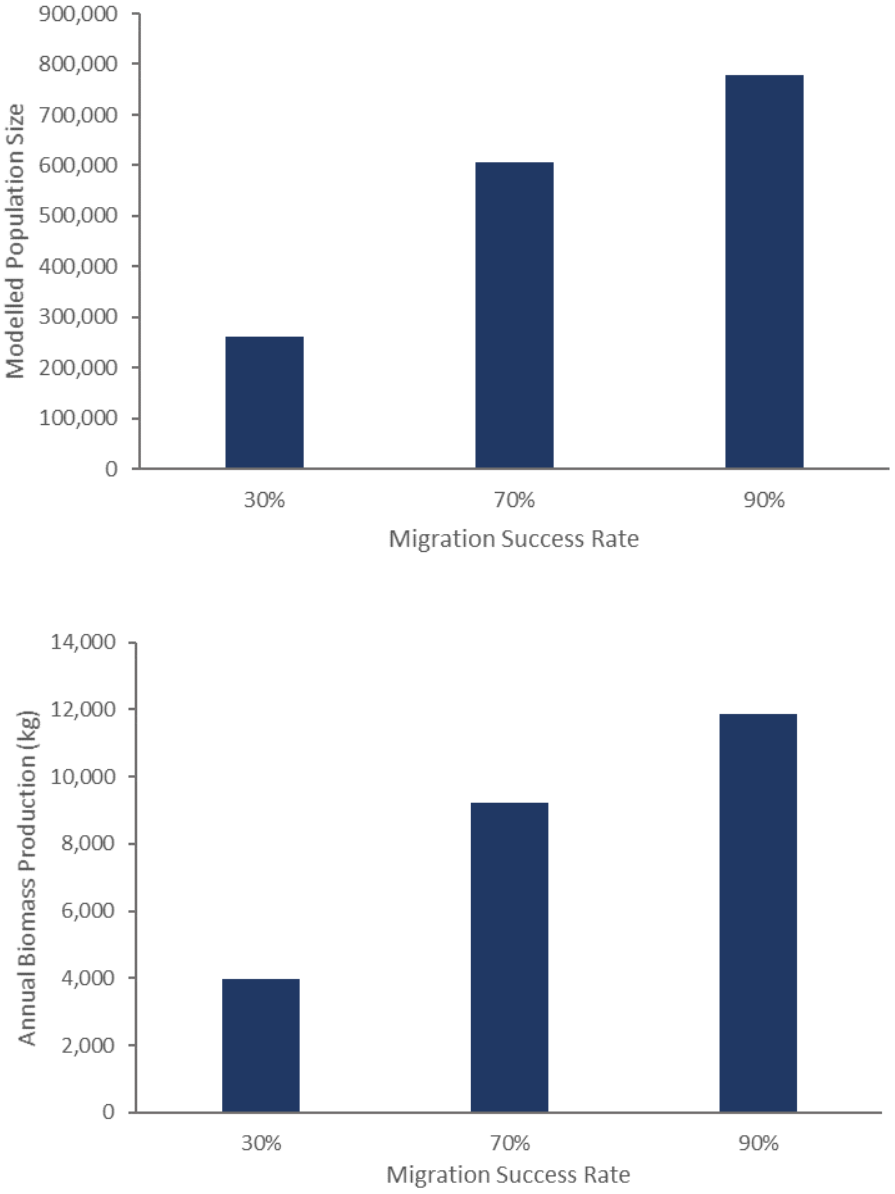


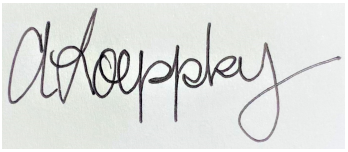
Figure 1: Predicted Total Population Size (Top Panel) and Annual Biomass Production (Lower Panel) for Arctic Char Under Assumed Baseline Conditions of 30% Migration Success and Scenarios of 70% and 90% Migration Success Following Improvements to Upstream Access at Pistol Bay Falls

