MELIADINE GOLD MINE

Meliadine Mine
Final Fish Offsetting Plan

JANUARY 2024

ᐊᐅᓚᑦᑎᔾᓂᖅᒫᖅᑐᑦ ᓇᐃᓈᖅᓯᔪᑦ

ᐊᒃᓂᓐᑯᑦ ᐅᐃᒍᒋᐊᖅᓯᔪᒪᔪᑦ (ᑕᐃᔭᐅᖃᑦᑕᖅᑐᒥᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᖅᓯᓂᖅ) ᓈᒻᒪᕆᔭᐅᓯᒪᔪᒧᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕋᒃᑕᕆᐊᕐᒧᑦ ᐅᖓᓯᒃᑎᒋᔪᖅ 25 ᑮᓛᒥᑕᓪᓗᐊᓂᒃ ᐅᐊᖕᓇᖓᓂᑦ ᑲᖏᖅᖠᓂᐅᑉ, ᐊᒻᒪᓗ 80 ᑮᓛᒥᑕᓂᒃ ᐅᖓᓯᒃᑎᒋᔪᖅ ᓂᒋᖅᐸᓯᐊᓂᑦ ᐱᖓᖕᓇᖅᐸᓯᐊᓂᑦ ᐃᓪᓗᓕᒫᕐᔪᖕᒥᑦ ᑭᕙᓪᓕᕐᒥᑦ ᓄᓇᕗᒻᒥᑦ. ᓄᓇᕗᒻᒥ ᐊᒃᑐᖅᓯᓂᕐᒥᑦ ᕿᒥᕐᕈᔾᑯᑦ (ᐊᕙᑎᓕᕆᔾᑯᑦ) ᐱᓕᕆᐊᕐᒧᑦ ᓇᓗᓇᐃᒃᑯᑕᖅ ᓈᓴᐅᑎ 006 ᑐᓂᔭᐅᓚᐅᖅᑐᖅ 2015-ᒥᑦ ᐊᒻᒪᓗ ᐊᕙᑎᒥᒃ ᖃᐅᔾᓴᐃᓂᖅ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕋᒃᑕᕆᐊᕐᒧᑦ, ᑐᓂᔭᐅᔾᔪᑎᖃᕈᑎᖓ ᐱᓕᕆᐊᕐᒧᑦ ᓇᓗᓇᐃᒃᑯᑕᕐᒥᑦ ᓈᓴᐅᑎ 006-ᒥᑦ 2015-ᒥᑦ, ᐃᓚᐅᔪᑦ ᓈᒻᒪᕆᔭᐅᓂᖏᑦ ᐊᕕᒃᓯᒪᐸᓗᒋᑦ ᐱᕙᓪᓕᐊᓂᕆᔭᖓᑦ, ᐃᓚᐅᑉᐳᑎᒃ ᐅᔭᕋᒃᑕᖅᑕᐅᓂᖓ ᑎᕆᓕᓂᐊᕐᒥᑦ ᐱᑕᓕᒃ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᒃᑯᑦ ᐊᒻᒪᓗ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᒃᑕᕐᓂᒃᑯᑦ ᐊᒻᒪᓗ ᐅᔭᕋᒃᑕᖅᑕᐅᓂᖏᑦ ᐸᒻᐸ (Pump), F ᐃᓂᐅᔪᖅ (F zone), ᑎᒃᑲᕗᕆ (Discovery) ᐊᒻᒪᓗ ᐅᐊᔅᒥᐊᒡ (Wesmeg) ᐱᑕᖏᑦ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᒃᑯᑦ ᐊᑐᕐᓗᑎᒃ. Type A ᐃᒪᕐᒧᑦ ᓚᐃᓴᓐᓯ 2AM-MEL1631 ᑐᓂᔭᐅᓚᐅᖅᑐᖅ 2016-ᒥᑦ ᑎᕆᓕᓂᐊᕐᒥᑦ ᐱᑕᓕᖕᒧᓗᐊᖑᓚᐅᖅᑐᖅ ᐊᒻᒪᓗ ᐱᕐᑯᑎᖏᓐᓄᑦ ᐃᓚᐅᑉᐳᑎᒃ ᐱᓕᐅᕆᕝᕕᒃ, ᓄᓇᓕᐊᓖᖅ, ᕿᒪᒃᑎᑦᑐᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᒃ ᐊᒻᒪᓗ ᐊᒃᑖᖅᑕᐅᔪᑦ ᐅᔭᖅᖃᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕚᑦ.

ᑕᐃᒪᙵᓂᑦ 2015-ᒥᑦ, ᐊᒃᓂᓐᑯᑦ ᑲᑎᑦᑎᖃᑦᑕᖅᑐᑦ ᑮᓕᕆᔭᐅᔪᓂᒃ ᐊᒻᒪᓗ ᑕᐃᒪᐅᔪᓂᒃ ᖃᓄᐃᖓᓂᐅᔪᓄᑦ ᓈᓴᐅᑎᓂᒃ/ᑎᑎᖅᖃᓂᒃ, ᐃᓚᓕᐅᑎᔭᐅᓯᒪᔪᑦ ᓄᑖᙳᖅᑎᖅᓯᒪᔪᒧᑦ ᐃᕙᑎᒥᒃ ᖃᐅᔾᓴᐃᓂᕐᒧᑦ ᖃᐅᔾᓂᐊᕐᓗᑎᒃ ᐊᒻᒪᓗ ᖃᐅᔾᓴᕐᓗᒋᑦ ᐊᕙᑎᒧᑦ ᐊᒻᒪᓗ ᐃᓅᖃᑎᒌᓄᑦ ᖃᓄᖓᓕᖅᑎᑦᑎᓂᐅᔪᖕᓇᖅᑐᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᖅᓯᓂᕐᒧᑦ ᐱᓕᕆᓂᕐᓂᑦ ᐱᔪᓂᒃ. ᓈᓴᐅᑎᓂᒃ/ᑎᑎᖅᖃᓂᒃ ᑲᑎᖅᓱᐃᓂᕐᒥᑦ ᐃᓚᐅᔪᑦ ᐊᕙᑎᕗᑦ (ᒫᕐᓗ, ᓄᓇ ᐊᒻᒪᓗ ᐃᐸᔪᐃᑦ, ᕐᑯᐊᖑᐃᓐᓇᐅᔭᖅᑐᖅ, ᓄᓇᐅᑉ ᖃᓄᐃᓕᐅᕐᓂᖓ, ᓂᐱᖃᕐᓂᖅ, ᐊᒻᒪᓗ ᐃᒪᖅ ᐊᖏᑎᒋᓂᖓ ᐊᒻᒪᓗ ᖃᓄᐃᓐᓂᖓ, ᑕᕆᐅᑉ ᐃᒪᐅᑉ ᖃᓄᐃᓐᓂᖓ), ᐆᒪᔪᑦ ᐊᕙᑎᖏᑦ (ᒫᕐᓗ, ᐱᕈᖅᑐᐃᑦ, ᓄᓇᒥᐅᑕᐃᑦ ᓂᕐᔪᑏᑦ, ᑎᖕᒥᐊᑦ ᐊᒻᒪᓗ ᑎᖕᒥᐊᑦ ᐃᓂᒋᔭᖏᑦ, ᐊᒻᒪᓗ ᐃᖃᓗᐃᑦ ᐊᓯᖏᓪᓗ ᐃᒪᕐᒥᐅᑕᐃᑦ ᐆᒪᔪᕋᓛᑦ, ᐊᒻᒪᓗ ᐃᒪᕐᒥᐅᑕᐃᑦ ᓂᕐᔪᑏᑦ), ᐊᒻᒪᓗ ᐃᓄᐃᑦ-ᐱᕈᖅᐸᓪᓕᐊᓂᖏᑦ (ᒫᕐᓗ, ᐃᓄᐃᑦ ᖃᐅᔨᒪᔭᑐᖃᖏᑦ, ᐃᑦᑕᕐᓂᑕᓕᕆᓂᖅ, ᐊᒻᒪᓗ ᐃᓄᐃᑦ-ᐱᕈᖅᐸᓪᓕᐊᓂᖏᑦ). ᖃᓄᐃᖓᓂᐅᔪᑦ ᐊᕙᑎᒥᒃ ᖃᐅᔾᓴᐃᓂᕐᒧᑦ ᖃᐅᔨᓚᐅᖅᑐᑦ ᐊᖏᕈᐊᖏᕆᐊᖅᑎᑦᑎᓂᖅ, ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᖅᓯᓂᖅ ᐊᑯᓂᐅᔪᒥᑦ ᐊᖏᔪᒥᒃ ᐱᑦᑕᐅᖏᑦᑐᒥᒃ ᖃᓄᐃᖓᓕᖅᑎᑦᑎᓂᖃᕐᓂᐊᖏᓐᓂᖓᓄᑦ ᓴᓇᕙᓪᓕᐊᑎᓪᓗᒋᑦ, ᐊᐅᓵᖅᑎᑦᑎᓂᕐᓂᑦ, ᐅᒃᑯᐊᖅᐸᓪᓕᐊᓂᕐᒥᓪᓗ ᐱᔪᓂᑦ.

ᐊᒃᓂᓐᑯᑦ ᐋᖅᕿᒃᓯᓚᐅᖅᑐᑦ ᖃᐅᔨᓴᐃᓂᕐᒧᑦ ᐊᒻᒪᓗ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᑐᕌᖓᔪᓂᑦ ᐱᔭᕆᐊᖃᖅᑐᓂᒃ ᐊᖏᕈᐊᖏᕆᐊᖅᑎᑦᑎᓂᕐᒧᑦ, ᖃᐅᔨᓴᐃᓂᕐᒧᑦ, ᐊᒻᒪᓗ ᐅᓂᑉᑲᓕᐅᕆᓂᕐᒧᑦ ᐊᕙᑎᐅᑉ ᖃᓄᐃᓕᐅᕐᓂᖓᓄᑦ ᒪᓕᑲᕆᓂᕐᒧᑦ ᐱᔭᕆᐊᓕᖕᓄᑦ ᐃᓗᐊᓐᓂᑦᑐᓂᒃ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐊᐅᓛᖅᑎᑦᑎᓂᕐᒧᑦ ᐱᔪᖕᓇᖅᑎᑕᐅᓂᕐᓂᑦ, ᐱᔪᖕᓇᖅᑎᑦᑎᔾᔪᑎᓂᒃ ᐳᒥᑦᓂᑦ, ᓚᐃᓴᓐᓯᓂᑦ, ᐊᒻᒪᓗ ᐊᑐᖅᑐᐊᖅᑕᐅᔪᓂᒃ ᐊᔾᔨᒋᓗᒋᑦ ᒪᓕᒐᒃᑯᑦ ᐱᔭᕆᐊᖃᖅᑐᓂᒃ ᐊᑐᖅᑐᑦ ᐱᖁᔭᓂᑦ ᐊᒻᒪᓗ ᒪᓕᒐᕆᓃᑦ ᓄᓇᕗᒻᒥᑦ. ᓇᓚᐅᑦᑎᓂᖏᑦ ᐊᕙᑎᒥᒃ ᐊᒃᑐᖅᓯᓂᕐᒧᑦ ᓇᓚᐅᑦᑖᖅᑕᐅᔪᑦ ᐊᒻᒪᓗ ᐋᑎᖃᕐᓂᖏᑦ ᐊᖏᕈᐊᖏᕆᐊᖅᑎᑦᑎᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᔪᑦ ᓇᓗᓇᐃᖅᑕᐅᓂᐊᖅᑐᑦ ᖃᐅᔨᓴᐃᒃᑯᑦ ᐊᒻᒪᓗ ᐊᕐᕿᒍᑕᒫᖅ ᐅᓂᑉᑲᓕᐅᕆᓂᒃᑯᑦ. ᐃᓱᒪᖕᓇᙱᑦᑐᒃ ᐅᕝᕙᓘᓐᓃᑦ ᓂᕆᐅᓐᙱᑦᑐᒃ ᐊᖏᔪᒥᒃ ᐊᕙᑎᒥᒃ ᐊᒃᑐᖅᓯᓂᐅᔪᒃ ᖃᐅᔨᔭᐅᒃᐸᑕ, ᐋᖅᕿᑎᐊᖅᓯᓂᕐᒧᑦ ᖃᓄᐃᓕᐅᕐᓂᐊᕐᓂᕐᒧᑦ ᐋᖅᕿᒃᓯᓂᐊᖅᑐᑦ. ᐊᑐᖅᑕᐅᔪᒃ ᐊᐅᓚᑦᑎᓂᕆᓂᒃᑯᑦ, ᑕᐃᒪᐅᔪᑦ ᐊᑐᖅᑕᐅᔪᓄᑦ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐸᕐᓇᐅᑎ, ᐊᒻᒪᓗ ᑕᐃᒪᐅᔪᖅ ᐊᕙᑎᒥᒃ ᐊᐅᓚᑦᑎᓂᕐᒧᑦ ᐊᒻᒪᓗ ᒥᐊᓂᖅᓯᓂᕐᒧᑦ ᐸᕐᓇᐅᑎ, ᑕᐃᒪᐅᔪᑦ ᐊᖏᕈᐊᖏᕆᐊᖅᑎᑦᑎᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᔪᑦ ᐊᔪᙱᑦᑐᑦ ᑭᓯᐊᓂ ᐋᖅᕿᒋᐊᖅᑕᐅᓂᐊᖅᑐᑦ ᐅᕝᕙᓘᓐᓃᑦ ᓄᑖᓂᒃ ᐊᖏᕈᐊᖏᕆᐊᖅᑎᑦᑎᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᓂᐊᖅᑐᒃ ᐊᑐᓕᖅᑎᑕᐅᓗᑎᒃ ᐱᔭᕆᐊᖅᐸᑕ.

ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᖅᓯᓂᖅ ᑲᔪᓯᑎᑦᑎᓂᐊᖅᑐᖅ ᐱᕈᖅᐸᓪᓕᐊᓂᕐᒧᑦ ᐃᑲᔫᑎᓂᒃ ᐊᒥᓲᓄᑦ ᐅᑭᐅᓄᑦ ᐃᓱᓕᓯᒪᓕᖅᑎᓪᓗᒍ ᐅᔭᕋᒃᑕᖅᑕᐅᓂᖓ ᑕᐃᒪᐅᔪᖅ ᒫᓇ ᐊᐅᓲᕐᓂᕆᔭᖓᑕ ᐅᔭᕋᒃᑕᕆᐊᑉ. ᐱᕈᖅᐸᓪᓕᐊᓂᕐᒥᑦ ᖃᓄᐃᖓᓕᖅᑎᑦᑎᓂᐅᔪᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᖅᓯᓂᕐᒥᑦ ᐱᔪᑦ ᐊᖏᔫᔪᑦ ᐊᒻᒪᓗ ᓂᕆᐅᒋᔭᐅᔪᑦ ᐃᑲᔫᑎᑕᒃᑎᐊᕐᓂᐊᕐᓂᖓᓄᑦ ᓄᓇᕗᒻᒧᑦ. ᐃᓪᓗᒥᐅᖃᑎᒌᑦ ᕿᓇᐅᔭᓕᐅᕐᓂᖏᓐᓄᑦ ᐊᒻᒪᓗ ᐊᒃᑐᐊᓂᖃᖅᑐᑦ ᐱᔭᐅᔪᖕᓇᕐᓂᖏᓐᓄᑦ ᓂᕿᑎᐊᕙᖃᕐᓂᖅ, ᖁᕕᐊᒋᔭᐅᔪᓕᕆᓂᕐᓄᑦ, ᐃᓕᓐᓂᐊᕐᓂᕐᒧᑦ, ᐊᒻᒪᓗ ᐱᕝᕕᐅᖃᑦᑕᖅᑐᓄᑦ ᐱᖅᑯᓯᕆᔭᐅᔾᔪᑦ ᖃᓄᐃᓕᐅᕐᕕᐅᖃᑦᑕᖅᑐᓂᑦ. ᐊᔾᔨᕐᓕᒋᔭᖓ, ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᖅᓯᓂᖅ ᐃᑲᔪᐃᓂᖃᐃᓐᓇᕐᓂᐊᖅᑐᖅ ᓄᓇᓕᖕᒥᑦ ᑐᕌᖓᔪᓕᕆᓂᕐᓂᑦ ᐊᒻᒪᓗ ᐃᓕᓐᓂᐊᕐᓂᕐᒧᑦ ᐱᔮᓂᒃ, ᐊᒻᒪᓗ ᐃᓄᖕᓂᒃ ᐃᑲᔪᑎᓄᑦ ᐊᒻᒪᓗ ᐊᒃᑐᖅᓯᓂᕐᓄᑦ ᐊᖏᖃᑎᒌᒍᑎᒃᑯᑦ ᐃᑲᔫᑎᑦ ᐊᒻᒪᓗ ᐱᓂᐊᕐᓂᕆᔭᐅᔪᓂᑦ.

ᐊᐅᓲᖅᑎᑕᐅᓕᕐᓚᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕋᒃᑕᕆᐊᖅ, ᐊᓪᓚᒃᑯᑦ ᑭᑐᒃᑖᓂᒃ ᐅᖃᖃᑎᖃᖃᑦᑕᖅᓯᒪᔪᑦ ᐊᕐᕋᒍᑕᒦᖅ ᑲᑎᒪᑎᑦᑎᓂᒃᑯᑦ ᓄᓇᓕᖕᒥᑦ ᐊᒻᒪᓗ ᓄᓇᓕᖕᒥᑦ ᐃᓚᒋᔭᐅᔪᓂᒃ ᑭᕙᓪᓕᕐᒥᑦ, ᒪᓕᒐᓕᕆᓂᕐᒧᑦ ᐱᕝᔪᕝᔨᔨᓂᒃ, ᐊᒻᒪᓗ ᓄᓇᓕᖕᒥᑦ ᐱᓕᕆᔩᒋᔭᐅᔪᓂᒃ. ᐊᔪᙱᑎᑦᑎᓯᒪᔪᖅ ᑐᑭᓯᐊᓂᖃᕐᓂᕐᒥᒃ ᐱᔪᓐᓇᐅᑎᒋᔭᐅᔪᓂᒃ, ᐱᔭᐅᔪᒪᔪᓂᒃ, ᐱᓪᒪᓇᐅᒋᔭᐅᔪᒥᒃ, ᐱᔪᒪᓂᓇᔭᐅᔪᓂᒃ, ᐊᒻᒪᓗ ᐃᓱᒫᓘᑕᐅᔪᓂᒃ ᐊᒃᑐᖅᑕᐅᓯᒪᔪᖕᓇᖅᑐᓄᑦ ᐃᓚᒋᔭᐅᔪᓂᒃ, ᐱᓗᐊᖅᑐᒥᒃ ᐱᔾᔪᑎᒋᐸᓗᒍ ᑲᖏᖅᖠᓂᖅ. ᐅᖃᖃᑎᖃᖃᑦᑕᕐᓂᒃᑯᑦ, ᐊᓪᓚᒃᑯᑦ ᐋᖅᑭᒃᓯᓚᐅᖅᑐᑦ ᐊᐅᓲᖅᑎᑦᑎᓂᕐᒧᑦ ᐱᖅᑯᓯᓇᔭᐅᔪᒥᒃ ᐃᓕᑕᖅᓯᔪᖅ ᐊᒻᒪᓗ ᐃᒃᐱᒍᓱᓪᕕᖃᖅᑯᓂ ᐱᔪᒪᓂᓇᔭᐅᔪᓂᒃ ᐸᕐᓇᐃᑎᓪᓗᒋᑦ ᐊᒻᒪᓗ ᐱᓕᕆᐊᖃᕆᐊᖅᑎᓪᓗᒋᑦ. ᐊᓪᓚᒃᑯᑦ ᐅᖃᖃᑎᖃᖅᓯᒪᔪᑦ ᓄᓇᓕᖕᒥᑦ ᐃᓚᒋᔭᐅᔪᓂᒃ ᐊᒻᒪᓗ ᒪᓕᒐᓕᕆᓂᕐᒧᑦ ᐱᓕᕆᐊᓕᖕᓂᑦ ᐊᐅᓲᖅᑕᐅᓂᖓᑕ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕋᒃᑕᕆᐊᖅ, ᐊᒻᒪᓗ ᑐᒃᓯᕋᐅᑕᐅᔪᖅ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᖅᓯᓂᖅ.

ᐅᖃᖃᑎᖃᕐᓂᒃᑯᑦ, ᑎᑎᖅᑲᓂᒃ ᕿᒥᕐᕈᓂᒃᑯᑦ ᐊᒻᒪᓗ ᐱᓕᕆᕝᕕᐅᔪᓂᒃ ᖃᐅᔨᓴᐃᓂᒃᑯᑦ, ᖃᓄᐃᑦᑑᓂᖏᑦ ᐊᒻᒪᓗ ᐃᓂᐅᔪᑦ ᐋᖅᑭᒃᓯᓂᕐᒧᑦ ᐱᓕᕆᐊᓂᒃ ᓯᕗᓪᓕᐅᖅᓯᒪᔪᑦ ᒪᓕᒃᑯᓕᑦ ᑐᓂᔭᐅᓯᒪᔪᑦ 2014 FEIS-ᒥᑦ ᐊᒻᒪᓗ ᑕᐅᑐᒐᐅᔪᕐᒥᒃ ᐋᖅᑭᒃᓯᓂᕐᒧᑦ ᐸᕐᓇᐅᑎᒦᑦᑐᓂᑦ. ᐅᖃᐅᓯᐅᓚᐅᖅᑐᑦ ᐊᑐᖅᓱᕆᑦ, ᓯᕗᓪᓕᖅᐸᐅᑎᕐᑯᔭᐅᔪᖅ ᐋᖅᑭᒋᐊᖅᓯᓂᐊᕐᓗᓂ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᖅᓯᓂᕐᒧᑦ ᐊᖏᓪᓕᒋᐊᖅᓯᕐᑯᔨᔪᑦ ᐃᖃᓗᐃᑦ ᐃᑳᕐᕕᒋᖃᑦᑕᖅᑕᖕᒋᓐᓂᑦ ᑐᓗᖅᑕᕈᑕᐅᔪᓂᑦ ᐊᐅᐸᓗᒃᑐᑉ ᓄᓈᓂᑦ ᖁᕐᓗᕐᓂᕐᓂᑦ. ᓂᕆᐅᓇᙱᑦᑐᓄᑦ ᐱᓕᕆᐊᓂᑦ ᐃᓚᐅᔪᑦ ᐅᑎᖅᑎᑎᕆᓂᖅ ᐅᔭᕋᒃᑕᖅᑕᐅᓯᒪᔪᓂᒃ ᓄᓇᒥᑦ ᐃᓗᑦᑐᖅᓯᒪᔪᓂᑦ ᑕᔩᑦ ᐃᓂᒋᔭᐅᔪᙹᕐᓗᒋᑦ, ᐊᒻᒪᓗ ᑲᑎᑎᒃᑲᓂᕐᓗᒋᑦ ᐃᒪᐃᑦ ᐊᒃᑐᐊᔾᔪᑎᓂᖏᑦ ᓄᑖᓄᑦ ᓄᓇᒥᑦ ᐃᓗᑦᑐᖅᓯᒪᔪᑦ ᑕᔩᑦ ᐃᓂᒋᔭᐅᔪᙹᕐᓗᒋᑦ ᐊᒻᒪᓗ ᐃᒪᐃᔭᖅᑕᐅᓯᒪᔪᑦ ᐃᒪᖃᓚᐅᖅᑐᑦ.

ᐱᓕᕆᐊᑦ ᑎᑯᓕᐅᖅᓯᒪᔪᑦ ᒪᓕᒃᑯᓕᑦ ᐃᖃᓗᓕᕆᔩᒃᑯᑦ ᐊᑐᐊᒐᖓᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ ᐱᓕᕆᐊᓄᑦ ᐋᖅᑭᒃᓯᓂᐊᓗᓂ ᐊᖏᔪᒥᒃ ᖃᓄᐃᖓᓕᖅᑎᑦᑎᓂᐅᔪᑦ ᐃᖃᓗᖕᓄᑦ ᐊᒻᒪᓗ ᐃᖃᓗᐃᑦ ᐃᓂᒋᔭᖏᓐᓄᑦ ᒪᓕᒃᑯᓗ ᐃᖃᓗᓕᕆᔩᒃᑯᑦ ᐱᑦᑯᔭᖓᑦ (ᐃᖃᓗᓕᕆᔩᒃᑯᑦ 2019) ᖃᐅᔨᑎᑦᑎᔪᖅ ᐅᑯᓂᙵᑦ ᓯᑕᒪᓂᑦ ᐃᓂᓕᐅᖅᓯᒪᔪᓂᒃ ᐱᓕᕆᐊᓂᑦ ᐋᖅᑭᒃᓯᓂᐊᕐᓗᓂ ᐃᖃᓗᖕᓂᑦ ᐊᒻᒪᓗ ᐃᖃᓗᐃᑦ ᐃᓂᖓᓄᑦ ᐊᒃᑐᖅᓯᓂᐅᔪᓂᒃ; ᐃᓂᒋᔭᐅᔪᓂᒃ ᐅᑎᖅᑎᑦᑎᓂᖅ ᐊᒻᒪᓗ ᐱᐅᓯᒋᐊᖅᓯᓂᖅ, ᐃᓚᐅᑉᐳᑎᒃ ᓄᓇᒥᒃ ᐋᖅᑭᒃᓱᐃᓂᖅ ᑕᐃᒪᐅᔪᑦ ᐃᓂᒋᔭᐅᔪᓂᒃ ᐱᐅᓯᒋᐊᕐᓂᐊᕐᓗᒍ ᐃᓂᒋᔭᐅᔪᑦ ᐊᑑᑎᖃᕐᓂᖓ ᐊᒻᒪᓗ ᐱᓕᐅᖅᑎᐅᔪᖕᓇᕐᓂᖓ, ᐃᓂᒋᔭᐅᔪᓕᐅᕐᓗᓂ ᐱᕙᓪᓕᐊᓗᓂ ᐅᕝᕙᓘᓐᓃᑦ ᐊᖏᓪᓕᒋᐊᕐᓗᒍ ᐃᒪᕐᒥᑦ ᐃᓂᒋᔭᐅᔪᖅ ᓄᓇᒥᑦ ᐃᓂᐅᔪᒥᑦ, ᖃᓄᐃᓕᐅᕐᓂᕆᓂᖓ ᐅᕝᕙᓘᓐᓃᑦ ᐆᒪᓂᖃᖅᑐᓂᒃ ᐱᓕᕆᓗᓂ, ᐃᓚᐅᑉᐳᑎᒃ ᖃᓄᐃᓕᐅᕐᓂᕆᓂᖕᓂᒃ ᐱᓕᕆᓗᓂ ᐃᒪᕐᓂᑦ, ᐊᒻᒪᓗ ᐃᖃᓗᓕᖅᑐᖅᓗᒍ ᐅᕝᕙᓘᓐᓃᑦ ᓯᑎᔪᒥᒃ ᖄᓕᖕᓂᑦ ᐅᕕᓗᕋᓗᖕᓂᑦ, ᐊᐅᓚᑦᑎᓂᖅ ᐃᒪᕐᒥᑦ ᑖᓕᓂᕐᒥᐅᑕᐅᖏᑦᑐᓂᒃ ᐆᒪᔪᓂᒃ (ᓵᕐᓗ, ᒪᓐᓂᓕᐅᕆᓃᑦ, ᐆᒪᔪᙱᖅᑐᓂᒃ), ᐊᒻᒪᓗ ᐃᑲᔪᖅᑐᓂᒃ ᐱᓕᕆᐊᓂᒃ, ᐱᑖᖅᑐᕐᓂᐅᔪᖅ ᓈᓴᐅᑎᓂᒃ/ᑎᑎᖅᑲᓂᒃ ᑲᑎᖅᓱᐃᓂᕐᒥᑦ ᐊᒻᒪᓗ ᖃᐅᔨᓇᓱᖕᓂᕐᒧᑦ ᖃᐅᔨᓴᐃᓂᕐᒥᑦ ᐱᔪᑎᖃᖅᑐᓂᒃ ᐱᓕᕆᐊᖃᕐᓂᕐᒥᒃ ᐅᕝᕙᓘᓐᓃᑦ ᐱᐅᓯᒋᐊᖅᓯᓂᕐᒥᒃ ᐱᓕᐅᖅᑎᐅᔪᖕᓇᕐᓂᖅ ᐃᖃᓗᕋᓗᐃᑦ.

EXECUTIVE SUMMARY

Agnico Eagle is proposing to include the F Zone, Wesmeg, Pump, and Discovery deposits 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 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 Mine proposes to advance the multi-phased approach to include F Zone, Wesmeg, Pump, and Discovery deposits, which will continue to use approved infrastructure, such as the camp, mill, water management infrastructures, power plant, tailings storage facility, All-weather Access Road, freshwater intakes and treatment plants. No changes are proposed to the Rankin Inlet facilities. The life of the mine would terminate in 2031, closure will occur from 2032 to 2036, and post-closure from 2037 to 2041.

The advancement of the multi-phased mine 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 mine is anticipated to result in fish habitat losses within the Meliadine Mine. It is estimated that during the operation phase, there will be a loss of 454.321 ha of fish habitat and 1554.063 kilograms per year of fish production, with 445.210 ha and 1417.393 kg of annual fish biomass losses in waterbodies, and a loss of 9.111 ha and 136.670 kg of annual fish biomass in watercourses which will be required to be offset through Sections 35 and 36 of the *Fisheries Act*.

Agnico Eagle continues to collect baseline and existing conditions data. 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 data collection confirm that with mitigation, the Meliadine Mine 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 2014 FEIS predictions and the effectiveness of the mitigation measures are being 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

are adjusted or new mitigation measures implemented if necessary.

The multi-phased Meliadine Mine 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 Mine are substantial and are expected to be of significant benefit to the territory. The Meliadine Mine will continue to have positive effects in communities, in terms of household incomes and associated access to nutritious food, recreation, education, and resources with which to conduct traditional activities. Similarly, the Meliadine Mine will continue to support 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.

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 project for the Meliadine Mine is to improve fish passage at the natural barrier at Pistol Bay Falls. Contingency projects include an alternate fish passage improvement location, restoration of mining pits into lake habitat, and reconnecting watercourses to new pit lake habitat and dewatered lake basins.

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.

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TABLES AND FIGURES

DOCUMENT CONTROL TABLE

Version	Date	Section	Page	Revision
Conceptual	July 2022	-	-	Submitted with the application to the NIRB for the Meliadine Mine.
1	January 2023	All	multiple	Updated from a conceptual plan to a detailed plan with conformity to Authorizations concerning Fish and Fish Habitat Protection Regulations and S.27.1 Metal and Diamond Mining Effluent Regulations. Included in the submission to the Nunavut Water Board for the water licence amendment
2.1	June 2023	All	multiple	Updated based on discussions held with DFO in January and May 2023. • Included consultation activities with the Kivalliq Inuit Association and the Hunters and Trappers Association • Where fish data unknown assumed presence based on upstream and downstream observations • Accounted for partial losses due to reduced flows • Better organization of main offsetting project from contingency projects • Minor section format updates
2.2	July 2023	All	multiple	Updated based on discussions held with DFO in June 2023. • Loss calculations for ponds have been completed using the biomass numbers throughout the document per DFOs comments on the June 2023 version. • Offsetting Monitoring Plan is briefly mentioned in the document (in two locations) and clearly outlined as an appendix. • Standardizing the number format across all of the calculations. • Minor edits for consistency.
3	January 2024	All	multiple	Included in the submission to the Nunavut Water Board for the Water Licence Amendment • Consolidated tables • Updated figures • Clarification of timeline • Mitigation related to downstream impacts • Minor edits for consistency • Additional appendices

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).

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 multi-phased Meliadine Project. The Minister accepted the NIRB's recommendation on January 27, 2015 and Project Certificate No.006 was issued on February 26, 2015 (Table 1.1-1). 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 (Table 1.1-1). At that time, Agnico Eagle only applied for the Type A Water Licence required to proceed with the Tiriganiaq deposit. Agnico Eagle is now submitting a Type A Water Licence Amendment to proceed with the F Zone, Wesmeg, Pump, and Discovery deposits. Agnico Eagle is not including the previously approved Discovery deposit in this submission.

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 inclusion of the F Zone, Wesmeg, Pump, and Discovery deposits at the Meliadine Mine 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 inclusion of F Zone, Wesmeg, Pump, and Discovery deposits in the Meliadine Mine is anticipated to result in additional fish habitat losses, with the majority of the area impacted within the 2014 NIRB approved Meliadine Mine footprint (Figure 1.1-2).

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: Meliadine Mine– Project Overview

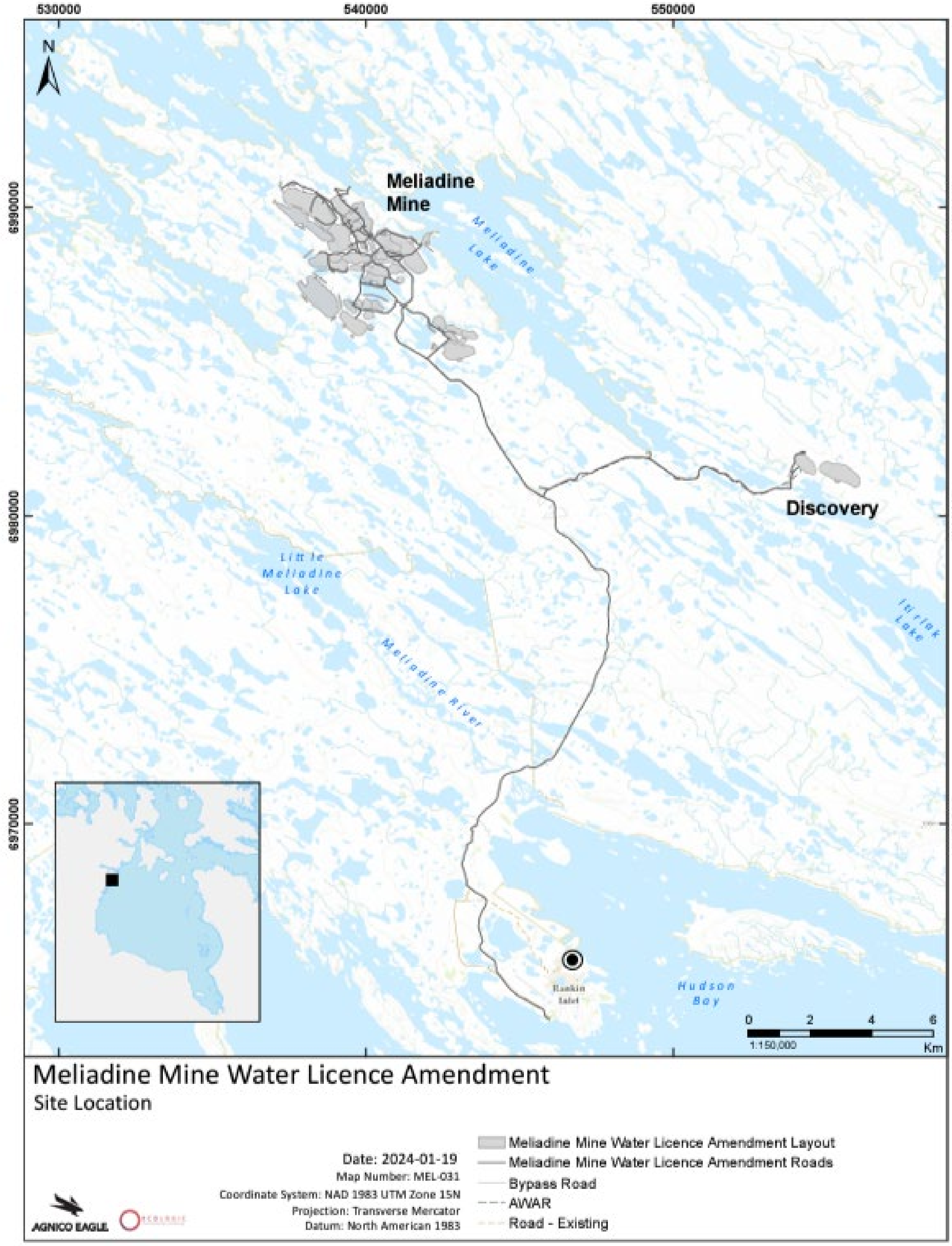
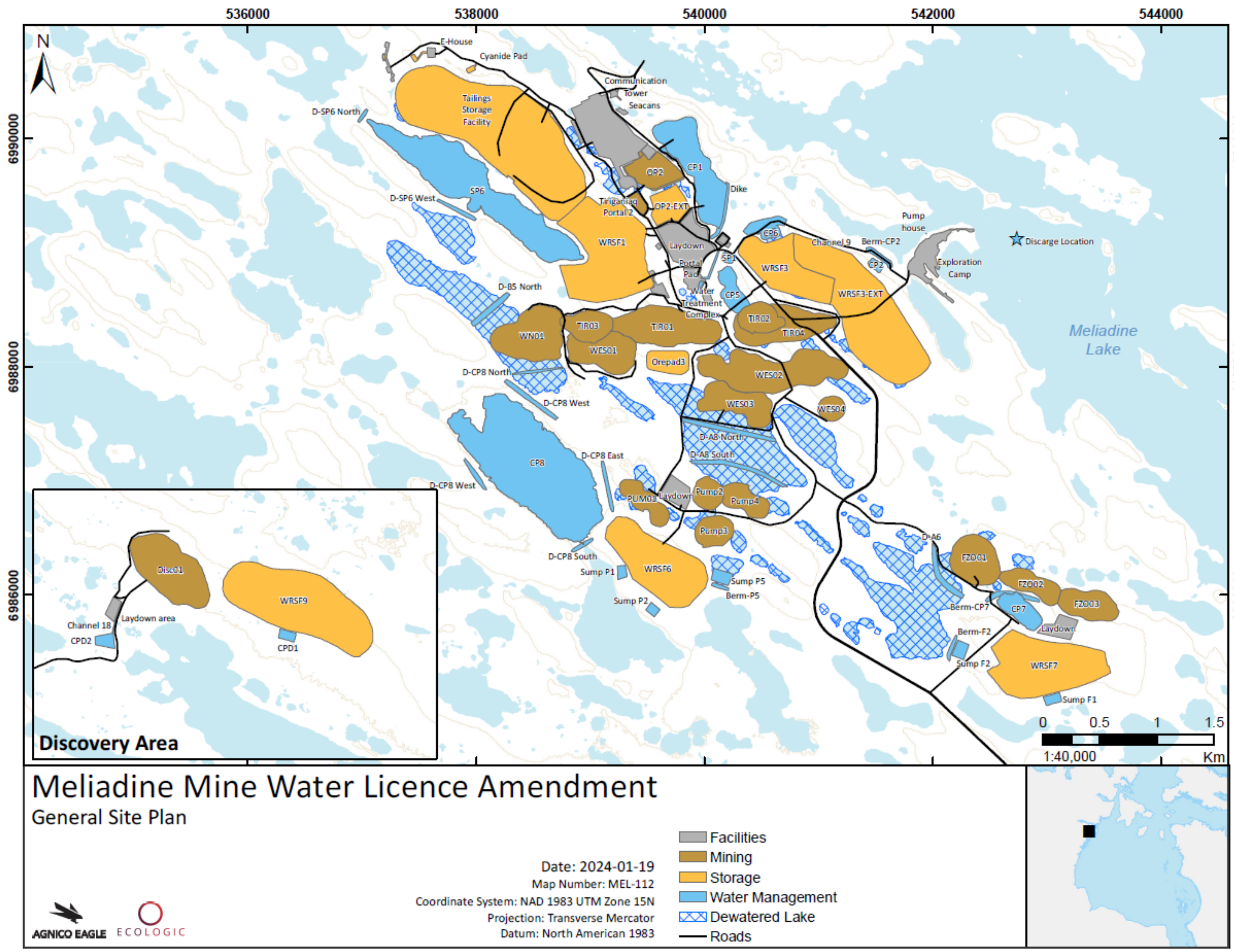


Figure 1.1-2: Meliadine Water License Amendment Infrastructure Overview



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 (Table 1.1-1). 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.

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

On May 19, 2016, the Minister approved the Type A Water Licence 2AM-MEL1631 to begin construction and operation of the Meliadine Mine (Table 1.1-1). 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 (i.e., 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 near Rankin Inlet.

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).

Agnico Eagle is seeking approvals and permits required to proceed with mining of four deposits that were not included in the Water Licence (i.e., F Zone, Wesmeg, Pump, and Discovery deposits) and associated approved activities. An Authorization under the *Fisheries Act* will be required for unavoidable impacts to fish and fish habitat.

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

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 regulates 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 a 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 Mine amendment for Water Licence 2AM-MEL1631, an amendment application document was submitted and this Fish Offsetting Plan is provided to address potential effects to fish and fish habitat.

1.2 Report Structure

This report and attached submission is organized similar to the Prescribed Information Requirements outlined in the *Applicant's Guide Supporting the "Authorizations Concerning Fish and Fish Habitat Protection Regulations"* (DFO, 2021). Additional guidance was gathered from the *Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act* (DFO, 2019). Additionally, this fish habitat offsetting plan includes Table of Concordance to Schedule 1 following the Information and Documents to be Provided in Schedule 1 of the *Fisheries Act* (**Appendix A**) as well as a Table of Concordance related to section 27.1 of the MDMER (**Appendix B**).

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).

2 DESCRIPTION OF PROPOSED WORK, UNDERTAKING, OR ACTIVITY

2.1 Meliadine Mine Overview

Mine development and operation plans and activities that are part of the multi-phase Meliadine Mine (i.e., F Zone, Wesmeg, Pump, and Discovery deposits) have the potential to interact with waterbodies in the Meliadine Mine area. Proposed activities are provided below:

Mining areas: Meliadine Mine proposes the development of open pit mining activities at the F Zone, Wesmeg, Pump, and Discovery gold deposits.

Life of mine: The operational phase will the same, with mining ending in 2031, closure from 2032 to 2036 and post-closure will be from 2037 to 2042.

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). Contact water is routed through either the Effluent Water Treatment Plant (if required) and discharged to the receiving environment (Meliadine Lake and 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 mine 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.

2.2 Description of Proposed Project Works

A detailed Project Description, including Project Components and Activities, is outlined in Section 2 of the Meliadine Mine Water Licence Amendment Main Application Document (Agnico Eagle 2024). The Meliadine Mine will begin as soon as approval and permits for the amendment applications are received, which are anticipated for mid-2024. The operation phase life of mine (LOM) is until 2031 (Table 2.2-1). Dismantling of infrastructures will occur and re-flooding from 2032 to 2038. Post-Closure Monitoring related to the mine site will take place from 2039 to 2048.

Table 2.2-1: Meliadine Infrastructure and Associated Timelines

Calendar Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Approved Mining	M	M	M	M	M							
TIRI02	M	Saline contact water storage				M	M	D	D	D	D	D
TIRI01	-	M	M	M	M	M	M	M	D	D	D	D
TIRI03	-	-	-	-	-	-	-	-	-	M	M	M
TIRI04	-	-	-	-	-	-	-	-	-	M	M	M
TIRI UG	-	-	-	-	U	U	U	U	U	U	U	U
WES04	-	-	-	-	-	M	x	x	x	x	x	x
WES01	-	-	-	-	-	M	M	M	M	x	x	x
WN01	-	-	-	-	-	-	M	M	M	M	M	x
WES02	-	-	-	-	-	-	-	-	-	M	M	M
WES03	-	-	-	-	-	-	-	-	-	-	M	M
PUMP03	-	-	-	-	-	-	-	-	M	M	M	x
PUMP01	-	-	-	-	-	-	-	-	-	M	M	M
PUMP02	-	-	-	-	-	-	-	-	-	M	M	M
PUMP04	-	-	-	-	-	-	-	-	-	M	x	x
F ZONE01	-	-	-	-	-	-	-	-	-	M	M	M
F ZONE02	-	-	-	-	-	-	-	-	-	M	M	M
F ZONE03	-	-	-	-	-	-	-	-	-	M	x	x
DISC01	-	-	-	-	-	-	-	-	-	M	M	M

Notes:

M = Open pit mining and dewatering
D = finished mining (OP), still dewatering
U = Underground mining
x = finished mining (UG or OP), no dewatering
- = Pre-mining

The advancement of the multi-phase Meliadine Mine 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.

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.

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 ore pad (OP)2 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, this area will continue to be used.

Temporary ore stockpiles adjacent to the pits at Pump, F Zone, and Discovery are also being proposed. They will facilitate ore handling and increases in 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 at the Meliadine Mine. Waste rock and overburden generated from open pit activities will be placed in one of the WRSFs.

Approximately 179.6 Mt of waste rock will be mined from the open pits and the Tiriganiaq underground mine operation, with the majority of the waste rock produced (about 153 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.

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.

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 pits (i.e., 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.

2.3 Activities with Potential to Impact Fish and Fish Habitat

Waterbodies and watercourses will be affected by mining operations, including dewatering, fish outs, overburden stripping, mining activities, roadway construction, and water management activities (**Table 2.2-2**, **Table 2.2-3**, **Table 2.2-4**).

Table 2.2-*2*: Waterbodies, Geographic Coordinates, and Associated Activities to Affected Waterbodies

Waterbody	Description	UTM Easting	UTM Northing	Timeline for Proposed Start	Effect of Meliadine Mine Water Licence Amendment	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
A1	Lake	544340	6985838	2027	Water quantity	-	-	-	-	-	-
A2	Pond	543409	6986180	2027	Water quantity	X	X	X	-	X	X
A2a	Pond	543437	6986188	2027	Water quantity	X	X	X	-	X	X
A3	Pond	543055	6986225	2027	Water quantity	X	X	X	-	X	X
A4	Pond	542972	6986211	2027	Water quantity	X	X	X	-	X	X
A5	Pond	542790	6986288	2029	Overprinted by pit	X	X	X	X	X	X
A6	Lake	541797	6985731	2028	Overprinted by pit; Loss of downstream connectivity	X	X	X	X	X	X
A7	Pond	540944	6986537	2028	Loss of downstream connectivity; Water quantity	X	X	X	-	X	X
A8	Lake	540402	6987170	2025	Overprinted by pit	X	X	X	X	X	X
A19	Pond	542462	6986490	2029	Overprinted by pit	X	X	X	X	X	X
A30	Pond	541837	6986464	2025	Loss of downstream connectivity	X	X	X	-	X	-
A31	Pond	541361	6986600	2025	Loss of downstream connectivity	X	X	X	-	X	-
A32	Pond	541209	6986731	2029	Loss of downstream connectivity	X	X	X	-	X	-
A33	Pond	541512	6986738	2025	Loss of downstream connectivity	X	X	X	-	X	-
A34	Pond	541389	6986827	2029	Loss of downstream connectivity	X	X	X	-	X	X
A35	Pond	540597	6987955	2025	Overprinted by pit	X	X	X	X	X	X
A37	Pond	540296	6987933	2025	Overprinted by pit	X	X	X	X	X	X
A44	Pond	541412	6985760	2027	Loss of downstream connectivity	X	X	X	-	X	X
A45	Pond	541265	6985695	2027	Loss of downstream connectivity	X	X	X	-	X	X
A49	Pond	541142	6985796	2027	Loss of downstream connectivity	X	X	X	-	X	X
A50	Pond	542558	6986190	2029	Overprinted by pit	X	X	X	X	X	X
A51	Pond	542561	6986081	2029	Overprinted by pit	X	X	X	X	X	X
A52	Lake	542766	6985866	2029	Collection Pond	X	X	X	-	X	X
A53	Pond	542471	6986082	2029	Overprinted by pit	X	X	X	X	X	X
B4	Lake	538772	6986895	2025	Collection Pond	X	X	X	-	X	X
B5	Lake	538007	6988529	2024	Overprinted by pit	X	X	X	X	X	X
B6	Lake	537779	6989168	2025	Loss of downstream connectivity	X	X	X	-	X	X
B7	Lake	538034	6989552	2025	Saline Pond	X	X				
B19	Pond	537629	6987622	2025	Loss of downstream connectivity	X	X	X	-	X	X
B22	Pond	537861	6987857	2025	Loss of downstream connectivity	X	X	X	-	X	X
B25	Pond	537347	6990239	2025	Tailings Storage Facility	X	X	X	-	X	X
B28	Pond	538202	6989724	2025	Tailings Storage Facility	-	X	-	-	-	-
B28a	Pond	538138	6989800	2025	Tailings Storage Facility	-	X	-	-	-	-
B30	Pond	538020	6988887	2025	Loss of downstream connectivity	X	X	X	-	X	X
B31	Pond	538109	6988805	2025	Loss of downstream connectivity	X	X	X	-	X	X

Waterbody	Description	UTM Easting	UTM Northing	Timeline for Proposed Start	Effect of Meliadine Mine Water Licence Amendment	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
B32	Pond	538247	6988753	2025	Loss of downstream connectivity	X	X	X	-	X	X
B34	Lake	539440	6987610	2027	Loss of downstream connectivity	X	X	X	-	X	X
B36	Pond	539438	6986913	2027	Overprinted by pit	X	X	X	X	X	X
B37	Pond	539709	6986708	2027	Overprinted by pit	X	X	X	X	X	X
B38	Pond	539968	6986670	2027	Overprinted by pit	X	X	X	X	X	X
B39	Pond	538156	6986743	2027	Loss of downstream connectivity	X	X	X	-	X	X
B59	Lake	540168	6986236	2027	Overprinted by infrastructure	X	X	X	-	X	X
B60	Pond	540479	6986300	2027	Loss of downstream connectivity	X	X	X	-	X	X
B61	Pond	540605	6986220	2027	Loss of downstream connectivity	X	X	X	-	X	X
B62	Pond	540297	6986468	2027	Overprinted by pit	X	X	X	X	X	X
B63	Pond	540420	6986380	2027	Loss of downstream connectivity	X	X	X	-	X	X
J2	Pond	541506	6988004	2025	Waste Rock Storage Facilities	X	X	X	-	X	X
J3	Pond	541263	6988187	2025	Waste Rock Storage Facilities	X	X	X	-	X	X
J4	Pond	541126	6988253	2022	Loss of downstream connectivity	X	X	X	-	X	X
J5	Pond	541068	6988319	2022	Overprinted by pit	X	X	X	X	X	X
J6	Pond	540933	6988163	2022	Overprinted by pit	X	X	X	X	X	X
J7	Pond	541263	6987807	2025	Overprinted by pit	X	X	X	X	X	X
J8	Pond	541714	6987891	2025	Waste Rock Storage Facilities	X	X	X	-	X	X

Table 2.2-3: Watercourses, Geographic Coordinates, and Associated Activities to Affected Waterbodies

Watercourse	Description	UTM Easting	UTM Northing	Timeline for Proposed Work	Effect of Meliadine Mine Water Licence Amendment	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
A1-A2	Stream	543663	6986127	2027	Water quantity	-	X	-	-	-	-
A2A-A3	Stream	543128	6986181	2027	Water quantity	X	X	X	-	X	-
A3-A4	Stream	542999	6986218	2027	Water quantity	X	X	X	-	X	-
A4-A5	Stream	542904	6986230	2027	Water quantity	X	X	X	-	X	-
A5-A19	Stream	542652	6986333	2028	Water quantity	X	X	X	-	X	-
A6-A7	Stream	541182	6986356	2028	Loss of downstream connectivity	-	X	-	-	-	-
A6-A31	Stream	541454	6986501	2028	Loss of downstream connectivity	-	X	-	-	-	-
A6-A44	Stream	541526	6985643	2028	Loss of downstream connectivity	-	X	-	-	-	-
A7-A8	Stream	540790	6986664	2028	Water quantity	X	X	X	-	X	-
A19-A20	Stream	542524	6986635	2029	Loss of downstream connectivity	X	X	X	-	X	-
A50-A51	Stream	542559	6986157	2029	Overprinted by pit	X	X	X	X	-	-
A51-A52	Stream	542611	6986047	2029	Overprinted by infrastructure	X	X	X	-	-	-
A5-A50	Stream	542601	6986210	2029	Overprinted by pit	X	X	X	X	X	-
A6-A50	Stream	542430	6986157	2028	Overprinted by pit	X	X	X	X	-	-
A49-A45	Stream	541202	6985744	2027	Loss of downstream connectivity	-	X	-	-	-	-
A31-A32	Stream	541241	6986696	2025	Loss of downstream connectivity	-	X	-	-	-	-
A6-A30	Stream	541781	6986382	2025	Loss of downstream connectivity	-	X	-	-	-	-
A44-A45	Stream	541342	6985750	2027	Loss of downstream connectivity	-	X	-	-	-	-
A33-A34	Stream	541435	6986806	2025	Loss of downstream connectivity	X	X	X	-	-	-
A8-A37	Stream	540224	6987818	2025	Overprinted by pit	X	X	X	X	-	-
A52 Tributaries	Stream	542949	6985628	2025	Waste Rock Storage Facilities	X	X	-	-	X	-
B2-B4	Stream	538026	6987063	2025	Overprinted by infrastructure	-	X	-	-	-	-
B5-B31	Stream	538103	6988786	2024	Loss of downstream connectivity	-	X	-	-	-	-
B30-B31	Stream	538110	6988765	2025	Loss of downstream connectivity	-	X	-	-	-	-
B31-B32	Stream	538154	6988852	2025	Loss of downstream connectivity	X	X	X	X	-	-
B5-B33	Stream	538722	6988623	2024	Loss of downstream connectivity	X	X	X	X	X	-
B6-B30	Stream	537976	6988930	2025	Loss of downstream connectivity	-	X	-	-	-	-
B26-B25	Stream	537258	6990353	2025	Overprinted by pit	-	X	-	-	-	-
B36-B37	Stream	539591	6986766	2027	Water quantity	X	X	X	X	-	-
B37-B38	Stream	539791	6986701	2027	Overprinted by infrastructure	X	X	X	-	X	-
B4-B5	Stream	538264	6987776	2024	Loss of downstream connectivity	X	X	X	-	X	-
B4-B22	Stream	537985	6987792	2025	Overprinted by infrastructure	-	X	-	-	-	-
B4-B36	Stream	539120	6986908	2025	Loss of downstream connectivity	X	X	X	X	-	-
B4-B39	Stream	538289	6986811	2025	Overprinted by infrastructure	-	X	-	-	-	-
B4-B45	Stream	538289	6986811	2025	Loss of downstream connectivity	X	X	X	-	-	-
B5-B34	Stream	539068	6987902	2024	Overprinted by infrastructure	X	X	X	-	X	-

Watercourse	Description	UTM Easting	UTM Northing	Timeline for Proposed Work	Effect of Meliadine Mine Water Licence Amendment	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
B6-B7	Stream	537928	6989387	2025	Water quantity	X	X	X	-	-	-
B7-B25	Stream	537355	6990154	2025	Tailings Storage Facility	-	X	-	-	-	-
B7-B28a -28	Stream	538142	6989759	2025	Loss of downstream connectivity	-	X	-	-	-	-
B59-B60	Stream	540367	6986296	2027	Water quantity	X	X	X	-	-	-
B59-B62	Stream	540228	6986368	2027	Loss of downstream connectivity	X	X	X	-	-	-
B60- B61	Stream	540562	6986250	2027	Loss of downstream connectivity	X	X	X	-	-	-
J4-J3	Stream	541168	6988263	2021	Waste Rock Storage Facilities	X	X	X	X	-	-
J3-J2-J8	Stream	541394	6988110	2025	Waste Rock Storage Facilities	X	X	X	-	-	-
J8-J1	Stream	541851	6988097	2025	Water quantity	X	X	X	-	X	-

Table 2.2-4: Watercourse Crossings, Geographic Coordinates, and Associated Activities to Affected Waterbodies

Watercourse	Description	UTM Easting	UTM Northing	Timeline for Proposed Work	Effect of Meliadine Mine Water Licence Amendment	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
CH5-CH6	Stream	553437	6981026	2027	Road crossing	-	X	-	-	X	-
CH100-CH101	Stream	553883	6981545	2027	Road crossing	-	X	-	-	X	-
CH101-CH102	Stream	553967	6981334	2027	Road crossing	-	X	-	-	X	-
CH6-CH102	Stream	554026	6981023	2027	Road crossing	-	X	-	-	X	-
J7-J6	Stream	541016	6988006	2025	Road crossing	X	X	X	X	-	-
J6-J4	Stream	541029	6988238	2022	Road crossing	X	X	X	X	X	-
J5-J4	Stream	541097	6988288	2022	Road crossing	X	X	X	X	X	-
Discovery Road 14	Stream	550736	6981249	2027	Road crossing	-	X	-	-	X	-
Discovery Road 15	Stream	550545	6981226	2027	Road crossing	-	X	-	-	X	-
Discovery Road 16	Stream	550355	6981227	2027	Road crossing	-	X	-	-	X	-
DSCR1-Pond 2	Stream	550854	6981515	2027	Road crossing	-	X	-	-	X	-
DSCR1-Pond 3 (CHP139-CHP140)	Stream	550925	6981600	2027	Road crossing	-	X	-	-	X	-
CH27-DRC	Stream	553270	6980924	2027	Road crossing	-	X	-	-	X	-
CHP114	Stream	553851	6981247	2027	Road crossing	-	X	-	-	X	-
Discovery Road 12	Stream	553923	6981714	2027	Road crossing	-	X	-	-	X	-
DSCR5 (CHP120-CH6)	Stream	553835	6980949	2027	Road crossing	-	X	-	-	X	-

2.4 Location, Effects, and Timeline of Waterbodies Potentially Affected by Meliadine Mine

The Meliadine Mine will result in the loss of habitat from the development of Wesmeg, Pump, F Zone, and Discovery deposits. Waterbodies and watercourses may be directly and indirectly impacted by the construction of mine infrastructure and active mining operations and could include: overprinting by infrastructure, changes in water quality and quantity, deposition of mine waste, water management, and loss of connectivity (**Table 2.2-*2*.**, **Table 2.2-*3***, **Figure 2.2-1a** to **Figure 2.2-1e**).