PRELIMINARY EQUIVALENCY ANALYSIS

The equivalency calculation for the Meliadine Extension offsetting plan used biomass production as the common currency for estimating gains and losses, and the gains target for the offsetting measure at Pistol Bay. The estimated habitat loss, measured in area, for waterbodies and watercourses incurred by the footprint includes 437.38 ha for waterbodies and 11.55 ha for watercourses, totalling 448.73 ha. The estimated loss in habitat units (HUs) to waterbodies and watercourses includes 154.69 HU for waterbodies and 4.28 HU for watercourses, totalling 158.97 HU. To calculate the potential losses measured in biomass production (i.e., forgone annual loss as kg/year), the previously estimated biomass production value for Second Portage Lake (2.34 kg/ha/yr; Golder 2020) was applied to the area affected by the Meliadine Extension Project (448.93 ha). The product of this calculation is 1,052 kg/yr. Assuming an offsetting target that is two-times the estimated losses, the resulting biomass target is equivalent to 2,104 kg/yr. For comparison, the fish production model developed for the Arctic Char population at Pistol Bay yielded a minimum gain in biomass production of 5,260 kg/yr when passability improves from 30% to 70%, and a minimum of 7,891 kg/yr when passability improves from 30% to 90%. Of note, predicted gains reflect a static characterization of the productive capacity of the upstream habitat following the addition of new recruits of Arctic Char to the Pistol Bay population and stabilization of local population dynamics over time. Actual gains will fluctuate until equilibrium is achieved and the capacity at equilibrium will also fluctuate in response to environmental conditions. In summary, the equivalency analysis suggests that the offsetting concept for Pistol Bay Falls can meet the offsetting objectives for the Meliadine Extension Project offsetting plan.

Signature Page

WSP CANADA INC.



Alison Loeppky, Ph.D., M.Sc.
Experienced, Aquatic Biologist

Cameron Stevens, Ph.D., M.Sc., P.Biol., RP. Bio.
Principal, Aquatic Biologist

AL/CS/jjm

Distribution: Alison Loeppky, Cam Stevens, Laurence Bonin, Manon Turmel, Edward Malindzak

https://golderassociates.sharepoint.com/sites/168667/project files/5 technical work/fisheries/arch model/tm 22565973 meliadine extension offset equivalency 13 jan 2023.docx

REFERENCES

Atse CB, Audet C, De La Noüe J. 2002. Effects of temperature and salinity on the reproductive success of Arctic charr, *Salvelinus alpinus* (L.): egg composition, milt characteristics and fry survival. Aquaculture Research 33: 299-309.

Barlaup BT, Moen V. 2001. Planting of salmonid eggs for stock enhancement – a review of the most commonly used methods. Nordic Journal of Freshwater Research 75:7-19.

Caswell H. 2001. 'Matrix Population Models. Construction, Analysis, and Interpretation.' 2nd Edn. (Sinauer:Sunderland, MA.) 722 pp.

Caza-Allard I, Mazerolle MJ, Harris LN, Malley BK, Tallman RF, Fisk AT, Moore JS. 2021. Annual survival probabilities of anadromous Arctic Char remain high and stable despite interannual differences in sea ice melt date. Arctic Science 7:575-84.

Golder Associates Ltd (Golder). 2012. SD-7-1 Aquatics Baseline Synthesis Report, 1994 to 2009 – Meliadine Gold Project, Nunavut. Prepared for Agnico Eagle Mines Limited. 970 pages.

Golder. 2014. SD 7-4 Conceptual Fisheries Protection and Offsetting Plan – Meliadine Gold Project, Nunavut. Submitted to Agnico Eagle Mines Limited..

Golder. 2020. Calculation of Target Gains in Fish Production for the Meadowbank Mine NNLP Update. Prepared for Agnico Eagle Mines Ltd, July 29, 2020. Report No. 20145113-489-TIM-Rev0. 16 pages.

Harris LN, Melley BK, Moore JS, Tallman RF. 2020. A dressed weight to round weight conversion factor for commercially harvested Arctic char (*Salvelinus alpinus*) from the Halokvik River, Nunavut

Horst TJ. 1977. Use of the Leslie matrix for assessing environmental impact with an example for a fish population. Transactions of the American Fisheries Society. 106:253-7.

Jensen AJ, Finstad B, Fiske P. 2019. The cost of anadromy: marine and freshwater mortality rates in anadromous Arctic char and brown trout in the Arctic region of Norway. Canadian Journal of Fisheries and Aquatic Sciences 12:2408-17.

Kennedy GJA, Strange CD. 1981. Comparative survival from salmon *(Salmo salar L.*) stocking with eyed and green ova in an upland stream. Fisheries Management 12: 43–48.

Kemp PS, O'Hanley JR. 2010. Procedures for evaluating and prioritising the removal of fish passage barriers: a synthesis. Fisheries Management and Ecology 17: 297-322.

Leslie PH. 1945. On the use of matrices in population mathematics. Biometrika 33:183-212.

Loewen TN, Gillis D, Tallman RF. 2010. Maturation, growth and fecundity of Arctic charr, *Salvelinus alpinus* (L.), life-history variants co-existing in lake systems of Southern Baffin Island, Nunavut, Canada. Hydrobiologia 650:193-202.

Nilsson J, Backström T, Stien LH, Carlberg H, Jeuthe H, Magnhagen C, Brännäs E. 2016. Effects of age and rearing environment on genetic parameters of growth and body weight and heritability of skin pigmentation in Arctic charr (*Salvelinus alpinus* L.). Aquaculture. 453:67-72.

Power G, Barton DR. 1987. Some effects of physiographic and biotic factors on the distribution of Anadromous Arctic Char (*Salvelinus alpinus*) in Ungava Bay, Canada. Arctic 40: 198-2033

Power M, Dempson JB, Reist JD, Schwarz CJ, Power G. 2005. Latitudinal variation in fecundity among Arctic charr populations in eastern North America. Journal of Fish Biology 67:255-73.

Shearer WM. 1961. Survival rate of young salmonids in streams stocked with 'green' ova. ICES, C.M. 1961/98, Copenhagen.

Sprules WM. 1952. The Arctic char of the west coast of Hudson Bay. Journal of the Fisheries Board of Canada 9:1-5.

Thorstad EB, Økland F, Aarestrup K, Heggberget TG. 2008. Factors affecting the within-river spawning migration of Atlantic salmon, with emphasis on human impacts. Reviews in Fish Biology and Fisheries. 18:345-71.

Worthington T, Kemp P, Osborne PE. 2011. Factors affecting the population viability of the burbot, *Lota*. Fisheries Management and Ecology 18:322-32.

APPENDIX E • MONITORING PLAN EXAMPLE

AGNICO EAGLE
MELIADINE

Meliadine Extension – Example Fish Offsetting Monitoring Plan

Pistol Bay Falls

Improved passage should be demonstratable in the years following the changes at Pistol Bay Falls. Since Arctic char alternate spawning years and 50% of Arctic Char in Nunavut reach maturity at approximately 10.5 years (Zhu et. al., 2021), determining increases in Arctic Char biomass are unlikely to be notable in the immediate aftermath of the passage alterations. Increased passage success should be demonstratable.

1 Monitoring Years -1, 0, 1, and 2

1.1 Monitoring Frequency/Timing

In offsetting Year -1-0 (baseline) and 1-2 (post-construction) to collect data, with possible monitoring during Year 5 depending on results from Year. General study design would include the following:

- Trap nets to sample upstream migrating fish (all species)
- Mark-recapture study to determine population size and passage rate change over time.

(Note that structural inspections will also be conducted in Years 0, 2, and 5)

1.2 Field Data

- Total number of Arctic Char captured.
- Flow conditions (e.g., water depths, velocities)
- Daily catch totals of fish per trap net
- Species and age/size of fish and behavior of fish observed during a visual survey.
- Duration of visual survey, number of observers and recorders
- Geo-referenced locations and photographs of survey locations

1.3 Supporting Data

- Fish length and weight measurements fish captured
- Continuous data collection of water temperature, water levels, and river discharge
- Incidental observations during monitoring events
- Qualitative analysis of stomach contents

1.4 Analyses

- Summary of water temperature and flow discharge trends for the monitoring year and comparison to previous years
- Comparison of fish community structure and Arctic Char population to previously collected and published (where relevant) data
- Descriptive statistics (e.g., mean, median, range, variance, standard deviation) and comparisons of collected fish data (e.g., length, weight, stomach contents)
- Descriptive summary of visual observations as supporting evidence for observed trends