Figure 2.2-1a: Areas of Potential Fish Habitat Loss

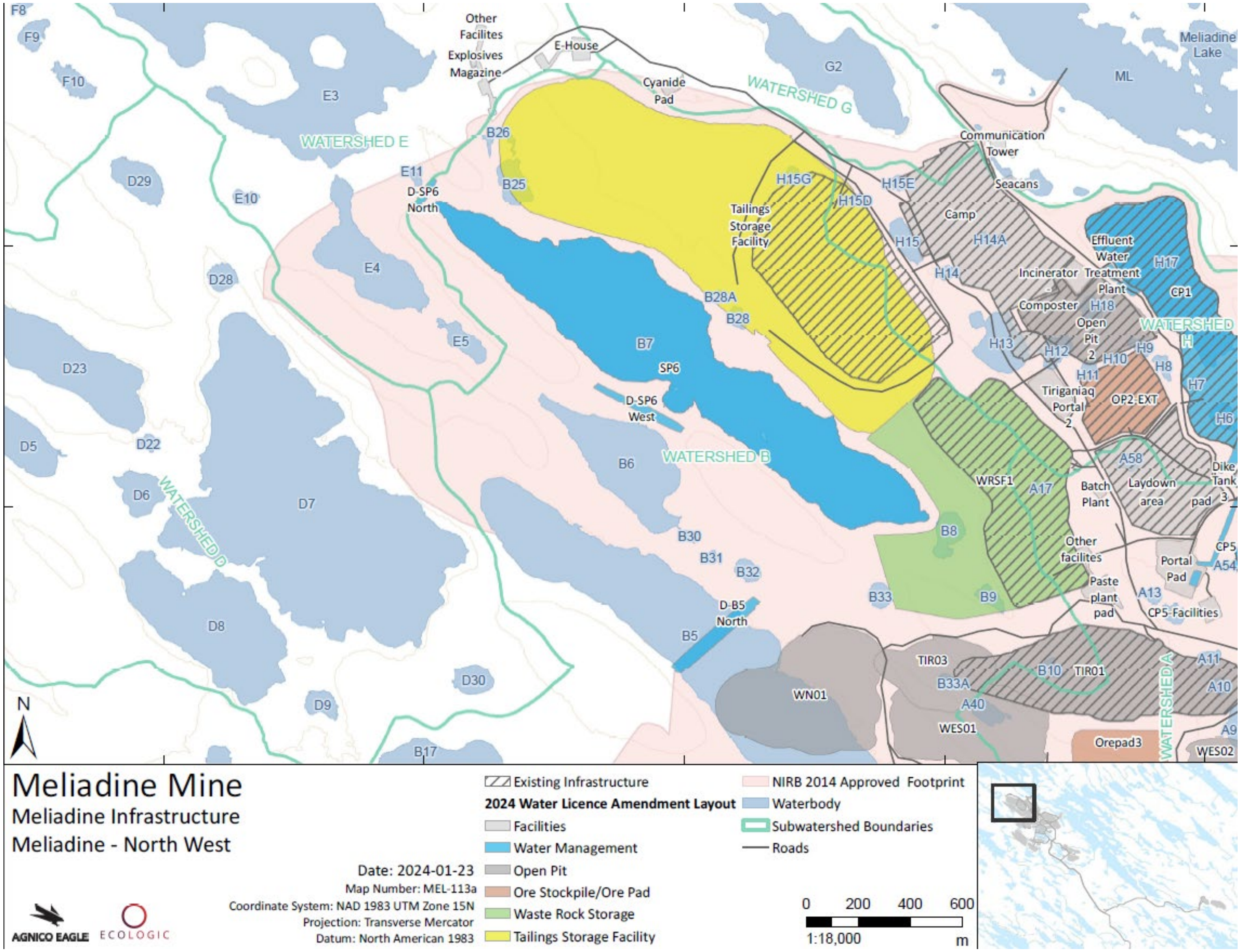


Figure 2.2-1b: Areas of Potential Fish Habitat Loss

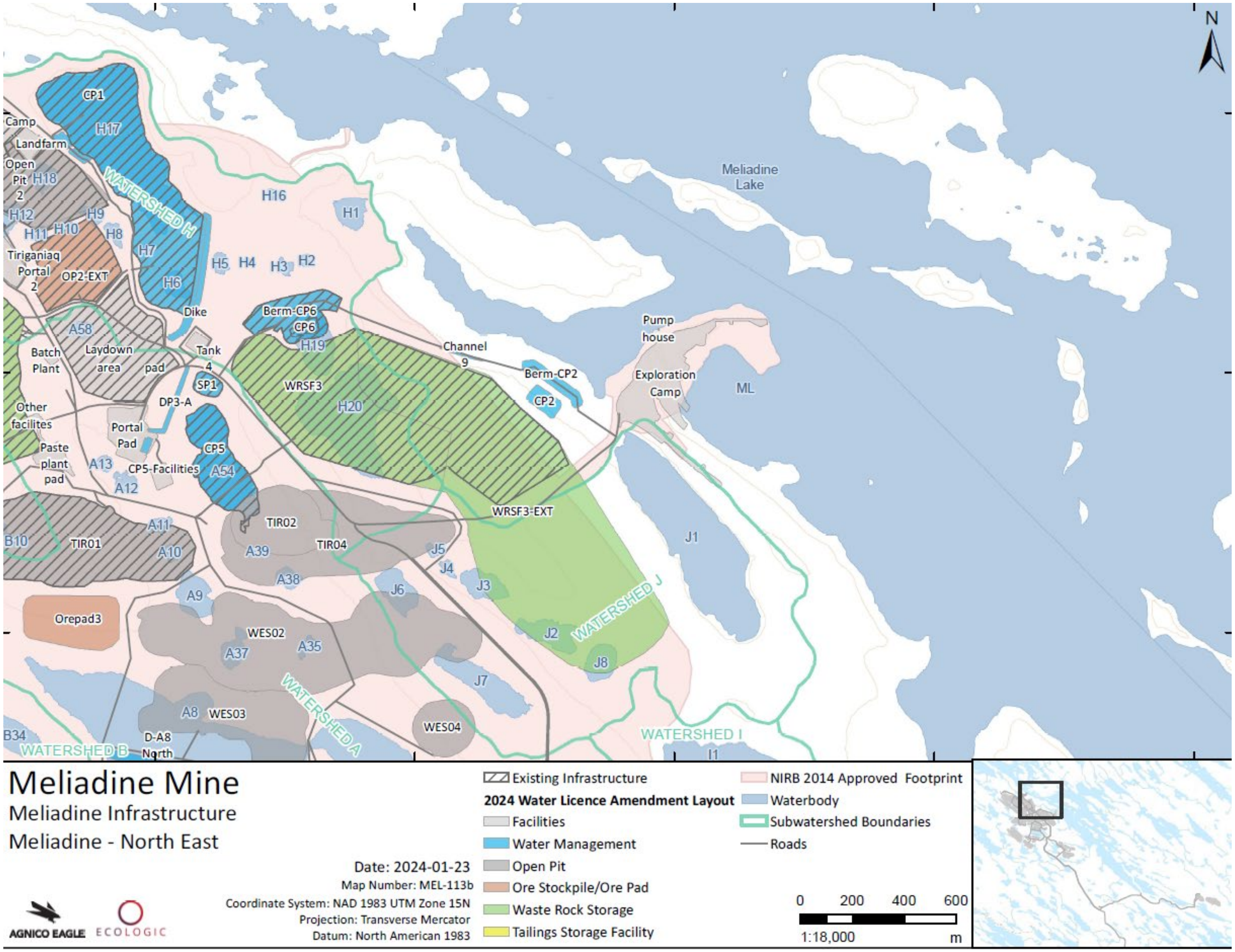


Figure 2.2-1c: Areas of Potential Fish Habitat Loss

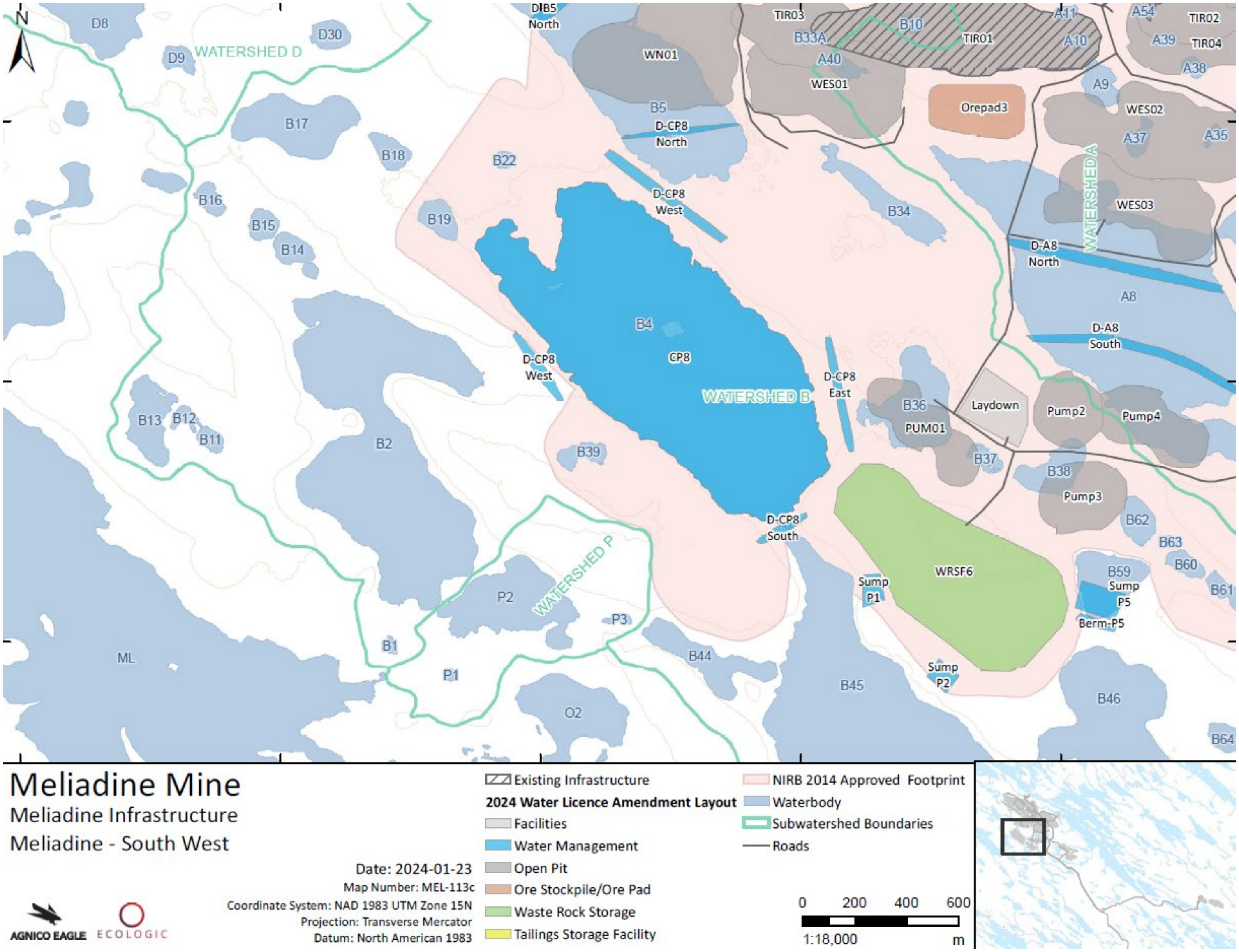


Figure 2.2-1d: Areas of Potential Fish Habitat Loss

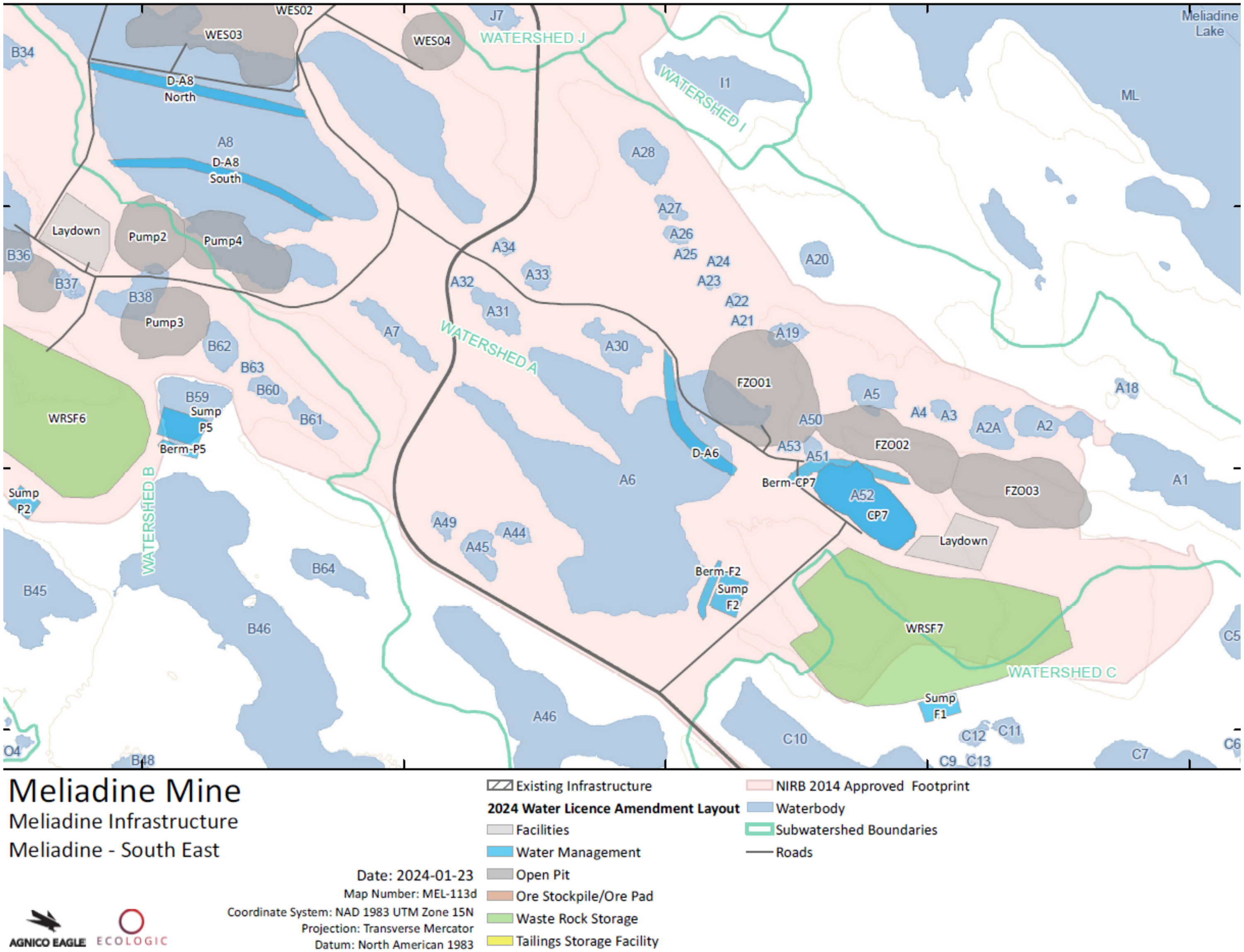
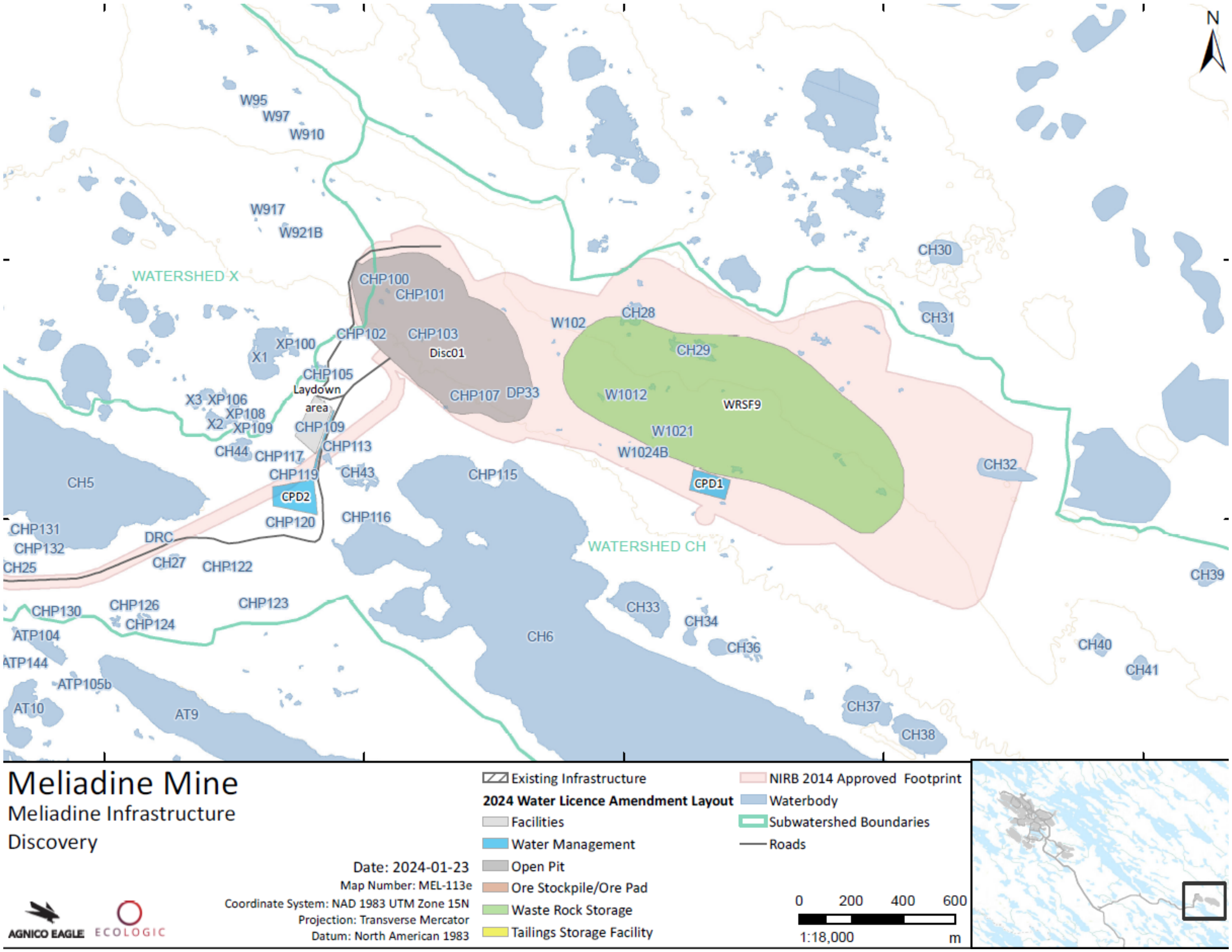


Figure 2.2-1e: Areas of Potential Fish Habitat Loss



3 CONSULTATION

Agnico Eagle has continued to work in partnership with community members, Hunters and Trappers Organization (HTO) 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 Mine 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.

Aiming to continuously improve on integrating IQ and TK to our operations, Agnico Eagle IQ and TK Advisors are responsible to advise Agnico Eagle's operations, service, and exploration teams on meaningful engagement which includes regular updates, advice, and suggestions. The IQ and TK Advisors play an active role and ensure plain language information is shared with community members. The IQ and TK Advisors also consult with groups of Elders, Women, Hunters, and other wildlife organizations to gather feedback that can be integrated in our operations and projects.

To ensure an effective and ongoing engagement process, we have implemented a variety of mechanisms and activities that occur throughout the year. These help us keep in touch with the communities and make sure they have the opportunity to give us feedback on a regular basis.

3.1 Previous Consultation Activities

Agnico Eagle acquired the Meliadine project in July 2010 from Complex 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.

Reference to Pistol Bay Falls in the consultation records first appears during "informal discussions with the Kangliqlinik HTO in 2010 and 2011" (Golder 2014). Additional references occur:

- July 13, 2011- No Net Loss Planning Workshop. Listed participants include the HTO, KIA, DFO, Agnico Eagle, and Consultants.
- July / August 2011- Discussion about "Pistol Bay access" with the Rankin Inlet HTO members. Listed participants were HTO and Agnico Eagle.

- October 24, 2012- Whale Cove consultations undertaken by Sam Tututanuak (Agnico Eagle-Community Liaison, Rankin Inlet) recorded additional qaujimajatuqangit related to the Pistol Bay watershed. Listed participants were Whale Cove community members and Agnico Eagle. Community members identified were named: Stanley Adjuk, Leopold Ekualaaq, Louis Voisey.

3.2 2021 to 2023 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.
- 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; and
- Arctic Char Hatchery.

<u>Fish Habitat Creation (lake or stream)</u>

- 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.

3.2.1 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 Mine. 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 2020, the 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 removed 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.

In 2023, meetings were held with the KivIA to discuss the offsetting plan.

- In person meeting in Yellowknife with DFO and KivIA to review the calculated losses, additional field data collection, and calculated gains.
- In person meeting in Ottawa with KivIA to present an overview of the planned 2023 field program at Pistol Bay.

3.2.2 Consultation with the Hunters and Trappers Organizations

Agnico Eagle routinely communicates with the HTO with updates related to on-going projects and consults with HTO directly to resolve concerns. Consultation is on-going and includes:

- In-person meeting in Rankin Inlet HTO to present the offsetting study and request support from the HTO (March 16, 2023).
- Discussion related to the 2023 Fisheries Studies on June 9, 2023, (Agnico Eagle and Rankin Inlet HTO).
- Letter of support for Agnico Eagle to conduct Fisheries Studies signed by Rankin Inlet HTO on June 9, 2023.

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 sub-watersheds. The A and B sub-watersheds have respectively a drainage area of 9 and 23 km^2. These two sub-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 through a series of waterbodies for a total stream distance of 39 km, 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.

Sub-watersheds within the local study area (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 (Figure 2.2-1a to Figure 2.2-1e). The approved Meliadine Mine is located primarily within the A, B, D, CH, and J sub-watersheds (Agnico Eagle 2014).

Waterbodies less than 2 m 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 most winters. The lakes within the Meliadine Mine are ultra-oligotrophic/oligotrophic (i.e., nutrient poor, unproductive) headwater lakes that are typical of the Arctic. The ice-free season on the lakes is very short with ice break-up usually during mid- to late-June and 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 2 m occurring in March/April.

Most streams are 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 stream habitat types include short riffles and small pools. In-stream substrate is typically 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, *Pungitius pungitius*). Flows during the spring melt and the summer vary with drainage area. Most small watercourses contain water for a short period in June and July with flows reducing to very little or no flows by late summer. This results in isolation of the waterbodies connected by the watercourse features. Watercourses that maintain flows through the summer will begin to freeze in the fall and most freeze to the bottom during the winter.

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 sub-watersheds) and Meliadine Lake in support of the 2014 FEIS (Golder 2012a, Golder 2012b). Additional fish sampling was conducted in the Meliadine Mine footprint in 2020 and 2021 in sub-watersheds A, B, D, E, H, I, and J, as well as in sub-watersheds CH and X near Discovery in support of advancing the multi-phase mine (ERM 2021). The 2020 and 2021 field investigations generally corroborated the earlier findings.

A reconnaissance fish and fish habitat survey was undertaken in 2022 throughout the main Meliadine Mine footprint (sub-watersheds A, B, and H), along the proposed Discovery Road alignment, Atulik Watershed and sub-watershed M, and within the Discovery Deposit area (sub-watersheds CH and X, **Appendix C**). The purpose of the reconnaissance survey was to collect additional data from waterbodies and watercourses that may be impacted by the Meliadine Mine and to validate and augment the understanding of historical baseline data and more recent data collected in 2020 and 2021 (ERM 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 Mine. Reconnaissance data for offsetting was collected around Pistol Bay, Suluppqugaliit, Iquutuuq, Nipissar Lake, Meliadine Lake, Meliadine River, Km 10 (AWAR), and the Char River.

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 (*Gasterosteus aculeatus*) were most prevalent (33% of total catch) followed by Arctic Char (*Salvelinus alpinus*, 20%), Ninespine Stickleback (16%), Cisco (*Coregonus artedi*, 14%), Arctic Grayling (*Thymallus arcticus*, 10%) and Lake Trout (*Salvelinus namaycush*, 4%). Round Whitefish (*Prosopium cylindraceum*), Slimy Sculpin (*Cottus cognatus*), and Burbot (*Lota lota*) comprised only a small portion of the catch (Golder 2012a).

Additional 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%, Golder 2012a, Golder 2012b).

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 (> 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, Golder 2012b), 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).

During the 2022 field campaign, a total of 76 waterbodies (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 common species comprising of 86% of the total number of fish captured, followed by Arctic Grayling at 13%. One Slimy Sculpin was caught (<1%). The 2022 Field Reconnaissance Report has been provided in **Appendix C** for further details.

Fish communities in waterbodies and watercourses impacted by the project are relatively simple with the more complex communities occurring in lakes (Table 4.1-1). Agnico Eagle took a conservative approach to fish occurrence by extending "assumed species presence" into waterbodies and waterbodies where they have potential to occur (based on upstream and downstream occurrences and habitats), even if those fish were never observed in those waterbodies and watercourses. Additionally, and with few exceptions, Agnico Eagle assumed that all waterbodies and watercourses contained at least one fish species, even though historic fish data suggests no fish ever occurred in those waterbodies and watercourses.

Table 4.1-1: Fish Species Observed in Waterbodies and Watercourses Potentially Impacted by the Meliadine Mine

Waterbody Name	Waterbody Type	Year(s) Sampled	Fish Community									Confirmed Species (#)	Assumed Species Presence
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB		
A1	Lake	1997, 2011, 2020	1	1	1		1*	1	1	1	1	7	8
A2	Pond	1997, 2011, 2020	1*	1*			1*	1		1*	1	2	6
A2A	Pond	Golder 2014 FEIS	1*	1*			1*	1		1*	1	2	6
A3	Pond	2012, 2020	1*	1*			1*	1		1*		1	5
A4	Pond	2012, 2020	1*	1*			1*	1		1*		1	5
A5	Pond	1997, 2009, 2020	1*	1*			1*	1		1*		1	5
A6	Lake	1997, 1998, 2009, 2020	1	1			1	1	1	1	1	7	7
A7	Pond	2011					1*	1				1	2
A8	Lake	1997, 1998, 2020, 2023					1	1		1		3	3
A19	Pond	2012, 2020					1*	1				1	2
A30	Pond	Golder 2014 FEIS					1*	1				1	2
A31	Pond	Golder 2014 FEIS						1				1	1
A32	Pond	Not Sampled						1*				0	1
A33	Pond	2022, 2023						1				1	1
A34	Pond	Not Sampled						1*				0	1
A35	Pond	2008										0	0
A37	Pond	2008						1				1	1
A44	Pond	2011, 2023						1			1	2	2
A45	Pond	2011						1				1	1
A49	Pond	2011						1				1	1
A50	Pond	2009, 2020						1				1	1
A51	Pond	2009, 2020						1				1	1
A52	Pond	2008, 2020						1				1	1
A53	Pond	2009						1				1	1
B4	Lake	1997, 1998, 2011, 2020, 2023	1*	1*		1*		1		1		2	5
B5	Lake	1997, 1998, 2020				1		1		1		3	3
B6	Lake	1997, 2008, 2020				1*	1	1	1	1		4	5
B7	Lake	1997, 1998, 2008, 2020				1		1	1	1		4	4
B8	Lake	2023						1				1	1
B19	Pond	2012						1				1	1
B22	Pond	2022										0	0
B25	Pond	2009, 2020						1				1	1
B28	Pond	2009						1				1	1

Waterbody Name	Waterbody Type	Year(s) Sampled	Fish Community									Confirmed Species (#)	Assumed Species Presence
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB		
B28a	Pond	2009						1				1	1
B30	Pond	2008, 2011, 2020						1				1	1
B31	Pond	2008, 2020, 2023						1				1	1
B32	Pond	2008, 2020, 2023						1				1	1
B34	Lake	2011, 2020						1				1	1
B36	Pond	2011, 2020						1				1	1
B37	Pond	2011, 2020						1				1	1
B38	Pond	2011, 2020						1				1	1
B39	Pond	2022										0	0
B59	Lake	2012						1*		1		1	2
B60	Lake	2012, 2020										0	0
B61	Pond	2011, 2020						1				1	1
B62	Pond	2011, 2012, 2020						1				1	1
B63	Pond	2020						1				1	1
J2	Pond	2011, 2012						1				1	1
J3	Pond	2012										0	0
J4	Pond	2012						1				1	1
J5	Pond	2012										0	0
J6	Pond	2012, 2021										0	0
J7	Pond	2012						1				1	1
J8	Pond	2012						1				1	1
A1-A2	Stream	1997, 1998, 2020	1	1				1		1	1	5	5
A2-A3	Stream	1997, 1998	1	1			1	1		1	1	6	6
A3-A4	Stream	1997, 1998, 2020	1*	1*				1		1		2	4
A4-A5	Stream	1997, 1998, 2020	1*	1*				1		1		2	4
A5-A19	Stream	2020, 2022						1				1	1
A6-A7	Stream	1997, 1998, 2000, 2008, 2009	1*	1*			1	1	1	1	1	5	7
A6-A31	Stream	Not Sampled					1*	1*		1*		0	3
A6-A44	Stream	Not Sampled					1*	1*		1*		0	3
A7-A8	Stream	1997, 1998					1	1		1		3	3
A19-A20	Stream	Not Sampled					1*	1*				0	2
A50-A51	Stream	Not Sampled						1*				0	1
A51-A52	Stream	2020						1			1	2	2
A5-A50	Stream	2020					1*	1*				0	2

Waterbody Name	Waterbody Type	Year(s) Sampled	Fish Community									Confirmed Species (#)	Assumed Species Presence
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB		
A6-A50	Stream	2020					1*	1*				0	2
A49-A45	Stream	Not Sampled						1*				0	1
A31-A32	Stream	Not Sampled						1*				0	1
A6-A30	Stream	Not Sampled					1*	1*		1*		0	3
A44-A45	Stream	1998, 2000						1				1	1
A33-A34	Stream	Not Sampled						1*				0	1
A8-A37	Stream	1998					1*	1		1*		1	3
A52 Tributaries	Stream	2023						1				1	0
B2-B4	Stream	1997, 1998	1	1		1	1	1	1	1		7	7
B5-B31	Stream	2011, 2020					1	1		1		3	3
B30-B31	Stream	2011						1		1		2	2
B31-B32	Stream	Not Sampled						1*		1*		0	2
B5-B33	Stream	Not Sampled						1*				0	1
B6-B30	Stream	2011 2020					1	1				2	2
B26-B25	Stream	Not Sampled						1*				0	1
B36-B37	Stream	Not Sampled					1*	1*				0	2
B37-B38	Stream	Not Sampled						1*				0	1
B4-B5	Stream	1997, 1998, 2020				1	1	1		1		4	4
B4-B22	Stream	Not Sampled						1*				0	1
B4-B36	Stream	1997					1	1				2	2
B4-B39	Stream	Not Sampled						1*				0	1
B4-B45	Stream	1997, 2011, 2022						1		1		2	2
B5-B34	Stream	2022						1				1	1
B6-B7	Stream	1997, 1998, 2020				1	1	1		1		4	4
B7-B25	Stream	Not Sampled					1*	1*				0	2
B7-B28a-B28	Stream	Not Sampled					1*	1*				0	2
B59-B60	Stream	2022					1*	1*	1*			0	3
B59-B62	Stream	2022						1*	1*			0	2
B60-B61	Stream	2022						1*				0	1
CH5-CH6	Stream	2023				1	1	1		1*		0	2
CH100-CH101	Stream	Not Sampled						1*				0	1
CH101-CH102	Stream	Not Sampled						1*				0	1
CH6- CH102	Stream	Not Sampled						1*				0	1
J7-J6	Stream	Not Sampled						1*				0	1

Waterbody Name	Waterbody Type	Year(s) Sampled	Fish Community									Confirmed Species (#)	Assumed Species Presence
			ARCH	LKTR	RNWH	BURB	SLSC	NSSB	CISC	ARGR	TSSB		
J6-J4	Stream	Not Sampled						1*				0	1
J5-J4	Stream	Not Sampled						1*				0	1
J4-J3	Stream	Not Sampled						1*				0	1
J3-J2-J8	Stream	Not Sampled						1*				0	1
J8-J1	Stream	Not Sampled						1*				0	1
Discovery Road 14	Stream	Not Sampled						1*					
Discovery Road 15	Stream	Not Sampled						1*					
Discovery Road 16	Stream	Not Sampled						1*					
DSCR1-Pond 2	Stream	2023						1*				0	0
DSCR1-Pond 3 (CHP139-CHP140)	Stream	2023						1				1	1
CH27-DRC	Stream	Not Sampled						1*					
CHP114	Stream	2023						1		1		2	2
Discovery Road 12	Stream	2023						1				1	1
DSCR5 (CHP120-CH6)	Stream	2023				1		1		1		3	3

* Conservative assumed species presence based on existing substrate and upstream / downstream fish communities.

ARCH – Arctic Char, LKTR – Lake Trout, RNWH – Round Whitefish, BURB – Burbot, SLSC – Slimy Sculpin, NSSB – Ninespine Stickleback, CISC – Cisco, ARGR – Arctic Grayling, TSSB – Threespine Stickleback

5 MEASURES AND STANDARDS TO AVOID OR MITIGATE IMPACTS TO FISH

5.1 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.

5.1.1 Design Practices

Protective principals were applied early in the design process to limit or eliminate the projects impacts to fish and fish habitat (Ministry Transportation Ontario, DFO, Ontario Ministry of Natural Resources 2006). Project-specific measures to avoid impacts to fish and fish habitat will be incorporated at the design stage of each project, where practical and required (**Table *5*.1-*1***), including:

- Design of drainage systems to avoid diversion of or otherwise minimize changes in drainage to or from a waterbody
- Design surface water management measures to manage runoff to waterbody
- Design and site bridge piers and abutments to avoid or otherwise minimize encroachment into waterbody, and avoid sensitive habitats
- Design and install culverts to prevent creation of barriers to fish movement, and maintain bankfull channel functions and habitat functions to the extent possible, including:
    - embedment
    - re-instatement of low flow channel and native substrates
    - proper sizing, maintaining channel slope etc.

Table 5.1-1: Applicable Management Plans to Mitigate Impacts to Fish and Fish Habitat

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 Mine Type A 2AM-MEL1631 Water Licence Amendment Application
Adaptive Management Plan		Provided as Appendix F-1 to Meliadine Mine 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 Mine Type A 2AM-MEL1631 Water Licence Amendment Application
Environmental Management and Protection Plan	Outlines and describes project-specific management plans, mitigation measures, adaptive management and other standards and requirements for specific areas of environmental management	Provided as Appendix F-8 to Meliadine Mine Type A 2AM-MEL1631 Water Licence Amendment Application
Roads Management Plan	Includes sediment control, watercourse crossings and inspections, as well as accidents, spills, malfunctions, and emergency response components	Provided as Appendix F-19 to Meliadine Mine Type A 2AM-MEL1631 Water Licence Amendment Application

Plan	Notes	Reference
Spill Contingency Plan	Predetermined response procedures in the event of a spill, release, or discharges to land, water, ice, and snow.	Provided as Appendix F-20 to Meliadine Mine Type A 2AM-MEL1631 Water Licence Amendment Application
Blast Monitoring Program	Outlines and describes procedures and guidelines for the use of explosives, including strategy regarding Blast Vibration Monitoring at surface, underground and construction blasting for the Mine.	Provided as Appendix 31-3 to Meliadine Mine 2022 Annual Report

5.1.2 Operational Practices

Standard operational practices have been identified to avoid and mitigate harm to fish and fish habitat during dewatering activities, including the construction of offsetting habitat will include the following measures:

- Implement timing restrictions on in-water work to protect sensitive life stages/processes of migratory species following DFO guidelines:
  - Spring Spawners: May 1 to July 15
  - Fall Spawners: August 15 to June 30
  - Fall and Spring Spawners or unknown: August 15 to July 15

5.1.3 Management Practices

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).
- Design and implement isolation/containment plan to isolate temporary in-water work zones to maintain clean flow downstream/around the work zone at all times

5.1.4 Codes of Practice

Relevant DFO Codes of Practice will be applied to construction activities. DFO will be notified prior to construction per the terms of the Code of Practice. Codes of Practice that may be used include:

- In-water site isolation

- End-of-pipe fish protection screens for small water intakes in freshwater
- Culvert maintenance
- Ice bridges and snow fills
- Repair and maintenance of in-water structures
- Routine maintenance dredging for navigation
- Temporary fords

5.1.5 Measures to Protect Fish and Fish Habitat

Additional measures that will be considered to protect fish and fish habitat include (DFO 2018):

- Heeding weather advisories and scheduling work to avoid wet, windy and rainy periods that may result in high flow volumes and/ or increase erosion and sedimentation
- Regularly monitoring the watercourse for signs of sedimentation during all phases of the work, undertaking or activity and taking corrective action if required
- Using biodegradable erosion and sediment control materials whenever possible and removing all exposed non-biodegradable erosion and sediment control materials once site is stabilized
- Operating machinery on land in stable dry areas
- Maintaining all machinery on site in a clean condition and free of fluid leaks to prevent any deleterious substances from entering the water
- Washing, refueling and servicing machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water
- Disposing all waste materials (including construction, demolition, excavation, commercial logging) above the high-water mark of nearby waterbodies to prevent entry

5.1.6 Watercourse Crossings

The Meliadine Mine will include a number of road crossings at watercourses to facilitate movement around the site, efficient operations, and a safe transportation network in the event of emergency. Culverts are very common and widely used hydraulic structures that convey flowing waters across roadways (e.g., 62,000 in Quebec, Ladouceur and Ghobrial 2023). Watercourse crossings are included in this document as potential impacts to fish and fish habitat. Impacts of culvert crossings are well understood and assumed to be mitigable, however Agnico Eagle has assumed that all culvert crossings will result in a HADD and therefore the footprint of the culverts below the normal high-water mark are included in the habitat loss calculations.

Agnico Eagle will provide a variety of culvert "typical" designs for watercourse crossings that contain fish The typicals will cover a variety of conditions and will include consideration for watercourse flow regimes and a variety of fish species and sizes. Culvert typical designs will include estimates of in-culvert and channel water velocities using the 3Q10 model and DFO's Swim Performance Online Tools. Other methods may be considered if acceptable justification is provided.

5.2 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.

A conceptual monitoring plan for the offsetting measures has been developed and is discussed further in Section 8 and includes monitoring to confirm that offsetting measures are implemented, functioning appropriately, and offsets are effectively counterbalancing the habitat losses from the expansion.

Future open pit mining at the Meliadine Mine will impact the headwaters and upper reaches of the A-chain and B-chain watersheds, resulting in a reduction or loss of flow to downstream areas. The reductions in flows will reduce the available habitats for the existing fish community. Agnico Eagle has included these waterbodies and watercourses in the calculations of fish habitat losses and they will be fully offset with the current offsetting plan.

The approved project included partially dewatering Lake A6 and diverting runoff from upstream waterbodies A22 to A28 to the lower end of the A-chain (i.e., A1). The final plan and schedule may include a constructed channel or a pipeline; this plan will be completed prior to construction of the works, and duration of the pumping operation will be defined.

The approved project includes the use of Lake B4 as a contact water containment pond. This will result in the loss of habitat in Lake B4 and reduced flows to the downstream areas. Agnico Eagle plans to divert headwater flows that enter Lake B45 to Lake B44 and constructing a channel between Lakes B44 and P2 (see Conceptual Design in **Appendix D**). Future refinements to the design will consider diversification of substrates, placement of larger stone for velocity breaks and cover, infrequent pools, and a low-flow channel.

The existing connection between Lake P2 and B2 provides little in the way of fish habitat, with mostly overland flow through an infrequent and ill-defined channel. This channel would be modified to better define the channel and allow for fish passage.

6 DESCRIPTION OF POTENTIAL EFFECTS ON FISH AND ANNUAL FISH PRODUCTION

The Meliadine Mine activities represent the Approved assessment activities (Agnico Eagle 2014, 2018a, 2020a) and the waterbodies and watersheds influenced through the Meliadine Mine are the same features assessed in the 2014 FEIS. The Meliadine Mine does not change the size of the spatial or temporal boundary of the 2014 FEIS. Potential effects of the Meliadine Mine on fish and fish habitat have been identified (**Table 2.2-1**, **Table 2.2-3**, **Table 2.2-4**).

DFO uses Pathways of Effects to evaluate proposed activities that may impact fish and fish habitat. DFO Pathways of Effects diagrams "are tools developed by the Department that can be used to identify and characterize the residual effects on fish and fish habitat that may remain after the application of measures to avoid and mitigate" (DFO 2019). Pathways of Effects are used to:

- Review the potential effects of individual development proposals
- Identify appropriate mitigation measures
- Develop guidelines and best management practices
- Assess the effects of alternative design options

Agnico Eagle has reviewed the DFO Pathways of Effects and examined the cause-effect relationships for the anticipated activities at Meliadine Mine. The Pathways of Effects examined include land-based and water-based activities, such as:

- Excavation
- Grading
- Change in timing, duration and frequency of flow
- Fish passage issues
- Placement of material or structures in water
- Wastewater management
- Water extraction

The results of the Pathways of Effects analysis resulted in the identification of measures and standards to avoid or mitigate impacts to fish (**Appendix E**).

7 RESIDUAL EFFECTS

A residual effect is the effect of a project that remains, or is predicted to remain, after mitigation measures have been implemented. The Meliadine Mine will be phased over the length of the expansion work and impacts will be incremental, with most impacts lasting a few years and some lasting longer (**Table 2.2-1**).

For the purposes of this submission, residual effects are presented as losses in fish habitat and are expressed in hectares (ha). Impacts are considered losses in fish habitat when activities at the mine related to construction, dewatering, mine operation, closure, and post-closure phases impact waterbodies and watercourses in a way that they are no longer useful to the fish community. This includes dewatering waterbodies for infrastructure construction, mining operations, or to better manage water.

Although the losses will be phased and occur over time as the project progresses, all losses are assumed to occur the day after the final project approval is received and continues until mine closure.

7.1 Determination of Potential Losses

Potential effects to fish and annual fish biomass production measured in kilograms per year (kg/yr) are predicted to occur through the loss of waterbody area (ha) due to the footprint of Project Infrastructure and resulting alteration of the hydrological landscape (Figures 2.2-1a-e). Biomass calculations for losses and gains were based on known biomass values for nearby waterbodies expressed as kg/ha (**Appendix F**).

Waterbody features (i.e., lakes, ponds) were delineated using July 21, 2011 aerial imagery within a GIS application (PhotoSat 2011). Each waterbody was individually delineated as a polygon feature by tracing the waterbody shorelines. All polygons were compiled into a single layer feature and the area of each polygon was calculated within the GIS application.

Area of watercourses was calculated using known stream length and width values (Golder 2014, ERM 2021). Where watercourse area (ha) data was not available, 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 (Golder 2014, ERM 2021). Watercourse lengths were measured using a desktop GIS mapping application.

Agnico Eagle has collected extensive fish community information for many of the waterbodies that will be impacted (**Table 4.1-1**). Agnico Eagle has taken a conservative approach to identification of fish communities for the purposes of loss calculations with "assumed species presence" into waterbodies and waterbodies where they have potential to occur (based on upstream and downstream occurrences and habitats), even if those fish were never observed in those waterbodies and watercourses. Additionally, Agnico Eagle assumed, with few exceptions, that all waterbodies and watercourses contained at least one fish species, even though historic fish data suggests no fish ever occurred in those waterbodies and watercourses. And lastly, Agnico Eagle has conservatively assumed that all impacts to fish habitat will occur one day after receipt of the Project Certificate, when in reality many of the impacts will not occur for several years after Agnico Eagle receives the Project Certificate.

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*).

7.2 Fish Habitat Losses

Habitat losses are predicted to result in HADD as a result of the development, operation, and closure of the Meliadine Mine. Ninety-seven water features (53 waterbodies, 44 watercourses) will be impacted by the project resulting in the loss of 454.321 hectares (ha, 445.21 ha of waterbodies and 9.11 ha of watercourses) of fish habitat and 1554.063 kilograms per year (kg/yr, 1417.39 kg/yr in waterbodies and 136.67 kg/yr in watercourses) of fish productivity. These losses are predicted to result in a HADD under the *Fisheries Act* and arise from the development, operation, and closure of the Meliadine Mine (**Table 7.*2*-1**).

Table 7.2-1: Residual Effects

Sub-watershed	*Fisheries Act* Section	Waterbody		Watercourse	
		Area (ha)	Fish Biomass (kg/yr)	Area (ha)	Fish Biomass (kg/yr)
A	Section 35	183.150	422.986	2.917	43.757
	Section 36	7.070	82.337	0.854	12.810
	Sub-watershed Total	190.220	505.323	3.771	56.567
B	Section 35	98.230	481.342	3.798	56.965
	Section 36	146.390	309.959	0.165	2.482
	Sub-watershed Total	244.620	791.301	3.963	59.446
J	Section 35	5.660	65.916	0.384	5.754
	Section 36	4.710	54.853	0.994	14.903
	Sub-watershed Total	10.370	120.769	1.377	20.657
CH	Section 35	0.000	0.000	0.000	0.000
	Section 36	0.000	0.000	0.000	0.000
	Sub-watershed Total	0.000	0.000	0.000	0.000
Sub-total by Section 35		287.040	970.244	7.098	106.475
Sub-total by Section 36		158.170	447.149	2.013	30.195
Total Residual Effects by Waterbody Type		**445.210**	**1417.393**	**9.111**	**136.670**
Total Residual Effects				**454.321**	**1554.063**

7.2.1 Potential Effects to Fish and Fish Biomass Lost through Project Infrastructure (Section 35)

A total of 294.138 ha and 1076.719 kg/yr of fish production are attributed to Section 35 fish habitat losses (**Table 7.*2*-1**). A total of 44 waterbodies will be impacted by the project under Section 35 of the *Fisheries Act*. Ten of the waterbodies are categorized as lakes (> 2 m water depth) and the remaining are pond habitat (< 2 m water depth). This will result in the loss of 287.040 ha and 970.244 kg/yr of annual fish biomass production (**Table 7.*2-2***). Additionally, a total of 40 watercourses will be impacted by the project under Section 35 of the *Fisheries Act*, resulting in the loss of 7.098 ha and 106.475 kg of annual fish biomass production (**Table 7.*2-2***).

Table 7.2-2: Total Area (Ha) and Total Annual Biomass Production (kg/yr) Losses (Section 35)

Feature	Associated Infrastructure	Watercourse Length (m)	Watercourse Width (m)	Size (ha)	Total Annual Production (kg/yr)
A1	Water quantity			16.040	31.727
A2	Water quantity			2.360	4.668
A2A	Water quantity			1.950	3.857
A3	Water quantity			0.480	0.949
A4	Water quantity			0.070	0.138
A5	Overprinted by pit			2.000	3.956
A6	Overprinted by pit; Loss of downstream connectivity			54.730	108.256
A7	Loss of downstream connectivity; Water quantity			2.380	4.708
A8	Overprinted by pit			91.450	180.888
A19	Overprinted by pit			1.010	1.998
A30	Loss of downstream connectivity			2.520	4.985
A31	Loss of downstream connectivity			1.880	3.719
A32	Loss of downstream connectivity			0.090	1.048
A33	Loss of downstream connectivity			0.910	10.598
A34	Loss of downstream connectivity			0.310	3.610
A35	Overprinted by pit			0.360	4.193
A37	Overprinted by pit			0.920	10.714
A44	Loss of downstream connectivity			0.820	9.550
A45	Loss of downstream connectivity			1.700	19.798
A49	Loss of downstream connectivity			0.590	6.871
A50	Overprinted by pit			0.080	0.932
A51	Overprinted by pit			0.440	5.124
A53	Overprinted by pit			0.060	0.699
B5	Overprinted by pit			56.740	112.232
B6	Loss of downstream connectivity			11.800	23.340
B19	Loss of downstream connectivity			1.570	18.284
B22	Loss of downstream connectivity			0.350	4.076
B30	Loss of downstream connectivity			0.090	1.048
B31	Loss of downstream connectivity			0.130	1.514

Feature	Associated Infrastructure	Watercourse Length (m)	Watercourse Width (m)	Size (ha)	Total Annual Production (kg/yr)
B32	Loss of downstream connectivity			0.600	6.988
B34	Loss of downstream connectivity			4.370	50.893
B36	Overprinted by pit			7.930	92.353
B37	Overprinted by pit			0.850	9.899
B38	Overprinted by pit			3.300	38.432
B39	Loss of downstream connectivity			1.180	13.742
B59	Overprinted by infrastructure			4.890	56.949
B60	Loss of downstream connectivity			0.980	11.413
B61	Loss of downstream connectivity			1.160	13.509
B62	Overprinted by pit			1.790	20.846
B63	Loss of downstream connectivity			0.500	5.823
J4	Loss of downstream connectivity			0.220	2.562
J5	Overprinted by pit			0.180	2.096
J6	Overprinted by pit			1.750	20.381
J7	Overprinted by pit			3.510	40.877
A1-A2	Water quantity	78	1.2	0.009	0.141
A2-A3	Water quantity	83	0.08	0.001	0.011
A3-A4	Water quantity	26	0.7	0.002	0.027
A4-A5	Water quantity	112	1.3	0.015	0.219
A5-A19	Water quantity	249**	18.18**	0.453	6.790
A6-A7	Loss of downstream connectivity	113	1.9	0.022	0.323
A6-A31	Loss of downstream connectivity	80**	18.18**	0.145	2.182
A6-A44	Loss of downstream connectivity	164**	18.18**	0.298	4.472
A7-A8	Water quantity	137	1.1	0.015	0.227
A19-A20	Loss of downstream connectivity	216**	18.18**	0.393	5.890
A50-A51	Overprinted by pit	58**	18.18**	0.105	1.582
A51-A52	Overprinted by infrastructure	51**	18.18**	0.093	1.391
A5-A50	Overprinted by pit	165**	18.18**	0.300	4.500
A6-A50	Overprinted by pit	141**	18.18	0.256	3.845
A49-A45	Loss of downstream connectivity	52**	18.18**	0.095	1.418
A31-A32	Loss of downstream connectivity	30**	18.18**	0.055	0.818
A6-A30	Loss of downstream connectivity	27**	18.18**	0.049	0.736
A44-A45	Loss of downstream connectivity	16**	18.18**	0.029	0.436
A33-A34	Loss of downstream connectivity	70**	18.18**	0.127	1.905
A8-A37	Overprinted by pit	251**	18.18**	0.456	6.845
B2-B4	Overprinted by infrastructure	158	1.1	0.017	0.261
B5-B31	Loss of downstream connectivity	108	1.7	0.018	0.275
B30-B31	Loss of downstream connectivity	122	0.4	0.005	0.073
B31-B32	Loss of downstream connectivity	152**	18.18**	0.276	4.145
B5-B33	Loss of downstream connectivity	370	20	0.740	11.100

Feature	Associated Infrastructure	Watercourse Length (m)	Watercourse Width (m)	Size (ha)	Total Annual Production (kg/yr)
B5-B34	Loss of downstream connectivity	270.00	40.00	1.080	16.200
B6-B30	Loss of downstream connectivity	24	0.6	0.001	0.022
B36-B37	Overprinted by pit	150**	18.18**	0.273	4.091
B37-B38	Water quantity	119**	18.18**	0.216	3.245
B4-B5	Overprinted by infrastructure	146	0.9	0.013	0.197
B4-B22	Loss of downstream connectivity	225**	18.18**	0.409	6.136
B4-B36	Overprinted by infrastructure	163	0.8	0.013	0.196
B4-B39	Loss of downstream connectivity	114**	18.18**	0.207	3.109
B4-B45	Overprinted by infrastructure	30	0.4	0.001	0.018
B6-B7	Overprinted by infrastructure	30	15	0.045	0.675
B7-B25	Water quantity	56	35	0.196	2.940
B59-B60	Loss of downstream connectivity	70**	18.18**	0.127	1.909
B59-B62	Water quantity	80**	18.18**	0.145	2.182
B60-B61	Loss of downstream connectivity	36	50	0.013	0.192
J4-J3	Loss of downstream connectivity	211**	18.18**	0.384	5.754
	Total			**294.138**	**1076.719**

Summary of Total Area (Ha) and Total Annual Biomass Production (kg/yr) of Fish Bearing Waterbodies/Watercourses to be Impacted by the Meliadine Mine (Section 35)
** Watercourse length / width estimated based on known values (Golder 2014, ERM 2021) and GIS Analysis.

7.2.2 Potential Effects to Fish and Fish Biomass Lost by Deposit of Mine Waste (Section 36)

All Section 36 losses from the Meliadine Mine are anticipated to be permanent. A total of approximately 160.183 ha and 477.344 kg of annual biomass production is predicted to be lost due to deposit of mine waste in nine waterbodies and four watercourses (**Table 7.2-3**). The following waterbodies will be used for mine waste disposal: saline pond (Lake B7); contact water containment ponds (Lake B4 and Pond A52). These waterbodies are known to support fish communities and are considered fish habitat (**Table 4.1-1**). Therefore, their use for mine waste disposal will require an amendment to Schedule 2 of the MDMER.

Table 7.2-3: Total Area (Ha) and Total Annual Biomass Production (kg/yr) Losses (Section 36)

Feature	Associated Infrastructure	Waterourse Length (m)	Watercourse Width (m)	Size (ha)	Total Annual Production (kg/yr)
A52	Collection Pond			7.070	82.337
B4	Collection Pond			85.820	169.752
B7	Saline Pond			58.460	115.634
B25	Tailings Storage Facility			1.580	18.401
B28	Tailings Storage Facility			0.450	5.241
B28a	Tailings Storage Facility			0.080	0.932
J2	Waste Rock Storage Facilities			1.890	22.011
J3	Waste Rock Storage Facilities			1.470	17.120
J8	Waste Rock Storage Facilities			1.350	15.722
A52 Tributaries	Waste Rock Storage Facilities	467.55**	18.18**	0.854	12.810

Feature	Associated Infrastructure	Waterourse Length (m)	Watercourse Width (m)	Size (ha)	Total Annual Production (kg/yr)
B7-B28a-B28	Tailings Storage Facility	93.5**	18.18**	0.165	2.482
J3-J2-J8	Waste Rock Storage Facilities	60.51**	18.18**	0.110	1.650
J1-J8	Waste Rock Storage Facilities	486**	18.18**	0.884	13.253
	Total			**160.183**	**477.344**

Summary of Total Area and Total Annual Biomass Production (kg/yr) of Fish Bearing Waterbodies/Watercourses to be Impacted by Deposition of Mine Waste for the Meliadine Mine Section 36)
** Watercourse length / width estimated based on known values (Golder 2014, ERM 2021) and GIS Analysis.

The Meliadine Mine will also result in the unavoidable loss of additional waterbodies that support fish communities or have assumed fish species occurrences, including B25, B28a, B28, J2, J3, and J8, watercourses B7-B28a-B28, J3-J2-J8, and J1-J8 as a result of the extensions of the TSF and WRSF. The waterbodies support fish communities and therefore are included in the Schedule 2 amendment of the MDMER. The Meliadine Mine will result in permanent, unavoidable fish biomass losses through direct habitat loss from infrastructure footprint, change in flows, and through the deposit of mine waste (**Table 7.*2*-1**).

For waterbodies and watercourses where a HADD is predicted, the area of the potential HADD has been conservatively estimated as the entire waterbody area, 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.

8 OFFSETTING

As a result of the Meliadine Mine, there will be HADD to fish habitat resulting in a potential loss of 454.321 ha of fish habitat and 1554.063 kilograms per year of fish production (i.e., 445.210 ha and 1417.393 kg/yr of biomass losses in waterbodies, 9.111 ha and 136.670 kg/yr biomass in watercourses) which will be required to be offset through Section 35 and 36 of the *Fisheries Act*. 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 at least 2589.45 kg of annual fish biomass gained through offsetting for Meliadine Mine (i.e., losses of 1559.91 kg multiplied by 1.66).

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:

- 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.

All of Agnico Eagles offsets fall in the habitat restoration and enhancement category.

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.

8.1.1 Pistol Bay Fish Passage Restoration

Pistol Bay Falls is on the northwest coast of Hudson Bay approximately 50 km southwest of the hamlet of Rankin Inlet and approximately 67 km south-southwest of the Meliadine Mine (**Figure 8.1-1**). The Project site is about 20 minutes travel time by helicopter from the Meliadine Mine site. Upstream of the falls, the Pistol Bay watershed encompasses an area of 9,710 ha containing 432 waterbodies including a series of larger lakes greater than 50 ha (Golder 2014). An additional 45 lakes that are greater than 5 ha account for 4,054 ha of potential overwintering habitat for fish. Aerial surveys identified hydraulic connectivity for fish between the lakes consisting of meandering braided streams and stream-like corridors with shallow ponds (Golder 2014).

Figure 8.1-1: Pistol Bay Watershed and Lakes

Agnico Eagle is proposing to alter the existing natural barrier to fish passage at Pistol Bay Falls to allow a higher rate 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 allowing only the fittest fish to pass.

Information related to the nature of the barrier and the Arctic Char run size were not known. A baseline field study was undertaken in August 2023 (**Appendix G**) to collect information to:

- Monitor the timing and size of the annual adult Arctic Char upstream migration run size at Pistol Bay Falls. Fish were captured using a two-way fyke net in August.
- Determine rates of Arctic Char movement and successful upstream passage above Pistol Bay Falls using Passive Integrated Transponder (PIT) tagging methods. The movement data provided a direct measurement of Arctic Char that successfully ascend Pistol Bay Falls and reach overwintering habitat.
- Collect aging structures (i.e., otoliths) from a subsample of migrating Arctic Char at Pistol Bay Falls and from fish caught above the falls to age fish and assess frequency of migrations and age at first migration. Understanding lake residency will aid with understanding how modifying the falls may influence population dynamics in the freshwater environment.
- Collect supporting fish habitat data including identification of barriers and description of the connectivity of habitat above Pistol Bay Falls.
- Opportunistically collect data to describe the timing and size of the annual smolt downstream outmigration at Pistol Bay.

Preliminary calculations suggest that significant increases to Arctic Char production can be gained from improved access for Arctic Char to spawning, rearing, and overwintering habitat in the approximately 1,880 ha of useable area for spawning, rearing, and overwintering area upstream of Pistol Bay Falls (**Figure 8.1-1**). Arctic Char productivity can be significantly improved by modifying the falls to be passable during periods of lower water (e.g., low flow).

The habitat losses from the Meliadine Mine project are 454.321 ha of fish habitat and 1554.063 kg/yr of fish production (i.e., 445.210 ha and 1417.393 kg/yr of biomass losses in waterbodies, 9.111 ha and 136.670 kg/yr biomass in watercourses). Biomass equivalency for waterbodies and watercourses with a presumptive number of species greater than one is based on the previously estimated biomass production value for Second Portage Lake (2.34 kg per ha per year; Golder 2020). Biomass equivalency for waterbodies with a presumptive number of species of one or zero is based on the fish biomass from five ponds dewatered on the Meliadine Mine in 2022 (11.646 kg per ha per year). Biomass equivalency for all watercourses is based on fish biomass estimates used in **Appendix F**. An offsetting target ratio of 1.66:1 of the estimated losses requires production of 2579.74 kg/year of fish biomass for the Pistol Bay Falls offset.