1.5 Management Thresholds and Actions

Year 2 Action Threshold(s)	20% increase in passage fish numbers comparing passage between years -1-0 and 1-2	Less than 20% increase in fish passage numbers comparing passage between years -1-0 and 1-2
Year 2 Management Action(s)	Continue with annual structural inspections until Year 5; Need for Years 4 and 5 biological monitoring to be determined based on strength of Years -1, 0 and 1,2 results, through discussion with DFO.	Engage with DFO Identify potential causes of results and implement remediation as required AND Move to Year 4-5 Monitoring

2 Monitoring Years 4, 5

Similar to Years -1, 0, 1, 2 but the study design may be expanded (e.g., increase in survey effort, implementation of special studies). Modifications to the monitoring plan would be considered following discussions with DFO.

2.1 Monitoring Frequency / Timing

Monitoring would be initiated in Years 4, 5. Monitoring frequency within a given year will be determined following review of results from Year 0 and 2 through discussions with DFO.

2.2 Field Measurements

Similar to Years -1, 0, 1, 2 with modifications as needed based on Year 2 results and any remedial actions that are implemented.

2.3 Supporting Data

Refer to the Supporting Data Requirements for Year -1, 0, 1, 2; alterations will be reviewed with DFO and considered for the next field season, if needed.

2.4 Analyses

Refer to the Analytical Requirements for Year -1, 0, 1, 2; analyses for additional remediation measures will determined through consultations with DFO, if needed.

2.5 Management Thresholds and Actions

Year 5 Action Threshold(s)	Arctic Char passage increased by at least 20% based on year -1, 0	Arctic Char passage increased by less than 20% based on year -1, 0 but trending upward	Arctic Char passage increased by less than 20% based on year -1, 0 with no upward trend
Year 5 Management Actions(s)	Criteria for success are met. Offset monitoring complete.	Re-assess the potential cause of results and whether any remedial actions can be taken. Engage with DFO to discuss results and possible extension of the monitoring period or whether criteria for success are met based on available data.	Re-assess the potential cause of results and whether any remedial actions can be taken. Engage with DFO to determine requirements for implementing contingency measures

3 Structural Monitoring (Pit Lakes and Pistol Bay)

Structural inspections will be conducted in years 1 and 3 to confirm stability of the constructed features. Following construction, as-built designs will be created by a qualified engineer. Ongoing annual structural assessments will be completed through visual surveys by appropriately trained personnel to document condition of the pit lakes.

The pit lakes will be assessed post-construction to determine whether it meets design assumptions. The measurement endpoint for structural monitoring will be the area (ha) of habitat created. Assessment will include area, depth, and substrate characteristics. A comparison will be made to the specifications described for these characteristics to determine whether expected physical habitat gains are achieved in the as-built state (i.e., to confirm features were constructed as planned).

The methods for the ecological monitoring program are recommended to include a variety of fish sampling methods to determine re-colonization time.

4 Annual Reporting

Annual offsetting monitoring reports will be submitted in all monitoring years. Results of structural monitoring activities will be included in the annual report. Reports will include the following:

- A review of quantitative targets for establishing effectiveness / success
- Detailed field methods, sampling intensity, and duration
- Maps depicting the locations of each sampling location
- Table(s) summarizing recorded fish and structural data
- Geo-referenced photos
- Table(s) summarizing statistical tests
- Table(s) fish capture information enumerated by location and treatment type
- Estimation of (realized) offset gains
- Discussion of results for fish passage relative to previous years
- Discussion on the effectiveness of monitoring, and the effectiveness of the offsetting measure
- Recommendations for the next field season

Zhu, X., Harris, L., Cahill, C., and Tallman, R.F. 2021. Assessing population dynamics of Arctic Char, Salvelinus alpinus, from the Halokvik and Jayko Rivers, Cambridge Bay, Nunavut, Canada. DFO Can. Sci. Advis. Sec. Res. Doc. 2021/016. iv + 34 p.