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 70%, and 90% fish passage rates (**Table 8.1-1**, **Appendix F**).

Assuming Arctic Char spawn every two years in this area, an increase in fish passage from 30% to 70% would increase annual biomass from 3,976 to 9,236 kg. Attaining 70% fish passage would exceed the required amount of biomass by 2,371.93 kg. If passage rates increase to 90%, there would be an excess of 5,002 kg in annual fish biomass. The excess productivity, above what is required to offset the Meliadine Mine, is approximately 135% of the total losses at the 70% passage rate. The excess productivity is nearly three times the total losses at the 90% passage rate.

In the event Arctic Char spawn less frequently (e.g., every 3 or 4 years), increases in productivity as a result of increased fish passage would take longer; however the productivity goals will still be achieved.

Table 8.1-1: Estimated Productivity Increases Based on Improved Arctic Char Passage Rates at Pistol Bay Falls

	Productivity (kg/yr)	Productivity above baseline	Gains in excess of Productivity Target for Meliadine Mine
Meliadine Mine Loss Equivalency	1554.063	-	-
Productivity Target (1.66:1 Ratio) for Meliadine Mine	2579.743	-	-
		-	-
Baseline Productivity at Pistol Bay	3,976	-	-
Increase from baseline (30%) to 70% passage rate	9,236	5,260	2,372
Increase from baseline (30%) to 90% passage rate	11,866	7,890	5,002

Detailed hydrology studies were undertaken in 2023 to gather site specific information to aid the passage design. Site visits were completed in June and August 2023 and had the following objectives:

- Install and operate hydrometric monitoring stations at five locations in the system
  - Establish benchmarks at each location
  - Collect continuous measurements of water depth using pressure transducers and data loggers
  - Manually collect measurements of water surface elevation during each site visit
- Collect continuous measurements of atmospheric pressure at a single location using a pressure transducer and data logger
- Manually collect measurements of streamflow at three locations upstream of Pistol Bay Falls during each field visit
- Manual and drone Real Time Kinematic Global Positioning System (or RTK GPS) surveys of existing ground and streams in the area of the planned fishways, and the upstream area were completed

The information collected will be used to determine the location, size, and type of passage design.

8.1.2 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 has been considered. It assumes the current biomass estimates are reasonable. It also assumes that the HADDs all occur in year one.

Construction of the Pistol Bay Falls offsetting measures will begin in 2025. 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.

8.2 Monitoring Offsetting Measures

A monitoring plan for the offsetting measures has been developed and includes monitoring to confirm that offsetting measures are implemented, functioning appropriately, and offsets are effectively counterbalancing the habitat losses from the expansion (**Appendix H**). Specifically, the Offsetting Monitoring Plan includes details related to the collection of baseline data, post-construction monitoring, specific thresholds to determine successful completion of offset creation, reporting requirements, and a monitoring schedule.

8.3 Contingency Offsetting Measures

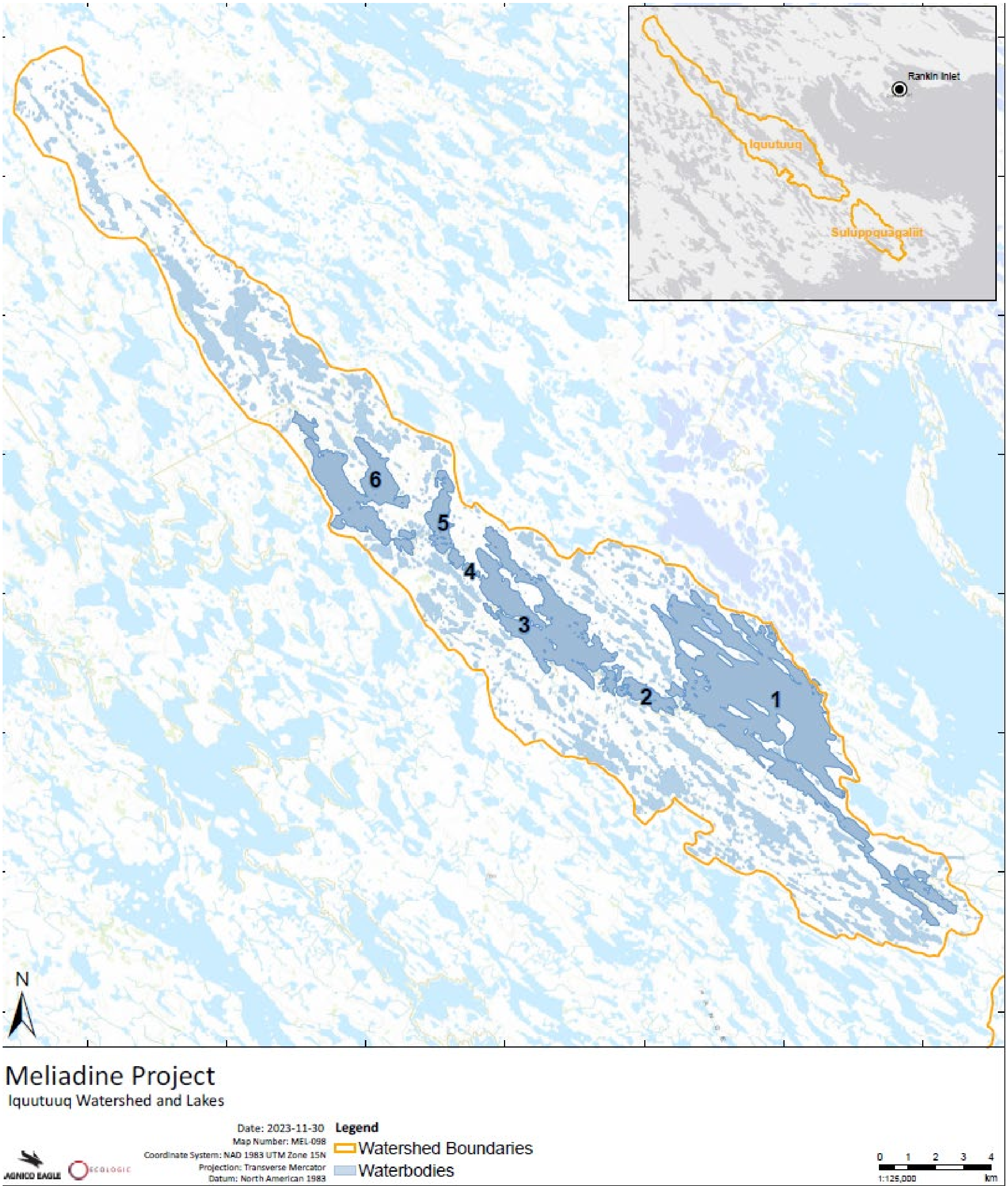
Contingency measures are planned secondary measures which would be implemented if the planned offsetting measures did not meet their objective(s). Additional offsetting options will continue to be considered as contingencies through continued consultation with the local community, the KivIA, HTO, and DFO.

8.3.1 Iquutuuq

In May 2020, Hutchinson Environmental Sciences Ltd. completed a Habitat Assessment and Initial Restoration Plan for the Kivalliq Inuit Association (Hutchinson 2020). This plan focused on identifying opportunities for improving Arctic Char productivity through remediation of physical barriers to migration in the vicinity of Rankin Inlet. Based on interviews with knowledge holders in the community and subsequent site visits in August 2019, various locations were identified with high potential for access improvements. Agnico Eagle proposes the Iquutuuq area access enhancement as a contingency offsetting option for the Meliadine Mine.

The Iquutuuq watershed is approximately 20 km southwest of Rankin Inlet (**Figure 8.3-1**). This site was identified by members of the community as previously having plentiful Arctic Char but appears to be less common. The site is accessible to the community of Rankin Inlet by a year-round trail system via all-terrain vehicles and snowmobiles, as well as by boat in the ice-free period (Hutchinson 2020).

Figure 8.3-1: Iquutuuq Watershed and Major Lakes



Hutchinson (2020) states that the KivIA supports Iquutuuq as a potential fish passage improvement site. This site has been visited by Agnico Eagle and the KivIA; this site warrants further consideration as an offsetting option. Arctic Char were observed in the area of this feature during at least one site visit. The upstream system contains Arctic Char, Lake Trout, and Arctic Grayling (E. Akerolik, Rankin Inlet resident and Agnico Eagle employee, personal comm.).

The area contains a widely dispersed shallow channel system through boulders. Selective removal of boulders to open passages and concentrate flows would better define channels and provide greater depth for fish passage. Manual labour or light machinery is likely all that is needed to complete fish passage improvement works.

The area of the proposed offsetting at Pistol Bay is approximately 1,880 ha. Lake 1 is the first lake upstream of the identified barrier to fish passage at Iquutuuq and is approximately 2,394.1 ha (25% larger than the area of the proposed offsetting at Pistol Bay, **Figure 8.3-1**). The fish community in Iquutuuq is known to contain Arctic Char and assumed to contain a similar fish community to Pistol Bay. Therefore restoration of fish passage to Lake 1 in the Iquutuuq system is an appropriate contingency option for the Pistol Bay offsetting (if needed).

The six primary lakes (i.e., Lake 1-Lake 6) immediately upstream of the identified barrier in the Iquutuuq watershed are approximately 4,375.5 ha in area (approximately 2.3 times larger than Pistol Bay). These six lakes are the largest in the watershed, are assumed to be suitable for Arctic Char, and based on aerial imagery passage between them is assumed feasible under current conditions. While this contingency currently only involves Lake 1 of the Iquutuuq system, existing natural access to Lake 2-Lake 6 would be an unexpected benefit.

8.3.2 Pit Lakes

Agnico Eagle is proposing to restore 132.2 Ha of habitat as a contingency offsetting measure. This would be accomplished through reclaiming mined out pits and converting them into pit lakes for fish habitat. The area and HU calculations are preliminary and do not account for additional gains through the flooding and reconnection of previously dewatered lakes and channels to pit lakes.

Habitat gains in pit lakes (that are potentially achievable via the restoration of up to nine pit lakes) was estimated from the Habitat Evaluation Procedure (HEP; ERM 2022). The HEP 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, Agnico Eagle 2016b).

The lakes would be created at one, some, or all of the following pits: FZO01, FZO02, FZO04, PUM02, PUM04, TIR02, TIR04, WES03, and WES04 (**Table 8.3-1, Figure 8.3-2**). The same HEP, 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 only be backfilled with coarse material, making the occurrence of habitat types 1, 2, 4, 5, 7, and 8 unlikely. 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, it was assumed that Arctic Char, Lake Trout, Slimy Sculpin, Ninespine Stickleback, and Arctic Grayling would inhabit all of the above-mentioned pit lakes. And lastly, no habitat co-factor has been incorporated in the HEP.

Figure 8.3-2: Conceptual Pit Lake Enhancements

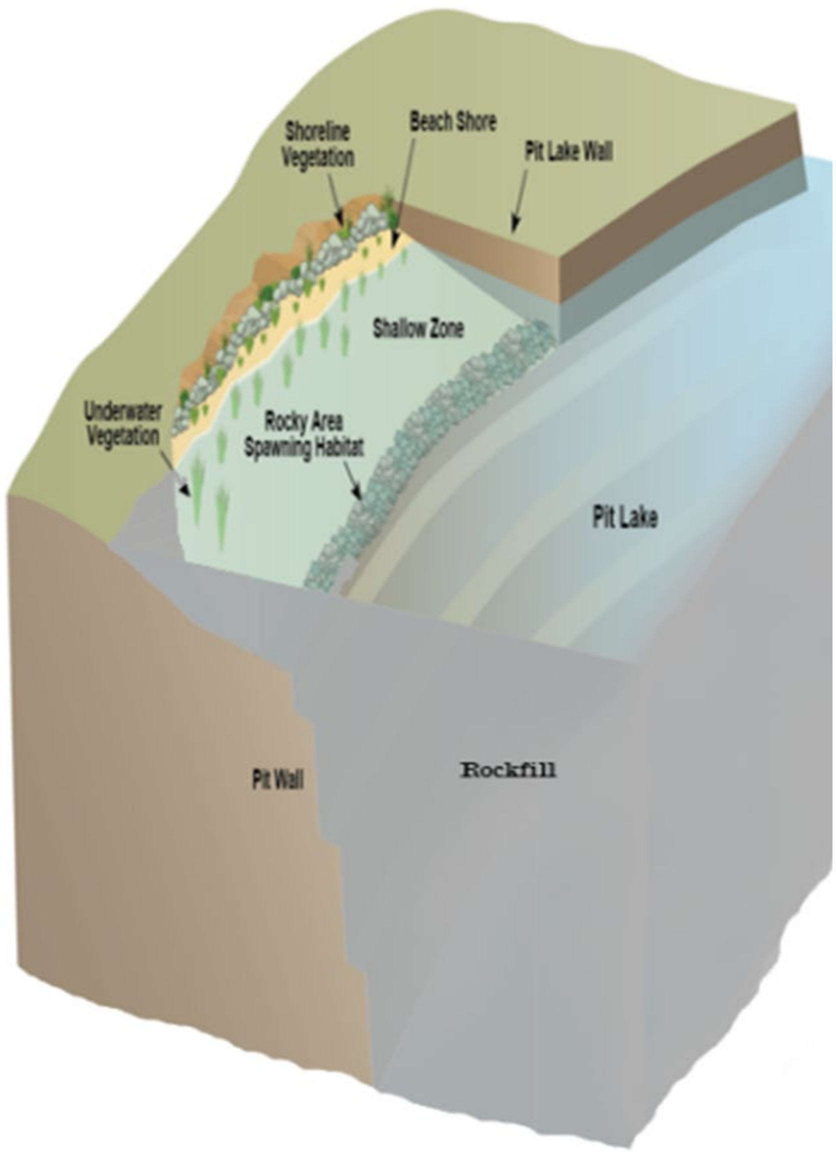


Table 8.3-1: Total Area of Each Proposed Pit Lake and Area of Each Habitat Type in Restored State

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)	-	-	-

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. For the purposes of this preliminary HU calculation, 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.

Pit lakes construction would not occur until after mine closure. Construction and design for the proposed contingency offsetting measures will be further refined if the primary offsetting measures are not meeting their success threshold criteria.

8.3.3 Other

Agnico Eagle has identified additional locations that may support Arctic Grayling spawning pads (i.e., CH5-CH6, Char River, Meliadine River) as fish habitat offsetting contingency measures. The spawning pads would be similar to those constructed at bridge R03 at the Meadowbank all weather access road in support of offsetting for the Meadowbank Complex. Additional field investigations will be required to confirm the suitability of these options.

Additionally, the construction of spawning shoals and scarification of roadways prior to reflooding of lakes are potential contingency measures. Similar measures have been approved for the Whale Tail Mine.

8.4 Complementary Measures

Barriers to fish passage at culvert crossings in the north is a common issue and a consistent solution has not been developed or identified. Agnico Eagle is proposing to undertake a study to evaluate a potential solution as a complementary measure.

The DFO *Policy for applying measures to offset adverse effects on fish and fish habitat under the Fisheries Act* (DFO 2019) provides the following with respect to complementary measures:

> *"Complementary measures are actions like data collection and scientific research related to maintaining or enhancing the conservation and protection of fish and fish habitat. Complementary measures may be considered in areas where there are limited opportunities for on-the-ground measures to offset fish and fish habitat residual effects and where there is limited understanding or data on fish populations. Complementary measures may comprise up to 10% of the required amount of the measures to offset (i.e., restore, enhance or create fish habitat); the remaining 90% of the amount of measures to offset should consist of habitat enhancement, restoration or creation. Calculation of the value of the proposed complementary measures is derived from the estimated cost of implementing measures to offset"*

A viable culvert solution that improves fish passage at road crossings in the north would allow reconnection of isolated features and fractured habitats, improving the overall health of affected fish communities. Agnico Eagle is undertaking a study into the viability of modular resin based open-bottom culverts under the extreme cold weather conditions found at the Meliadine Mine. Agnico Eagle will install culverts on an exiting road on-site to evaluate whether the resin-based open bottom culvert is a viable option. The structure being considered is similar to the Enviro-Span Modular Culvert System (http://www.envirospan.ca/technical).

8.5 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.

9 SUMMARY

There will be a HADD to fish habitat as a result of the Meliadine Mine Water Licence Amendment during the operations phase, resulting in a potential loss of up to approximately 454.321 ha and 1554.063 kg/yr of fish productivity which will be required to be offset through Section 35 and 36 of the *Fisheries Act*. Habitat Restoration and Enhancement will be utilized to offset the predicted losses to fish habitat by "improving local hydraulic conditions to favour certain functions of fish habitat" (DFO 2019).

Improving fish passage at Pistol Bay Falls is anticipated to increase productivity of Arctic Char in that system resulting in increases to biomass that far exceed the projected proposed 1.66:1 offset ratio. Additional habitat may also be realized through complementary offsetting measures currently under consideration. These offsetting measures will meet the community objectives of improving, preserving, and restoring fish habitat. The improved fish passage is 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.

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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 2, Tables 2.2-3 and 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	Tables 2.2-3 and 2.2-4
(b) a small-scale plan identifying the overall location and boundaries	Figures 1.1-1 and 1.1-2
(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	Figure 2.2-1 (a to e)
(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.	Tables 2.2-3 and 2.2-4
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.	Section 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.	Section 4 and 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 4.1-1

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	2014 FEIS (Section 7)
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 (a to e)
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 8.3 and 8.4
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 7
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 8
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
(b) a small-scale site plan identifying the general location and boundaries of the location where the measures will be implemented;	Appendix E
(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);	Appendix H - 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 8.3 and 8.4
(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 8.3

Schedule 1 Description	Section of Report
(i) an estimate of the cost of implementing each element of the plan; and	Section 8.5 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;	Sections 2.2 and 5.2, Tables 2.2-1, 2.2-2, 2.2-3, 2.2-4, 5.2-1
(b) a quantitative impact assessment of the deposit on fish habitat;	Section 5.2 and 7.2
(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. 4, Appendix D
(f) a description of the measures to be taken to verify the extent to which the plan's purpose has been achieved;	Section 8
(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
(h) an estimate of the cost of implementing each element of the plan.	Section 8.5
(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 8.5
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 • 2022 FIELD REPORT

Fish and Fish Habitat Field Reconnaissance Program 2022

MELIADINE EXTENSION

Submitted by:

Agnico Eagle Mines Limited – Meliadine Division

December 14, 2022

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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.

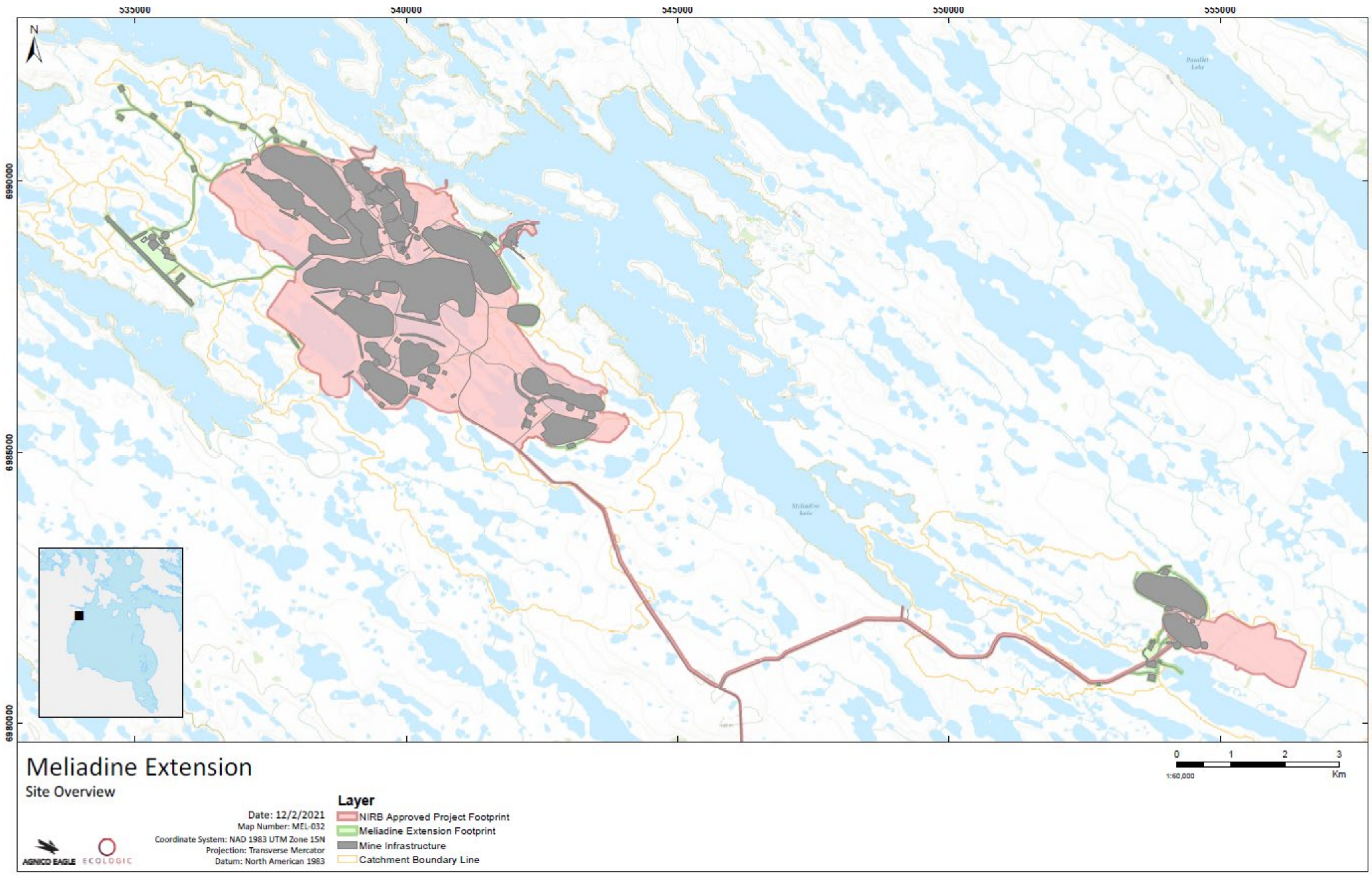
A conceptual offsetting plan for the Meliadine Mine was consulted on, and reviewed as part of the approved 2014 FEIS. The Meliadine Mine plan was reviewed by DFO and a Letter of Advice was issued for waterbodies and watercourses affected by the Tiriganiaq deposit only advising that no serious harm was 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.

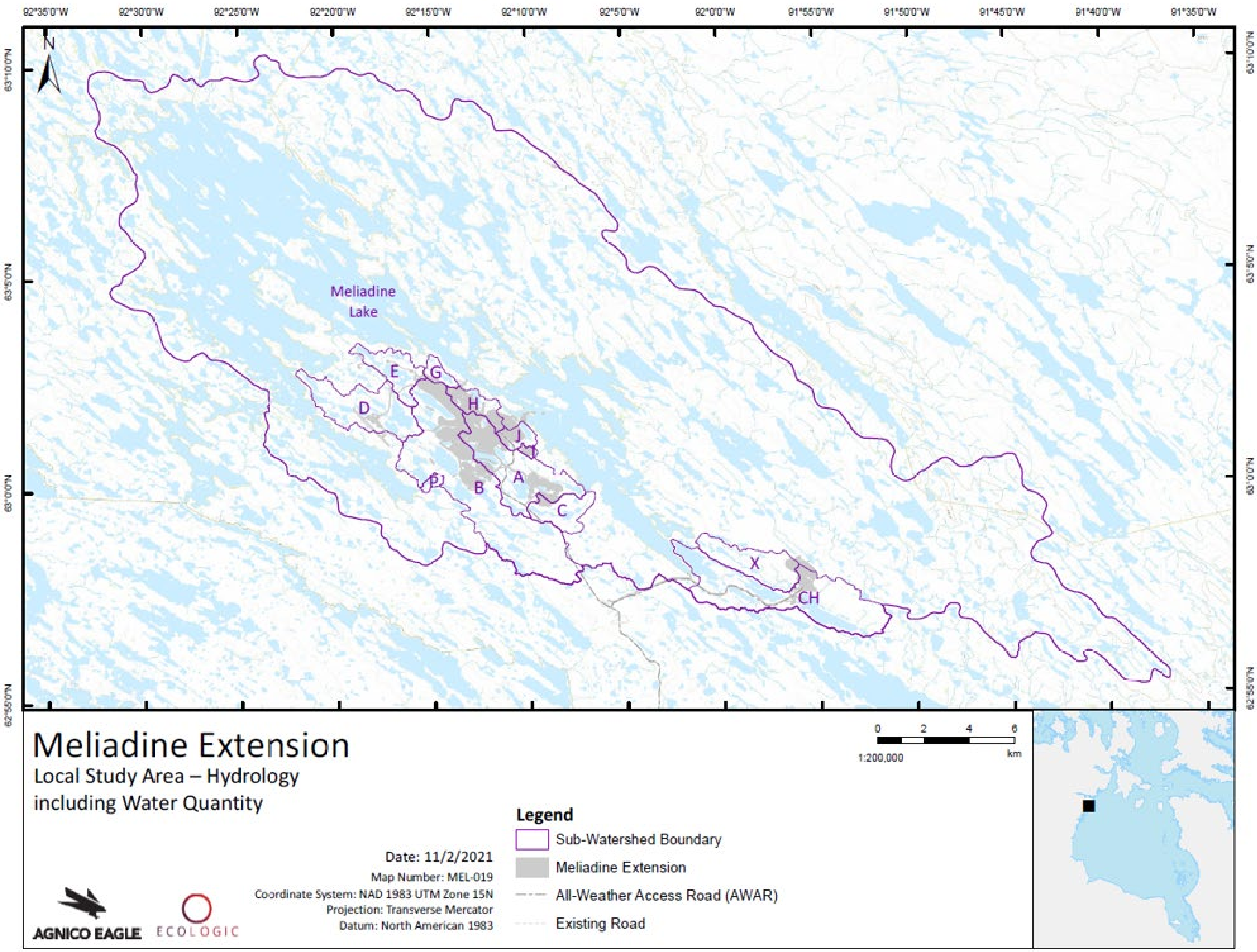
4 STUDY AREA

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

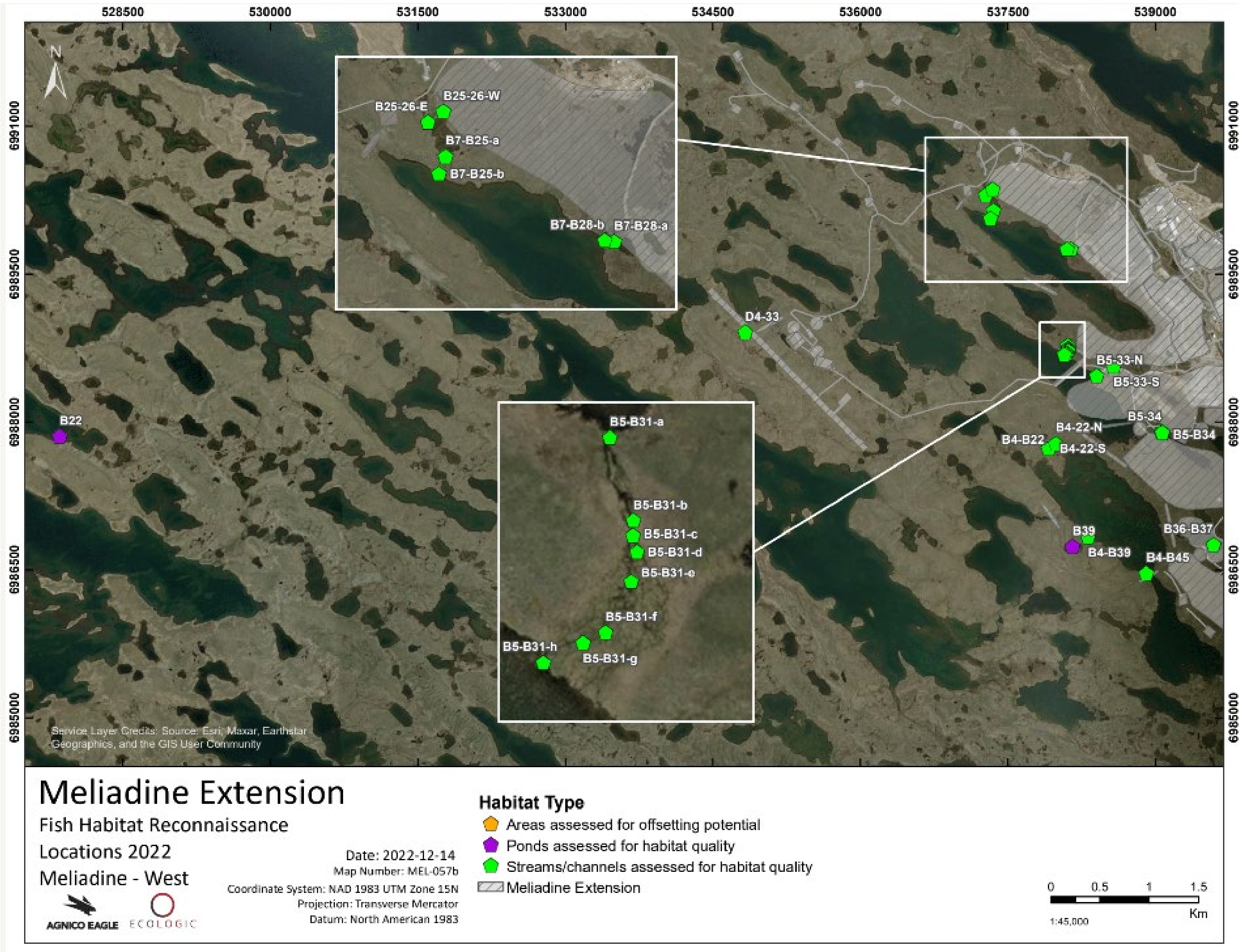


Figure 5-2: Fish Habitat Sampling Locations in 2022 – Meliadine East

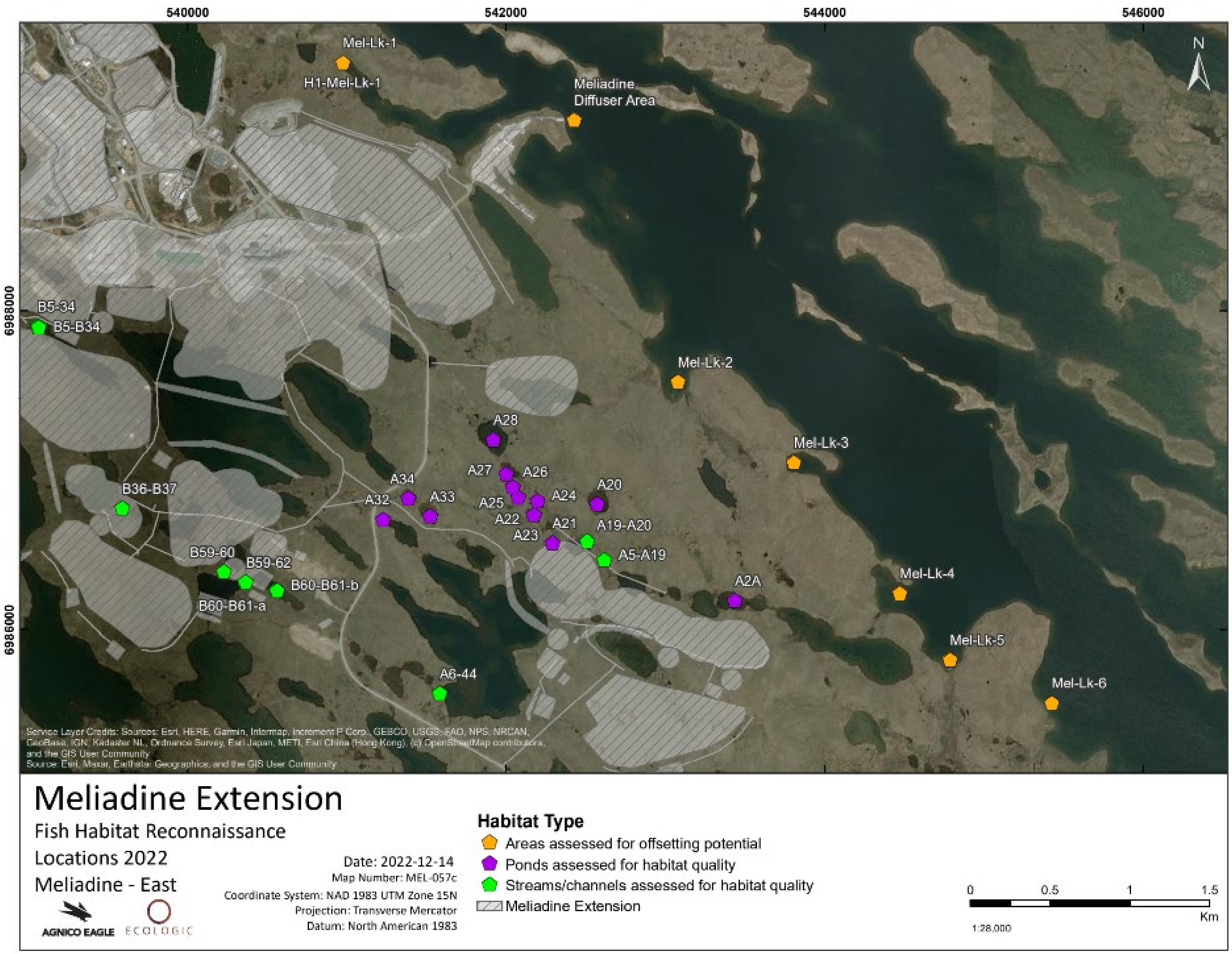


Figure 5-3: Fish Habitat Sampling Locations in 2022 – Road to Discovery

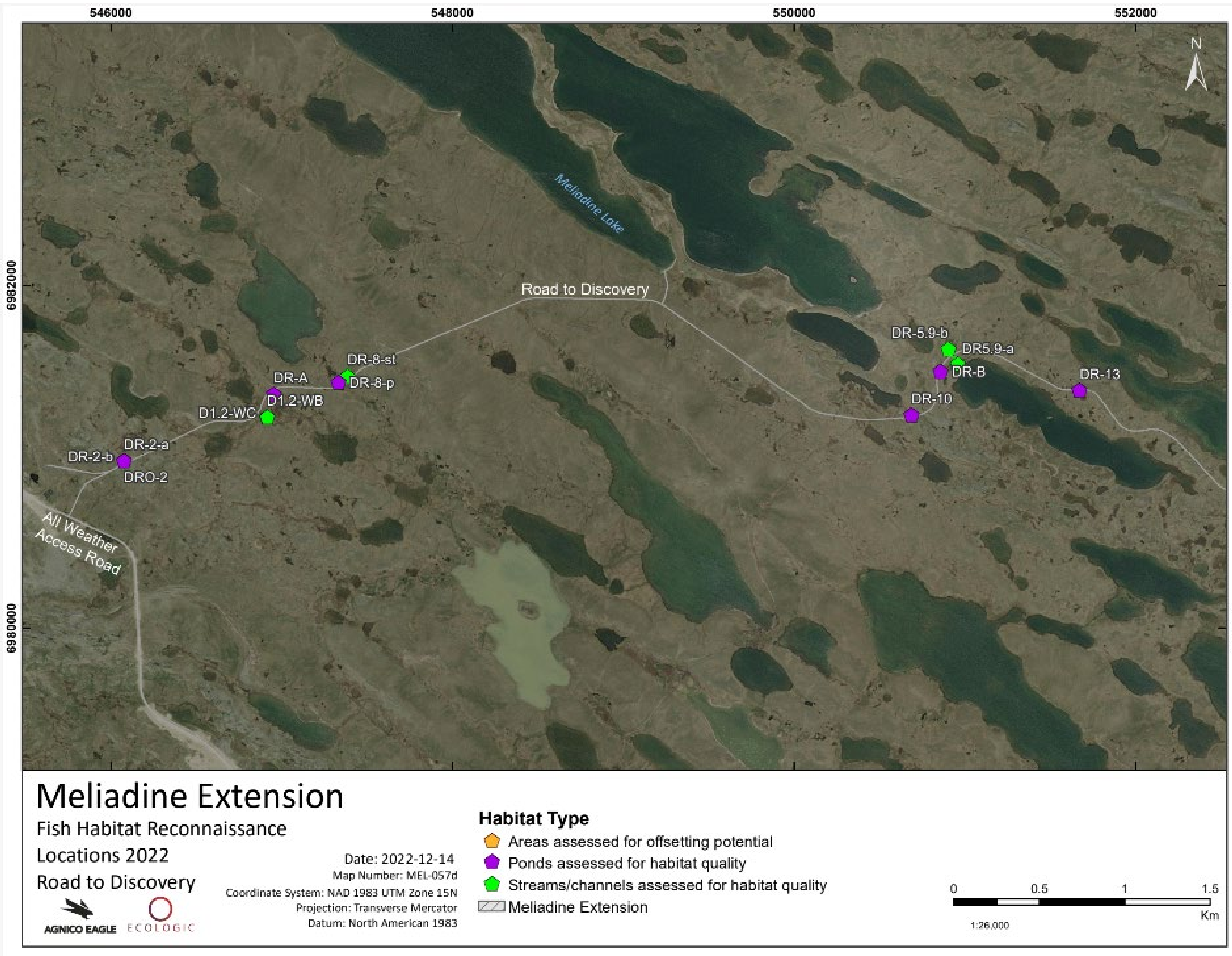


Figure 5-4: Fish Habitat Sampling Locations in 2022 - Discovery

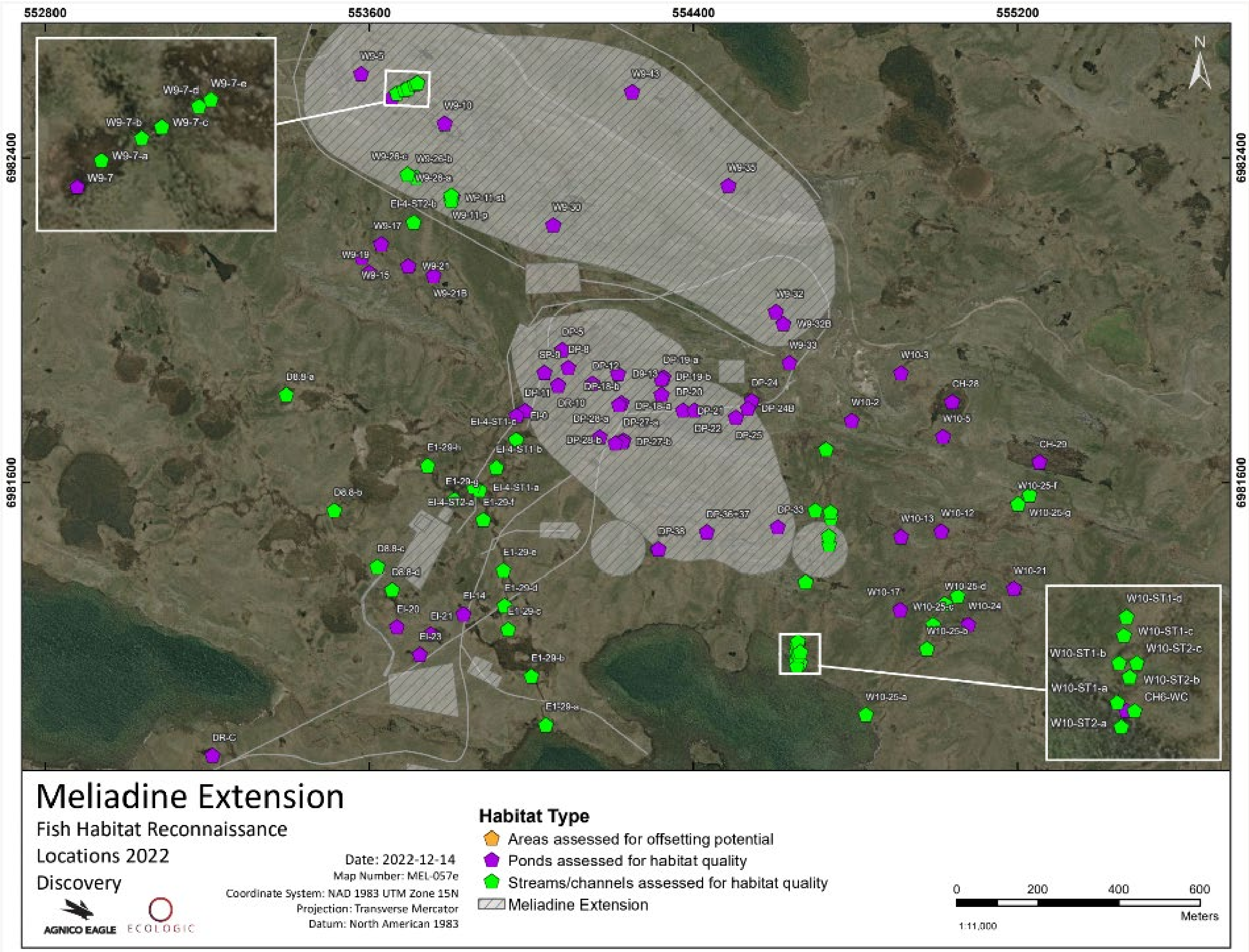


Figure 5-5: Fish Habitat Sampling Locations in 2022 – Rankin North

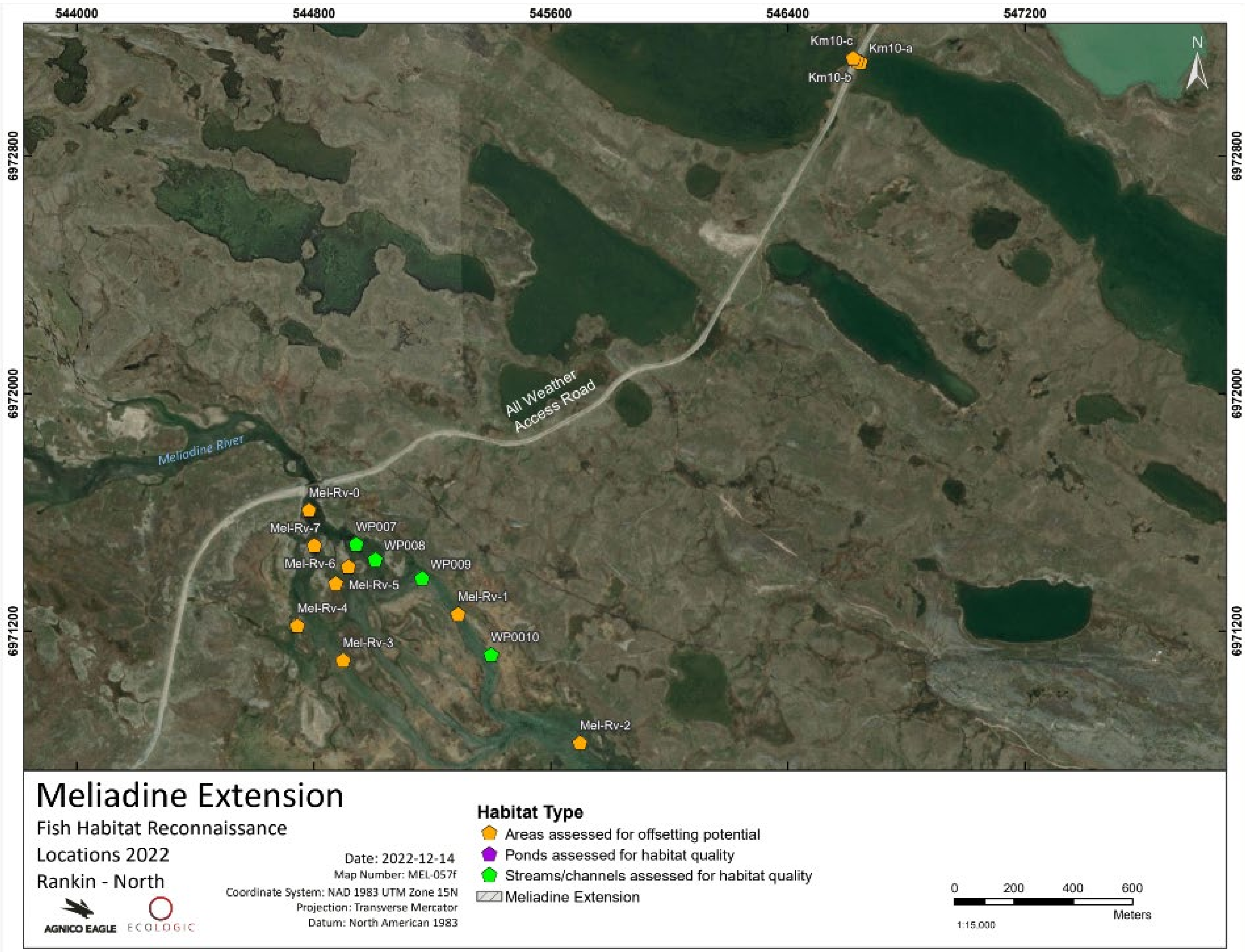
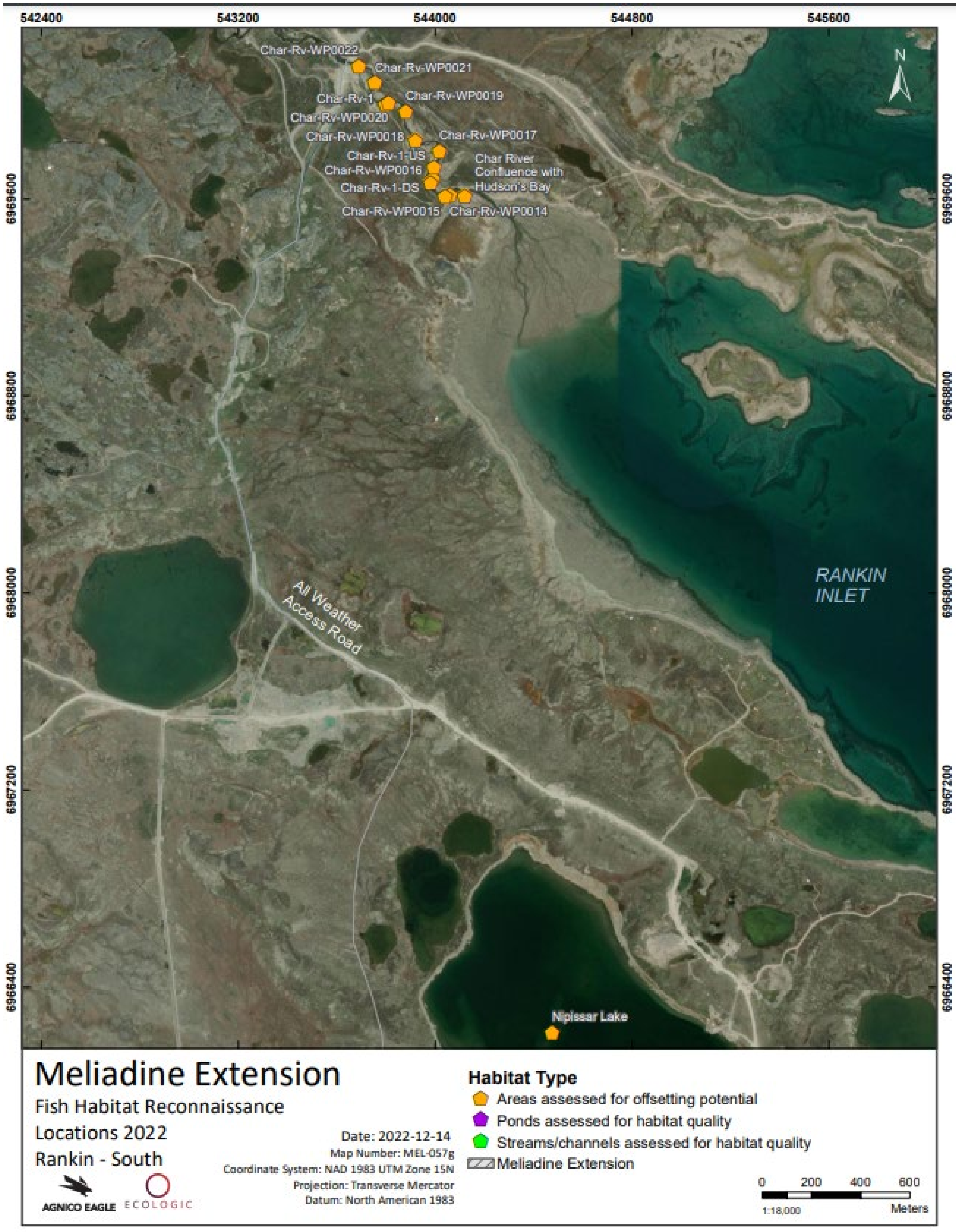


Figure 5-6: Fish Habitat Sampling Locations in 2022 – Rankin South



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

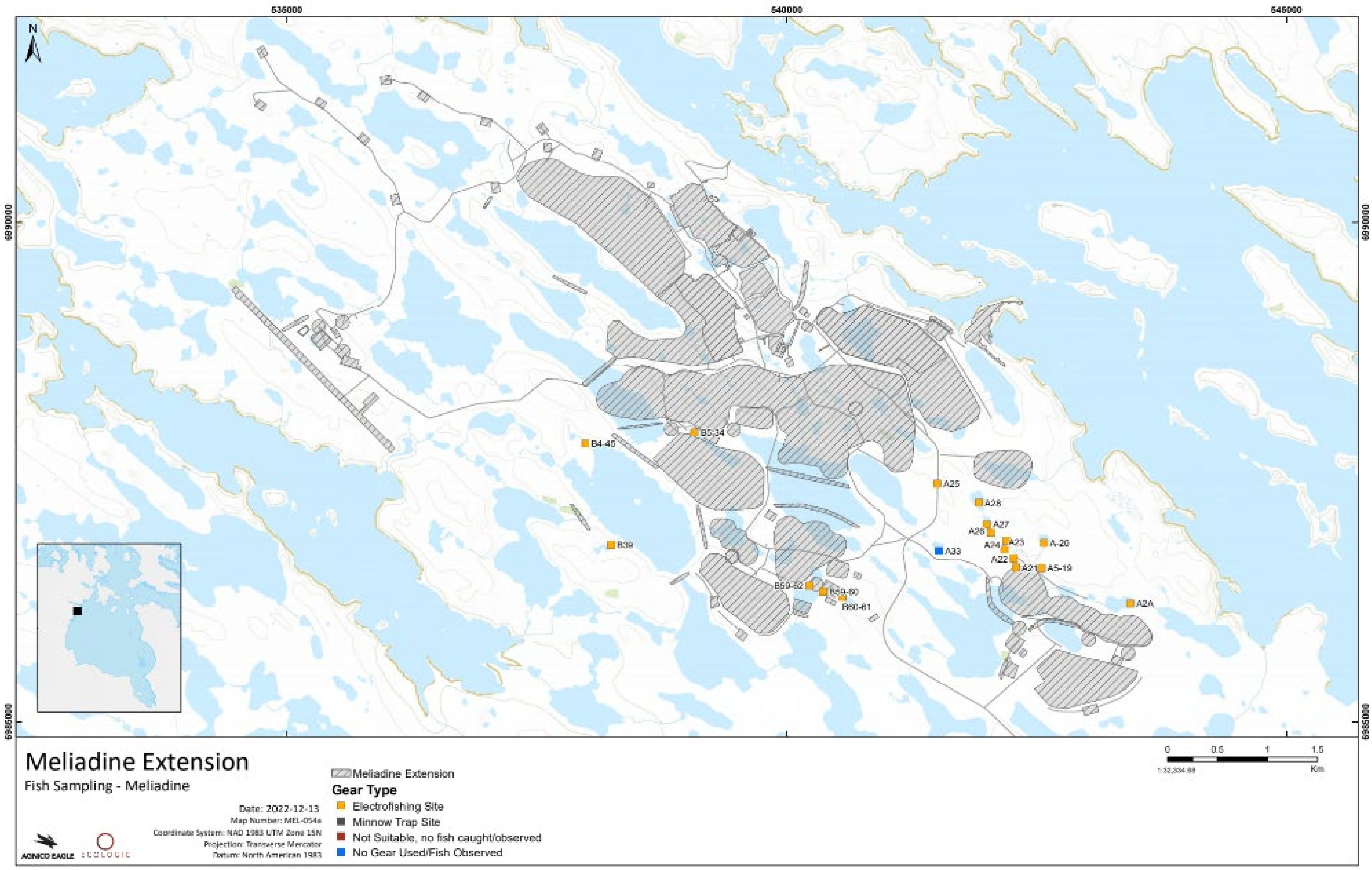


Figure 5-8: Fish Community Sampling Locations 2022 - Discovery Rd West

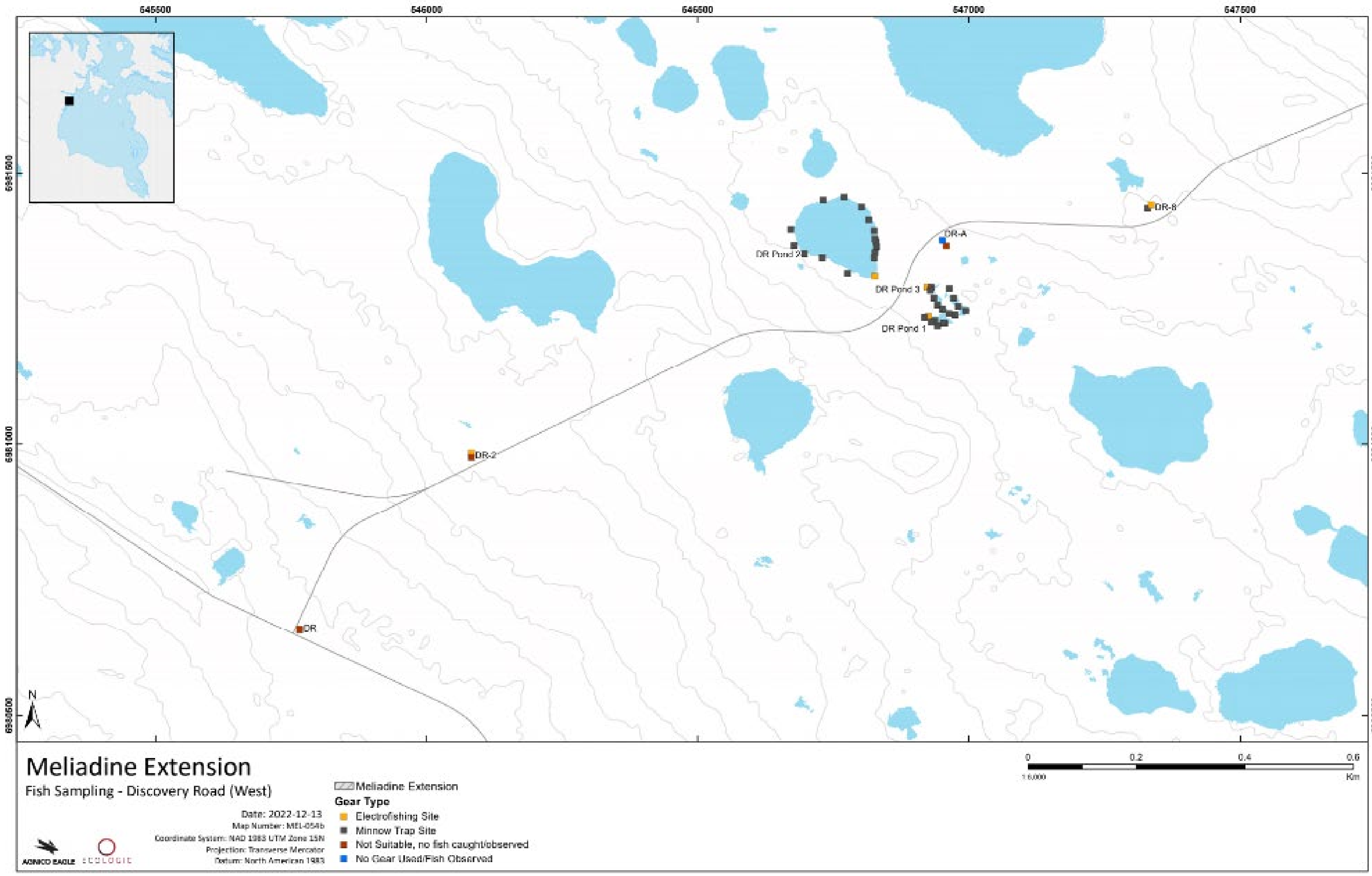


Figure 5-9 Fish Community Sampling Locations 2022- Discovery Rd Center

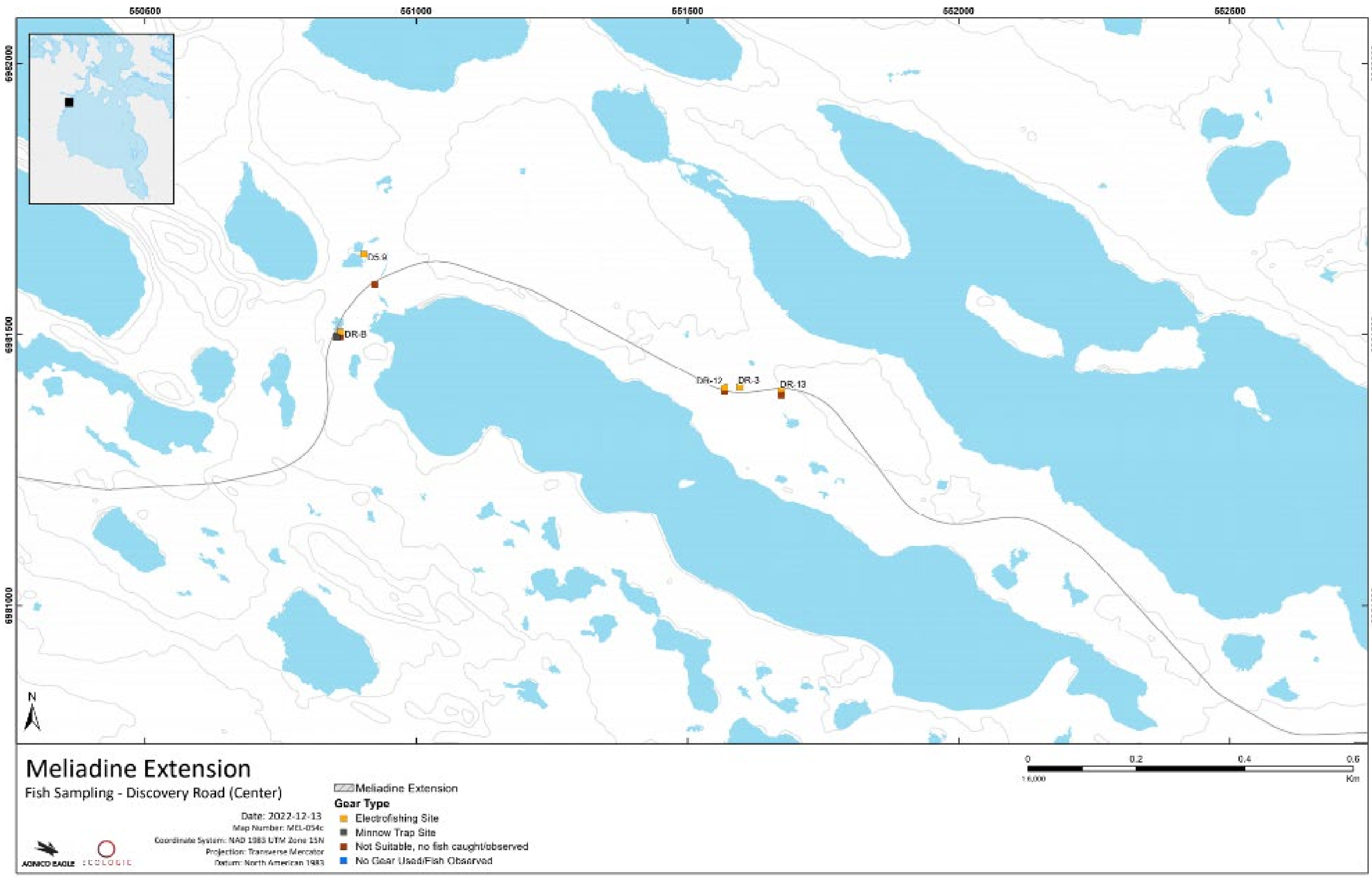
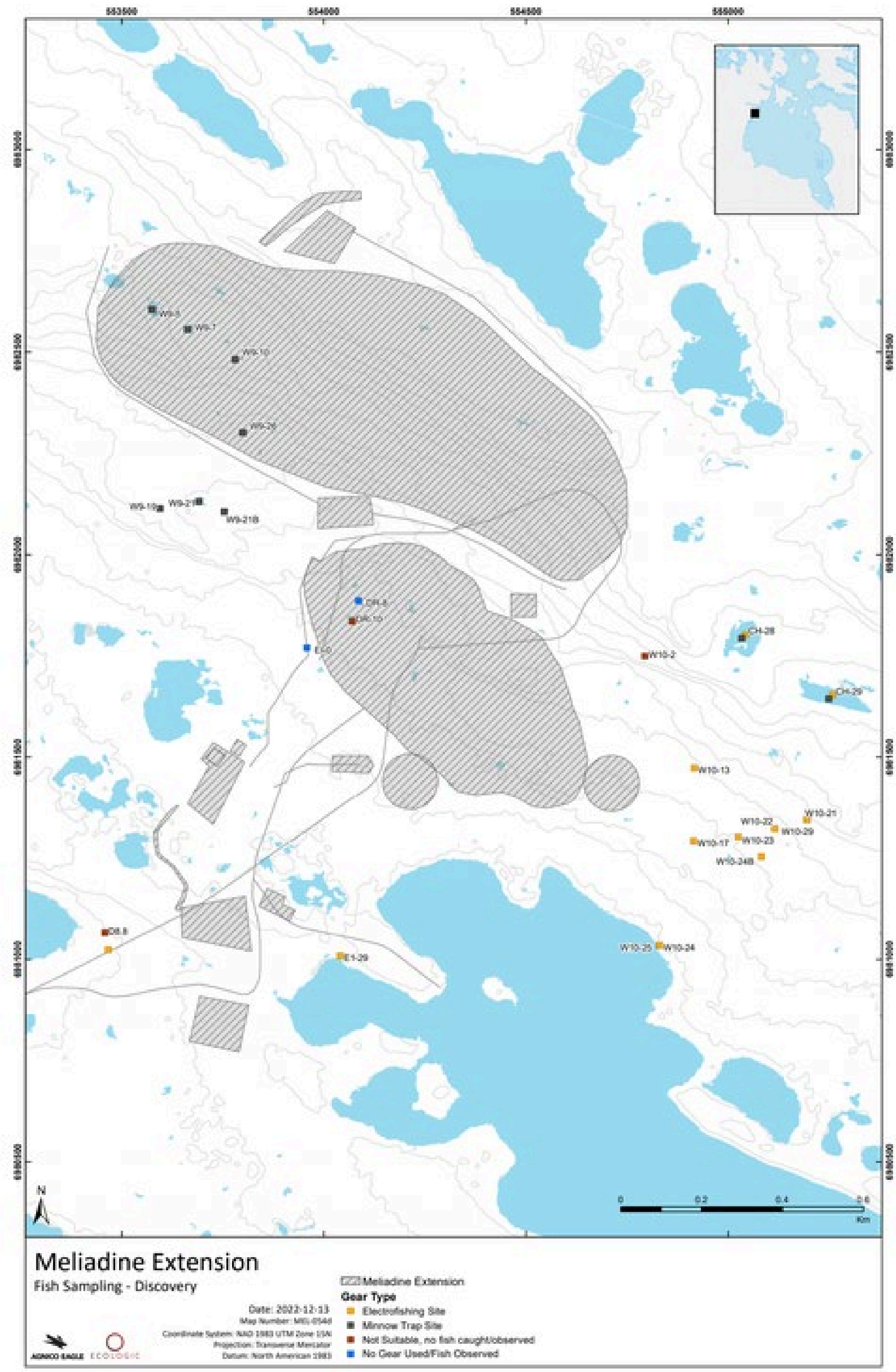


Figure 5-10: Fish Community Sampling Locations 2022- Discovery



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,

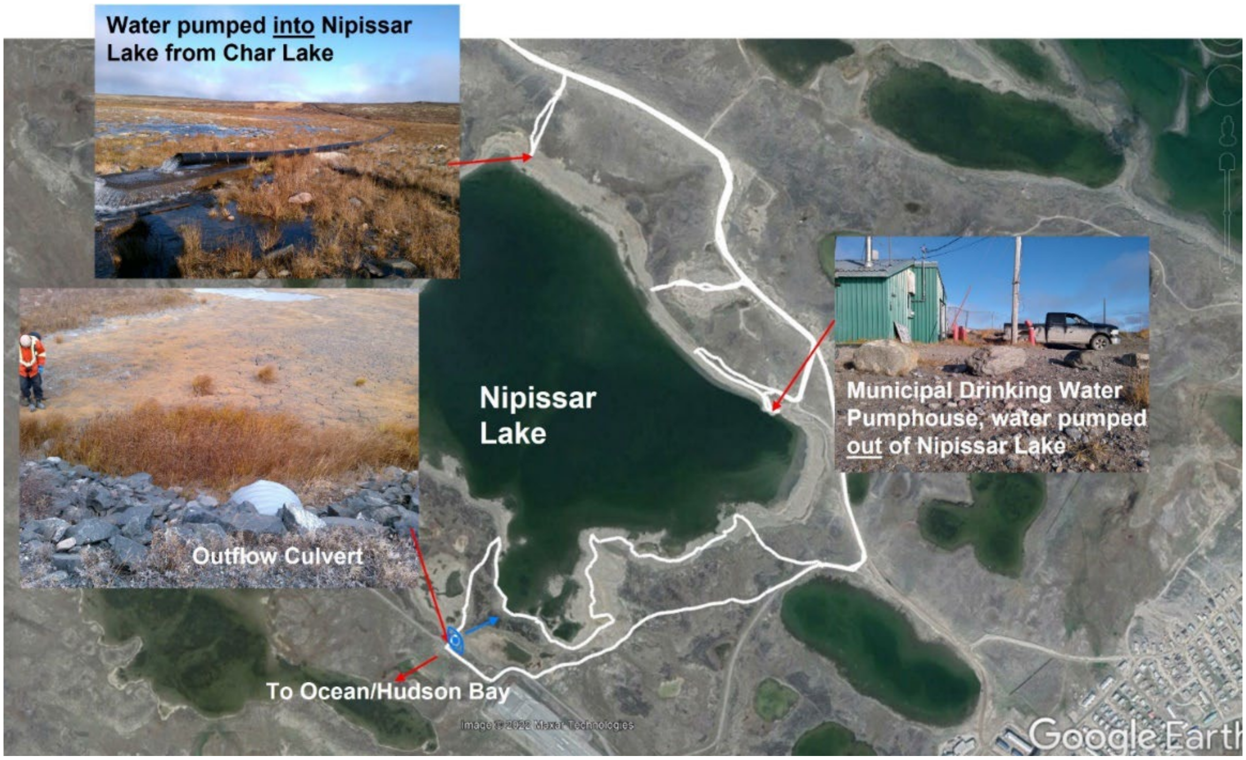
2022. A brief summary of the offsetting projects under consideration for inclusion in the offsetting plans are provided below.

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

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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 It 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	
El-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
El-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
El-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
El-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
El-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
El-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
El-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
El-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	
El-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
El-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/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*	

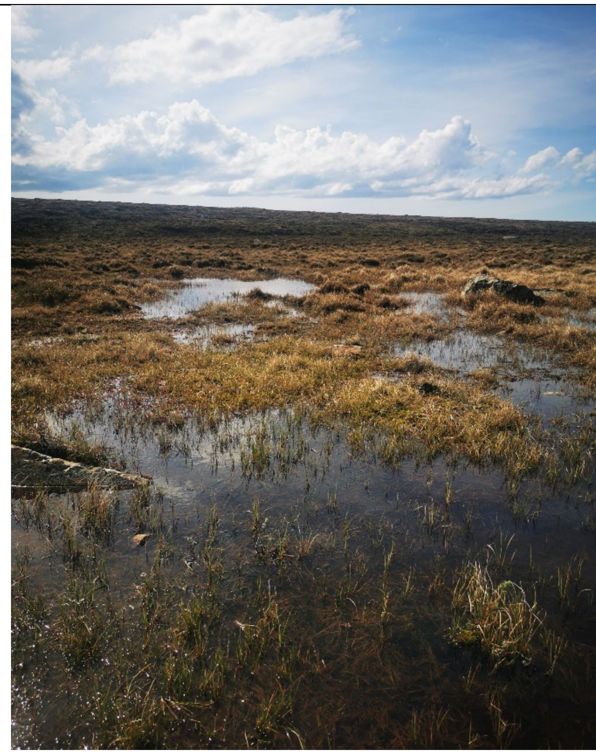
Table A-7: Fish Metrics for Reconnaissance Survey in 2022

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	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.

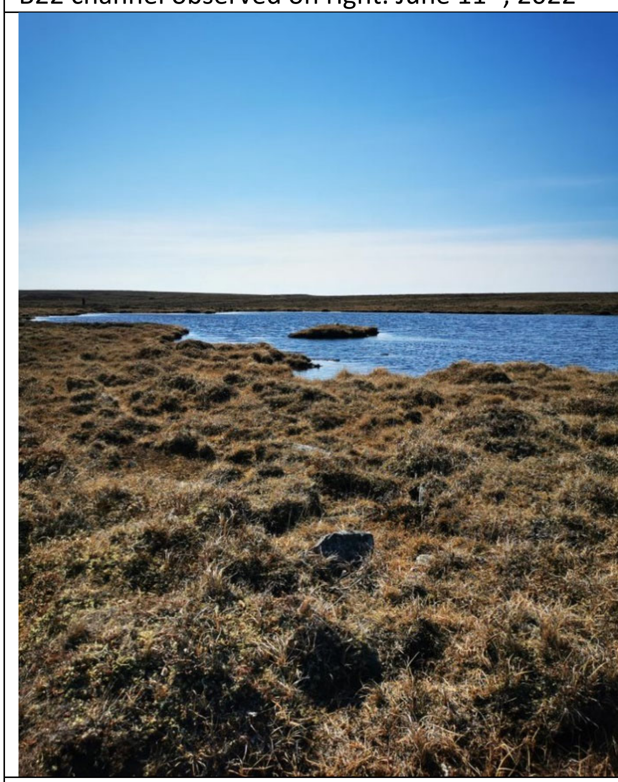
	
Facing North at dry B31-B32 channel. June 15th, 2022.	Facing East at dry B31-B32 channel. June 15th, 2022.

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

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

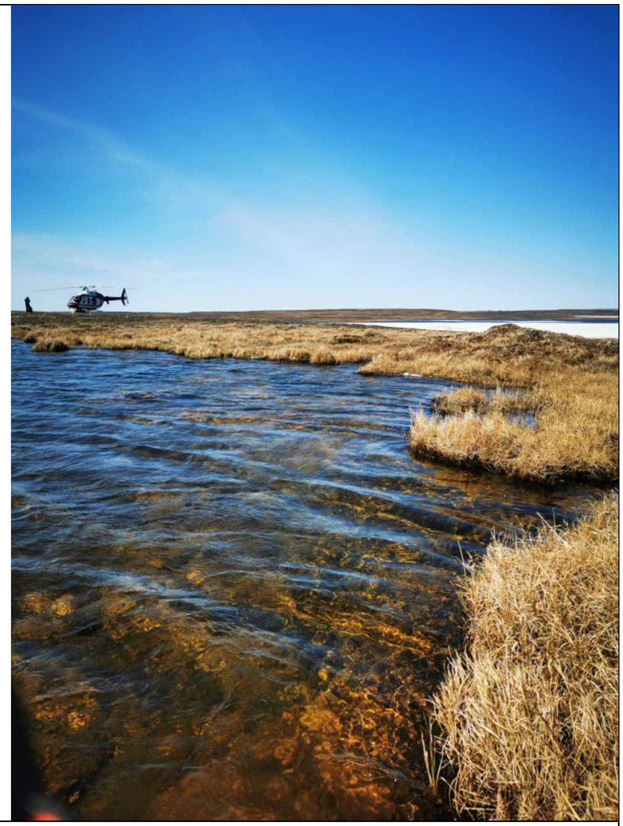
Facing West looking upstream at standing water in B4-B22 channel. June 11th, 2022.



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.

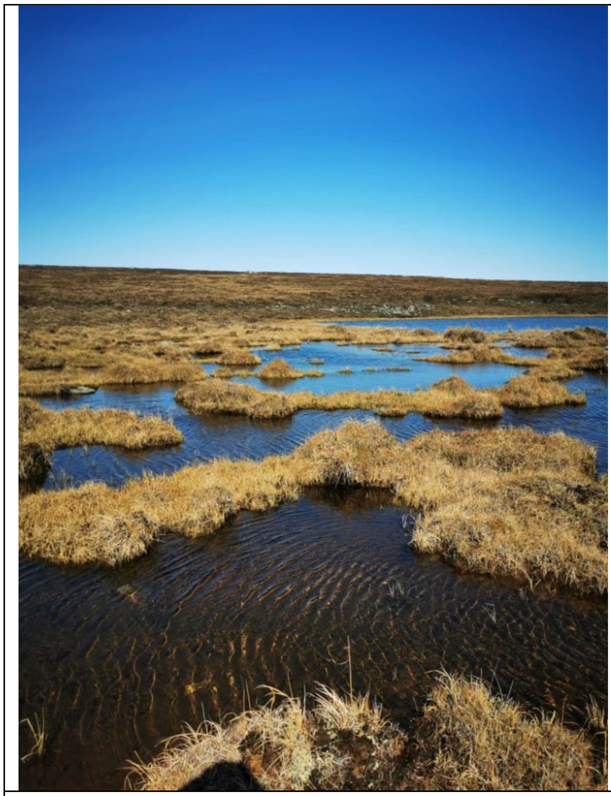
Facing East looking downstream towards B4 at dry B4-B39 channel. June 11th, 2022.

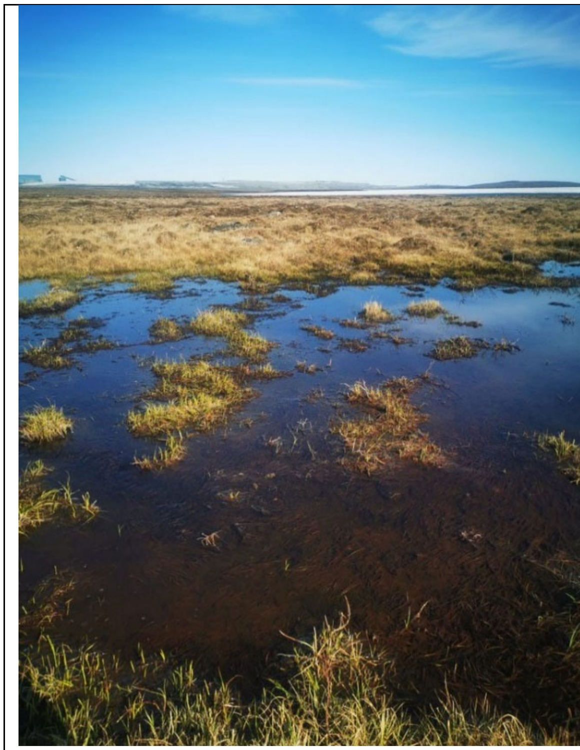


Facing North standing in B39 facing outlet towards B4. June 11th, 2022.

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

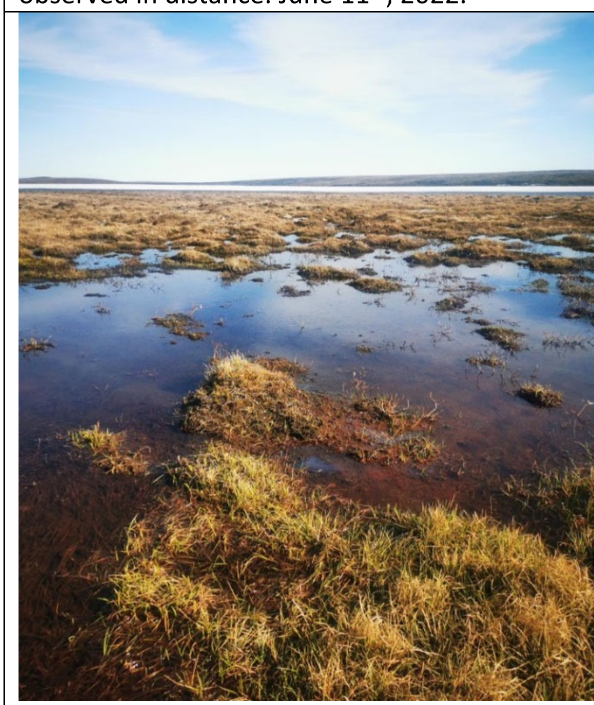
Facing Southwest at inlet of dry channel in B4. June 11th, 2022.

	
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.

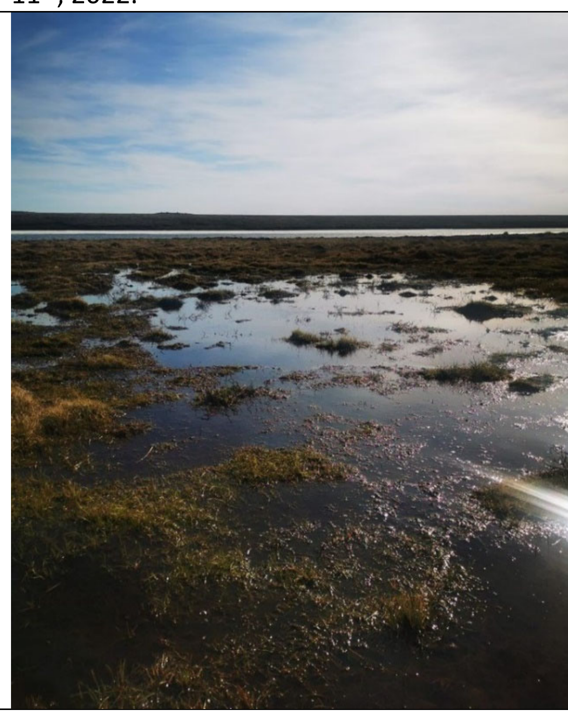


Facing East with standing water of undefined B7-B25 channel and B7 in background. Meliadine site observed in distance. June 11th, 2022.

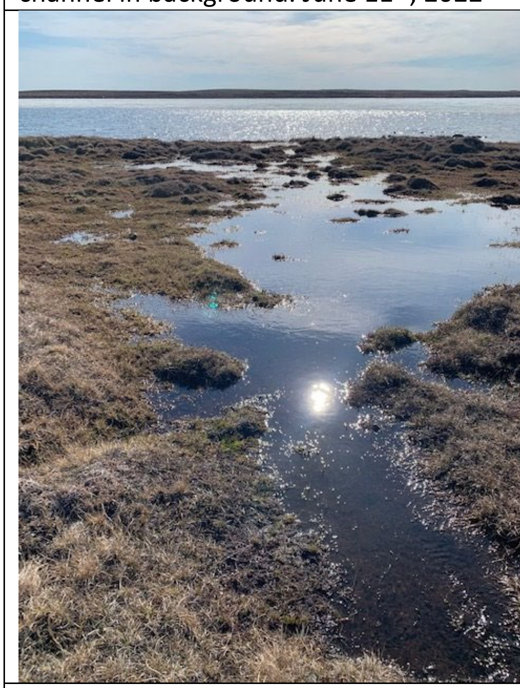
Facing North standing in inlet of B25 looking at B25. Meliadine site observed in distance. June 11th, 2022.



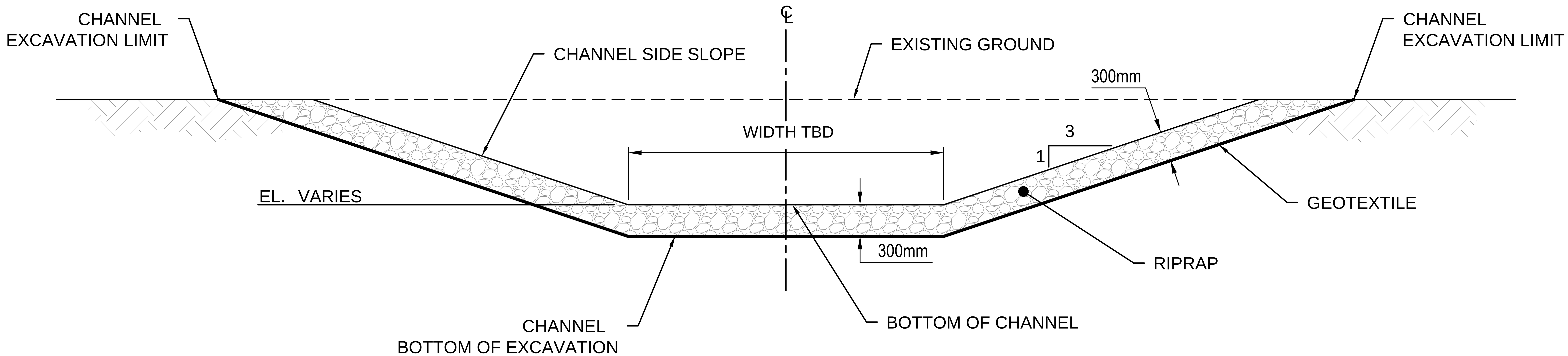
Facing South standing in inlet of B25 looking towards B7. June 11th, 2022.



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 • PISTOL BAY CONCEPTUAL DESIGN



PROPOSED CHANNEL DB4 TYPICAL DESIGN CROSS-SECTION


B2
B4
B41
B45
D2
Proposed Channel Location
N: 6986259.040
E: 537732.790
Z: 54.000
Lenght: ±50m
N: 6986111.300
E: 538152.660
Z: 55.000
Proposed Channel Location
Lenght: ±310m
N: 6986055.440
E: 538384.670
Z: 56.000
Proposed Channel Location
N: 6985875.410
E: 538930.120
Z: 56.000
Lenght: ±40m

APPENDIX E • WORKS, UNDERTAKINGS, AND ACTIVITIES TABLES

Table 1: WUA-WBWC Description and Activity

Mine Activity	Waterbodies and Watercourses	WUA	Potential Effects if Unmitigated (Unique effects)	Mitigation Strategies for Mine Activities
Blasting	A5, A6, A8, A19, A35, A37, A50, A51, A53, B5, B36, B37, B38, B62, J5, J6, J7, A50-A51, A5-A50, A6-A50, A8-A37, B36-B37, PBF	Industrial equipment Explosives	Change in sediment concentration Change in contaminant concentrations Potential mortality of Fish/Eggs/Ova from Equipment Change in nutrient concentrations Lethal or sublethal effects on fish	Dust Management Plan Spill Management Plan Blast Monitoring Program Sediment and Erosion Management Plan
Borrow and quarrying	A5, A6, A8, A19, A35, A37, A50, A51, A53, B5, B36, B37, B38, B62, J5, J6, J7, A50-A51, A5-A50, A6-A50, A8-A37, B36-B37	Excavation Industrial equipment Explosives	Change in water temperature Change in sediment concentration Change in base flow Change in contaminant concentrations Potential mortality of Fish/Eggs/Ova from Equipment Change in nutrient concentrations Lethal or sublethal effects on fish	Dust Management Plan Spill Management Plan Sediment and Erosion Management Plan Blast Monitoring Program
Dewatering	A5, A6, A7, A8, A19, A30, A31, A32, A33, A34, A35, A37, A44, A45, A49, A50, A51, A52, A53, B4, B5, B6, B7, B19, B22, B25, B28, B28a, B30, B31, B32, B34, B36, B37, B38, B39, B59, B60, B61, B62, B63, J2, J3, J4, J5, J6, J7, J8, A50-A51, A51-A52, A52 Tributaries, A5-A50, A6-A50, A8-A37, B6-B7, B7-B28a-B28, B36-B37, J8-J1, J3-J2-J8	Industrial equipment Placement of Material Flow management Fish passage	Change in sediment concentration Change in contaminant concentrations Potential mortality of Fish/Eggs/Ova from Equipment Change in habitat structure and cover Change in nutrient concentrations Change in food supply Change in water temperature Change in migration patterns Displacement or stranding of fish Change in total gas pressure Change in salinity Change in thermal cues or temperature barriers Interbasin transfer of species Incidental entrainment, impingement of mortality of resident species Change in access to habitat/migration	Site Specific Fish Out Plan (To be developed and submitted with FAA) Dust Management Plan Spill Management Plan Sediment and Erosion Management Plan Water Management Plan A-chain pipeline to supplement water levels B-watershed flow diversion to supplement water levels
Drainage and stormwater management	A1, A2, A2A, A3, A4, A7, A30, A31, A32, A33, A34, A44, A45, A49, B6, B19, B22, B30, B31, B32, B34, B39, B60, B61, B63, J4, A1-A2, A2-A3, A3-A4, A4-A5, A5-A19, A6-A7, A6-A31, A6-A44, A7-A8, A19-A20, A31-A32, A33-A34, A44-A45, A49-A45, A6-A30, B2-B4, B4-B5, B4-B22, B4-B36, B4-B39, B4-B45, B5-B31, B5-B33, B5-B34, B6-B30, B7-B25, B30-B31, B31-B32, B37-B38, B59-B60, B59-B62, B60-B61, CH5-CH6, CH100-CH101, CH101-CH102, CH6-CH102, J4-J3, J5-J4, J6-J4, J7-J6, Discovery Road 14, Discovery Road 15, Discovery Road 16, DSCR1-Pond 2, DSCR1-Pond 3 (CHP139-CHP140), CH27-DRC, CHP114, Discovery Road 12, DSCR5 (CHP120-CH6)	Flow management Fish passage	Change in water temperature Change in habitat structure and cover Change in sediment concentration Change in nutrient concentrations Change in food supply Change in contaminant concentrations Change in migration patterns Displacement or stranding of fish Change in total gas pressure Change in salinity Change in thermal cues or temperature barriers Interbasin transfer of species Incidental entrainment, impingement of mortality of resident species Change in access to habitat/migration	Water Management Plan Dust Management Plan Sediment and Erosion Management Plan Roads Management Plan Spill Management Plan A-chain pipeline to supplement water levels B-watershed flow diversion to supplement water levels

Channel design/construction (includes realignment and channelization)	PBF	Vegetation clearing Grading Excavation Riparian planting Industrial equipment Explosives Placement of Material Dredging Water extraction Debris management Aquatic vegetation management Wastewater Flow management Fish passage	Change in water temperature Change in habitat structure and cover Change in sediment concentration Change in nutrient concentrations Change in food supply Change in contaminant concentrations Change in base flow Potential mortality of Fish/Eggs/Ova from Equipment Lethal or sublethal effects on fish Direct or indirect mortality of fish Change in dissolved oxygen Pathogens, disease vectors, exotics Change in migration patterns Displacement or stranding of fish Change in total gas pressure Change in salinity Change in thermal cues or temperature barriers Interbasin transfer of species Incidental entrainment, impingement of mortality of resident species Change in access to habitat/migration	Dust Management Plan Sediment and Erosion Management Plan Blast Monitoring Program Spill Management Plan

Table 2: WUA-Species and Sensitivity

WB/WC Name	Type	Species	Species life processes supported by habitat	Sensitivity of Habitat Component (low, moderate, high)	Habitat Sensitivity Rationale
A1	Lake	ARCH, LKTR, RNWH, SLSC, NSSB, CISC, ARGR, TSSB	Arctic Char may use this as a migration area and for foraging, spawning, nursery and rearing; Lake Trout may use this as a migration area and for foraging, spawning, nursery and rearing; Round Whitefish may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Cisco may use this as a migration area and for foraging, spawning, nursery and rearing; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Threespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A2	Pond	ARCH, LKTR, SLSC, NSSB, TSSB	Arctic Char may use this as a migration area; Lake Trout may use this as a migration area; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area, or for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Threespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A2A	Pond	ARCH, LKTR, SLSC, NSSB, TSSB	Arctic Char may use this as a migration area; Lake Trout may use this as a migration area; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area, or for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Threespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A3	Pond	ARCH, LKTR, SLSC, NSSB	Arctic Char may use this as a migration area; Lake Trout may use this as a migration area; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area, or for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A4	Pond	ARCH, LKTR, SLSC, NSSB	Arctic Char may use this as a migration area; Lake Trout may use this as a migration area; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area, or for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A5	Pond	ARCH, LKTR, SLSC, NSSB	Arctic Char may use this as a migration area; Lake Trout may use this as a migration area; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area, or for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A6	Lake	ARCH, LKTR, SLSC, NSSB, CISC, ARGR, TSSB	Arctic Char may use this as a migration area and for foraging, spawning, nursery and rearing; Lake Trout may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Cisco may use this as a migration area and for foraging, spawning, nursery and rearing; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Threespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A7	Pond	SLSC, NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area, or for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A8	Lake	SLSC, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A19	Pond	SLSC, NSSB, TSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area, or for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Threespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A30	Pond	SLSC, NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area, or for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A31	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A32	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A33	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A34	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A35	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A37	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A44	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A45	Pond	NSSB, TSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Threespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A49	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species

WB/WC Name	Type	Species	Species life processes supported by habitat	Sensitivity of Habitat Component (low, moderate, high)	Habitat Sensitivity Rationale
A50	Pond	NSSB, TSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Threespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A51	Pond	NSSB, TSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Threespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A52	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A53	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B4	Lake	ARCH, LKTR, BURB, NSSB, ARGR	Arctic Char may use this as a migration area and for foraging, spawning, nursery and rearing; Lake Trout may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Round Whitefish; Burbot may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B5	Lake	BURB, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Burbot may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B6	Lake	BURB, SLSC, NSSB, CISC, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Burbot may use this as a migration area and for foraging, spawning, nursery and rearing; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Cisco may use this as a migration area and for foraging, spawning, nursery and rearing; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B7	Lake	BURB, NSSB, CISC, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Burbot may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Cisco may use this as a migration area and for foraging, spawning, nursery and rearing; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B19	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B22	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B25	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B28	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B28a	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B30	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B31	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B32	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B34	Lake	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B36	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B37	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B38	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B39	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B59	Lake	NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B60	Lake	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B61	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species

WB/WC Name	Type	Species	Species life processes supported by habitat	Sensitivity of Habitat Component (low, moderate, high)	Habitat Sensitivity Rationale
B62	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B63	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J2	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J3	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J4	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J5	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J6	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J7	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J8	Pond	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area, or for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A1-A2	Stream	ARCH, LKTR, NSSB, ARGR, TSSB	Arctic Char may use this as a migration area and for foraging, spawning, nursery and rearing; Lake Trout may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Threespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A2-A3	Stream	ARCH, LKTR, SLSC, NSSB, ARGR, TSSB	Arctic Char may use this as a migration area and for foraging, spawning, nursery and rearing; Lake Trout may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Threespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A3-A4	Stream	ARCH, LKTR, NSSB, ARGR	Arctic Char may use this as a migration area and for foraging, spawning, nursery and rearing; Lake Trout may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A4-A5	Stream	ARCH, LKTR, NSSB, ARGR	Arctic Char may use this as a migration area and for foraging, spawning, nursery and rearing; Lake Trout may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A5-A19	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A6-A7	Stream	ARCH, LKTR, SLSC, NSSB, CISC, ARGR, TSSB	Arctic Char may use this as a migration area and for foraging, spawning, nursery and rearing; Lake Trout may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Cisco may use this as a migration area and for foraging, spawning, nursery and rearing; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Threespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A6-A31	Stream	SLSC, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A6-A44	Stream	SLSC, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A7-A8	Stream	SLSC, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A19-A20	Stream	SLSC, NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A31-A32	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A33-A34	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species

WB/WC Name	Type	Species	Species life processes supported by habitat	Sensitivity of Habitat Component (low, moderate, high)	Habitat Sensitivity Rationale
A44-A45	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A49-A45	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A50-A51	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A51-A52	Stream	NSSB, TSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Threespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
A52 Tributaries	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
A5-A50	Stream	SLSC, NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A6-A30	Stream	SLSC, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A6-A50	Stream	SLSC, NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
A8-A37	Stream	SLSC, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B2-B4	Stream	ARCH, LKTR, BURB, SLSC, NSSB, ARGR	Arctic Char may use this as a migration area and for foraging, spawning, nursery and rearing; Lake Trout may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Round Whitefish; Burbot may use this as a migration area and for foraging, spawning, nursery and rearing; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B4-B5	Stream	BURB, SLSC, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Burbot may use this as a migration area and for foraging, spawning, nursery and rearing; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B4-B22	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B4-B36	Stream	SLSC, NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B4-B39	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B4-B45	Stream	NSSB, ARGR, TSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Threespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
B5-B31	Stream	SLSC, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B5-B33	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B5-B34	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B6-B7	Stream	BURB, SLSC, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Burbot may use this as a migration area and for foraging, spawning, nursery and rearing; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B6-B30	Stream	SLSC, NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B7-B25	Stream	SLSC, NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species

WB/WC Name	Type	Species	Species life processes supported by habitat	Sensitivity of Habitat Component (low, moderate, high)	Habitat Sensitivity Rationale
B7-B28a-B28	Stream	SLSC, NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B30-B31	Stream	NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B31-B32	Stream	NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B36-B37	Stream	SLSC, NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B37-B38	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
B59-B60	Stream	SLSC, NSSB, CISC	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Cisco may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B59-B62	Stream	NSSB, CISC	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Cisco may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
B60-B61	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
CH5-CH6	Stream	BURB, SLSC, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Burbot may use this as a migration area and for foraging, spawning, nursery and rearing; Slimy Sculpin may use this as a migration area and for foraging, spawning, nursery and rearing when rock/gravel is present; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
CH100-CH101	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
CH101-CH102	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
CH6-CH102	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J4-J3	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J5-J4	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J6-J4	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J7-J6	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J8-J1	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
J3-J2-J8	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
PBF	Stream	ARCH, NSSB, ARGR, TSSB	Arctic Char may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Threespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing	Moderate-High	Habitat supports multiple life processes across multiple species
Discovery Road 14	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
Discovery Road 15	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
Discovery Road 16	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
DSCR1-Pond 2	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species

WB/WC Name	Type	Species	Species life processes supported by habitat	Sensitivity of Habitat Component (low, moderate, high)	Habitat Sensitivity Rationale
DSCR1-Pond 3 (CHP139-CHP140)	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
CH27-DRC	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
CHP114	Stream	NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species
Discovery Road 12	Stream	NSSB	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Not used by Burbot; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Not used by Arctic Grayling; Not used by Threespine Stickleback	Moderate	Habitat supports multiple life processes across one species
DSCR5 (CHP120-CH6)	Stream	BURB, NSSB, ARGR	Not used by Arctic Char; Not used by Lake Trout; Not used by Round Whitefish; Burbot may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Slimy Sculpin; Ninespine Stickleback may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Cisco; Arctic Grayling may use this as a migration area and for foraging, spawning, nursery and rearing; Not used by Threespine Stickleback	Moderate-High	Habitat supports multiple life processes across multiple species

Table 3: WUA-WBWC Activity Categorization

Mine Activity	Waterbodies and Watercourses	WUA	Potential Effects if Unmitigated (Unique effects)	Mitigation Strategies for Mine Activities
Blasting	A5, A6, A8, A19, A35, A37, A50, A51, A53, B5, B36, B37, B38, B62, J5, J6, J7, A50-A51, A5-A50, A6-A50, A8-A37, B36-B37, PBF	Industrial equipment Explosives	Change in sediment concentration Change in contaminant concentrations Potential mortality of Fish/Eggs/Ova from Equipment Change in nutrient concentrations Lethal or sublethal effects on fish	Dust Management Plan Spill Management Plan Blast Monitoring Program Sediment and Erosion Management Plan
Borrow and quarrying	A5, A6, A8, A19, A35, A37, A50, A51, A53, B5, B36, B37, B38, B62, J5, J6, J7, A50-A51, A5-A50, A6-A50, A8-A37, B36-B37	Excavation Industrial equipment Explosives	Change in water temperature Change in sediment concentration Change in base flow Change in contaminant concentrations Potential mortality of Fish/Eggs/Ova from Equipment Change in nutrient concentrations Lethal or sublethal effects on fish	Dust Management Plan Spill Management Plan Sediment and Erosion Management Plan Blast Monitoring Program
Dewatering	A5, A6, A7, A8, A19, A30, A31, A32, A33, A34, A35, A37, A44, A45, A49, A50, A51, A52, A53, B4, B5, B6, B7, B19, B22, B25, B28, B28a, B30, B31, B32, B34, B36, B37, B38, B39, B59, B60, B61, B62, B63, J2, J3, J4, J5, J6, J7, J8, A50-A51, A51-A52, A52 Tributaries, A5-A50, A6-A50, A8-A37, B6-B7, B7-B28a-B28, B36-B37, J8-J1, J3-J2-J8	Industrial equipment Placement of Material Flow management Fish passage	Change in sediment concentration Change in contaminant concentrations Potential mortality of Fish/Eggs/Ova from Equipment Change in habitat structure and cover Change in nutrient concentrations Change in food supply Change in water temperature Change in migration patterns Displacement or stranding of fish Change in total gas pressure Change in salinity Change in thermal cues or temperature barriers Interbasin transfer of species Incidental entrainment, impingement of mortality of resident species Change in access to habitat/migration	Site Specific Fish Out Plan (To be developed and submitted with FAA) Dust Management Plan Spill Management Plan Sediment and Erosion Management Plan Water Management Plan A-chain pipeline to supplement water levels B-watershed flow diversion to supplement water levels
Drainage and stormwater management	A1, A2, A2A, A3, A4, A7, A30, A31, A32, A33, A34, A44, A45, A49, B6, B19, B22, B30, B31, B32, B34, B39, B60, B61, B63, J4, A1-A2, A2-A3, A3-A4, A4-A5, A5-A19, A6-A7, A6-A31, A6-A44, A7-A8, A19-A20, A31-A32, A33-A34, A44-A45, A49-A45, A6-A30, B2-B4, B4-B5, B4-B22, B4-B36, B4-B39, B4-B45, B5-B31, B5-B33, B5-B34, B6-B30, B7-B25, B30-B31, B31-B32, B37-B38, B59-B60, B59-B62, B60-B61, CH5-CH6, CH100-CH101, CH101-CH102, CH6-CH102, J4-J3, J5-J4, J6-J4, J7-J6, Discovery Road 14, Discovery Road 15, Discovery Road 16, DSCR1-Pond 2, DSCR1-Pond 3 (CHP139-CHP140), CH27-DRC, CHP114, Discovery Road 12, DSCR5 (CHP120-CH6)	Flow management Fish passage	Change in water temperature Change in habitat structure and cover Change in sediment concentration Change in nutrient concentrations Change in food supply Change in contaminant concentrations Change in migration patterns Displacement or stranding of fish Change in total gas pressure Change in salinity Change in thermal cues or temperature barriers Interbasin transfer of species Incidental entrainment, impingement of mortality of resident species Change in access to habitat/migration	Water Management Plan Dust Management Plan Sediment and Erosion Management Plan Roads Management Plan Spill Management Plan A-chain pipeline to supplement water levels B-watershed flow diversion to supplement water levels

Channel design/construction (includes realignment and channelization)	PBF	Vegetation clearing Grading Excavation Riparian planting Industrial equipment Explosives Placement of Material Dredging Water extraction Debris management Aquatic vegetation management Wastewater Flow management Fish passage	Change in water temperature Change in habitat structure and cover Change in sediment concentration Change in nutrient concentrations Change in food supply Change in contaminant concentrations Change in base flow Potential mortality of Fish/Eggs/Ova from Equipment Lethal or sublethal effects on fish Direct or indirect mortality of fish Change in dissolved oxygen Pathogens, disease vectors, exotics Change in migration patterns Displacement or stranding of fish Change in total gas pressure Change in salinity Change in thermal cues or temperature barriers Interbasin transfer of species Incidental entrainment, impingement of mortality of resident species Change in access to habitat/migration	Dust Management Plan Sediment and Erosion Management Plan Blast Monitoring Program Spill Management Plan

APPENDIX F • ARCTIC CHAR PRODUCTIVITY MODEL FOR PISTOL BAY

TECHNICAL MEMORANDUM v1.0

DATE June 13, 2023 **Project No.** 22565973-Rev1

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 technical 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. Existing hydrological conditions of Pistol Bay Falls are described in Section 1.0. The potential increase in fish production from improved access to spawning habitat above Pistol Bay Falls was modelled and described in Section 2.0. Models applied 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 of which were used to determine whether offsetting objectives can be achieved for the Meliadine Extension Project. A preliminary equivalency analysis is provided in Section 3.0, which includes a comparison of gains to losses.

Note that this version (v1.0) is an update to the previously prepared draft memorandum that was submitted to Agnico Eagle in January 2023 (dated January 13, 2023), and incorporates changes based on questions and comments on the Arctic Char productivity model that was submitted by Fisheries and Oceans Canada to Agnico Eagle Mines.

1.0 EXISTING CONDITIONS

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)

2.0 PISTOL BAY 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 run population sizes were used to calculate age-structure and annual production using the Leslie Matrix model.

To understand the response of the spawning run sizes over time (following the installation of an offset at the falls to improve passability), the inputs used in the Leslie Matrix model were applied to a Population Viability Analysis (PVA) model (Akçakaya 2000, 2001, 2008; Larson et al. 2004). Projections of modelled abundance were provided for both the current baseline case and the post-installation case, and then outputs for each year of the simulations were compared to understand the population response over time. All temporal simulations of age-based Leslie matrices (Leslie 1945) of species vital rates were executed within a commonly used software package that provides transparency and repeatability of methods (i.e., RAMAS®; Akçakaya 2000, 2001, 2008; Larson et al. 2004).

2.1 Methods

2.1.1 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 to 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.

2.1.2 PVA Model

Each PVA model was repeated 1,000 times for an 80-year period to simulate 20-years of the current estimated baseline population followed by 60-years of predicted gains in the population should modification to the passability of Pistol Bay Falls increase access to upstream habitats by 70 or 90%. This timeline was selected to not only examine the long-term trajectory of the population, but also to confirm the stability of population sizes over a sufficient period following manipulation of the barrier. Only survival rates for juvenile fish were considered to be density dependent following the Beverton-Holt (contest-competition) model (Rose et al. 2001; Wood 2004). The Beverton-Holt model was selected as a traditional representation of density dependence in fisheries stock assessment models (Beverton and Holt 1993).

2.2 Results

2.2.1 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**

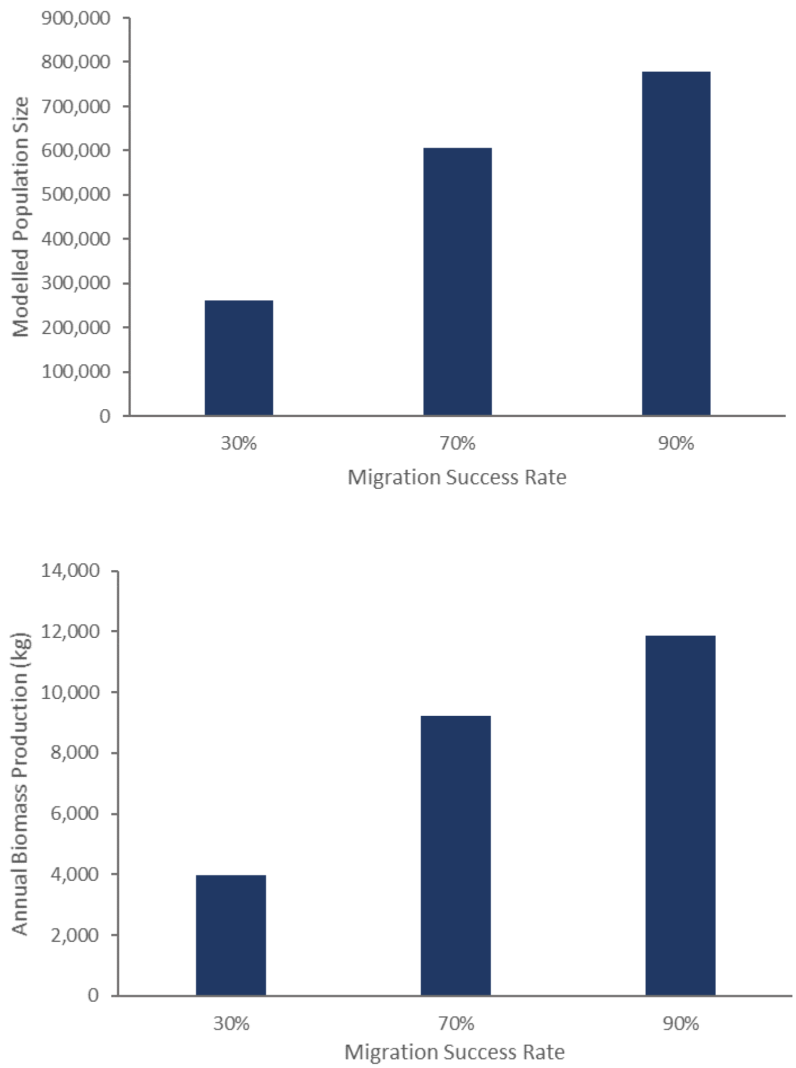


Figure 1: Predicted Total Population Size (Top Panel) and Annual Biomass Production (Lower Panel) for Arctic Char Under Assumed Baseline Conditions of 30% Migration Success and Scenarios of 70% and 90% Migration Success Following Improvements to Upstream Access at Pistol Bay Falls

2.2.2 Population Trajectories

The maximum run size of the Pistol Bay Arctic Char population was estimated to be 215 individuals at carrying capacity. For both post-construction scenarios, a constraint was applied to the first 20 years of the PVA that allowed only 30% of adults (i.e., 65 fish) to contribute to the population (Figure 2). During this period, the population is relatively stable with an average of 236,875 individuals. In the year 2025, when the proposed modification to the barrier at Pistol Bay Falls could be theoretically complete, the constraint was reduced to project Arctic Char total abundances once upstream access is improved. The post-construction projections allowed 70% (i.e., 151 fish; Scenario 1) and 90% (i.e., 194 fish, Scenario 2) of adult migrating individuals to spawn and contribute to the population.

Both scenarios predict a steep increase in total abundance immediately following the modification to the barrier with a peak population size of approximately 843,000 and 1,177,000 individuals in Scenario 1 and 2, respectively after just five years. A delay in maturation of the population is not observed given these mature fish would already exist in the marine environment and would immediately be able to spawn once access to upstream habitats is improved. The rapid gains are then followed by a cyclical trend as the population reaches, and surpasses in the case of Scenario 2, maximum adult run size and, thus, the carrying capacity of the system (Figure 3). These cyclical increases in total abundance occur every eight-years of the simulation followed by a minor decline in abundance over several years. The magnitude of the fluctuations in these cycles is reduced with each consecutive cycle, which is directly linked to fluctuations in the number of spawning fish until the population begins to stabilize approximately 40-years following modification.

For Scenario 2, maximum run size and total abundance exceed carrying capacity in the first years following modification to Pistol Bay Falls as an additional 129 adult fish enter the system compared to baseline. When the additional Arctic Char quickly begin to colonize the system and capitalize on the available habitat, a rapid increase in abundance is observed as recruitment is high. However, once the population exceeds carrying capacity, known as an overshoot, populations will begin to experience a die-off as the system cannot support the excess numbers due to limiting physical factors in the environment. As such, total abundance begins to cycle, which decreases in magnitude as the population stabilizes over time. In the case of Scenario 2, this stabilization is observed towards the end of the simulation and would continue longer should the model have been projected for a longer time period. Further, our models did not account for additional harvest by Inuit fishers as run sizes increase for the Pistol Bay system. The predicted increase in run size and abundance will provide more opportunity for harvest by local communities, likely reducing the overshoot of carrying capacity in Scenario 2 and may contribute to population stabilization in a shorter amount of time for both scenarios.

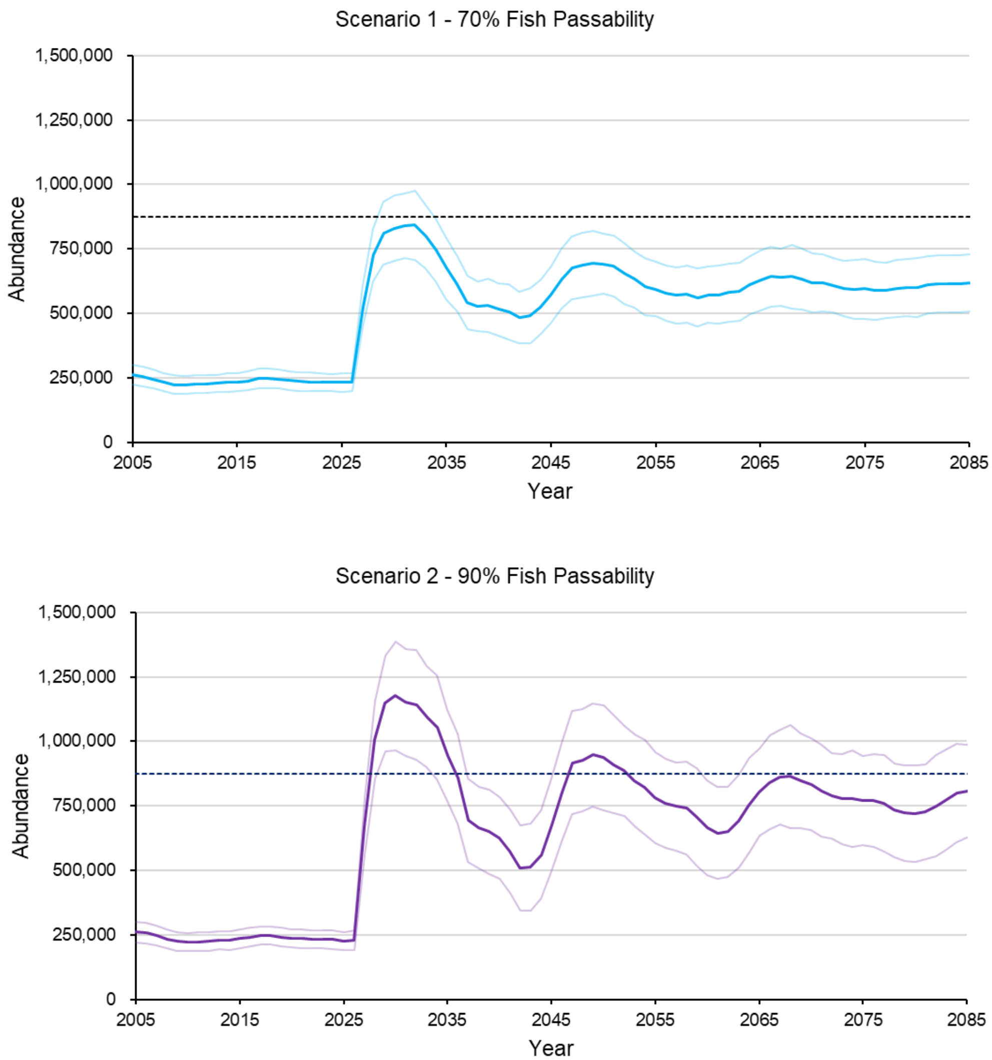


Figure 2: PVA Model Trajectories (Contours = ±1 Standard Deviation) For Arctic Char Abundances Including Current Assumed Baseline Abundances At 30% Migration Success From 2005 To 2025; The Increase in Abundance After 2025 Represents Population Trajectories Following a Proposed Modification To Pistol Bay Falls Whereby 70% (Upper Panel) And 90% (Bottom Panel) Are Now Able To Migrate; Dashed Lines Represent the Estimated Carrying Capacity of The Freshwater Habitat Above the Falls.

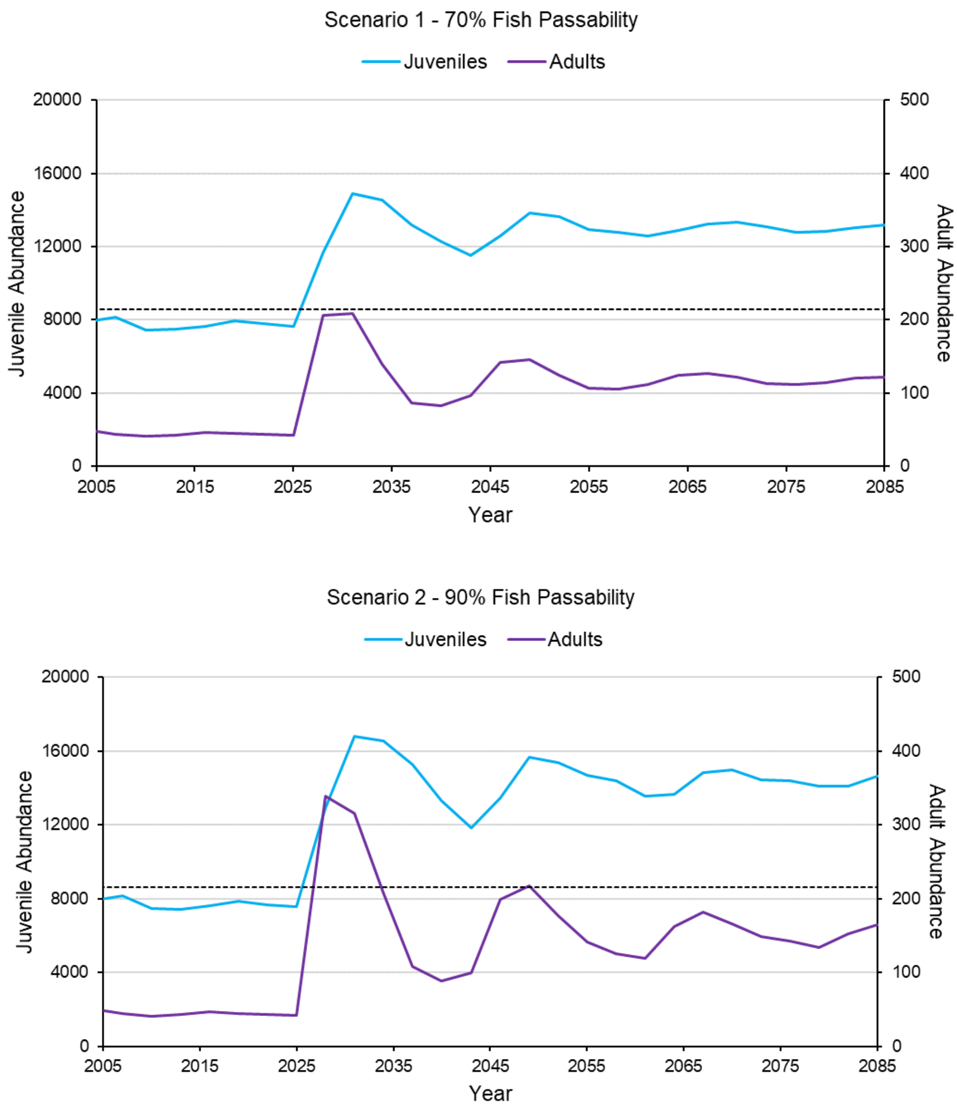


Figure 3: PVA Modelled Trajectories of Juvenile (Primary Axis, Blue Lines) and Adult (Secondary Axis, Purple Lines) Arctic Char Abundances Following the Proposed Modification to Pistol Bay Falls Whereby 70% (Upper Panel) And 90% (Bottom Panel) of the Run Size are Able to Migrate Upstream; Dashed Line Represents the Estimated Maximum Adult Run Size at Carrying Capacity.

3.0 PROJECT EQUIVALENCY ANALYSIS

Biomass production has been proposed as the currency for determining losses and equivalency targets based on the premise that fisheries production (e.g., biomass) is an acceptable surrogate of fisheries productivity (Randall and Minns 2000; Randall et al. 2013). The biomass production unit provides a transferrable unit for the calculation of both losses at the Project mine site and the gains for an offsetting measure that will improve access to upstream spawning habitats for anadromous Arctic Char.

Using the biomass production approach, the biomass removed from previously completed fish-outs in Nunavut was summarized (see Section 3.1.1) and then used to estimate annual foregone fish biomass production at waterbodies and watercourses to be lost during construction of the Project (see Section 3.1.2). Methods related to the calculation of the annual losses to biomass production are consistent with methods used in Golder (2020) and WSP Golder (2022).

3.1 Summary of Project Losses

3.1.1 Methods Overview

Lakes

Predictions for annual fish biomass production loss for 'large waterbodies' (i.e., lakes) at the Meliadine Extension Project were based on calculations using fish-out data for Northwest Arm of Second Portage Lake (122.7 ha) and the Bay-Goose Basin of Third Portage Lake (102.0 ha). Estimation of fish production at both lakes followed Golder (2020), which was consistent with the general method described by Ricker (1975), where annual production is a function of instantaneous growth rate and biomass:

$$P = G \times B \qquad \text{Equation 1}$$

G (instantaneous growth rate) and B (biomass) were estimated on an age-specific basis:

$$P = \sum_{a=0}^{n} G_a \, B_a \quad \text{Equation 2}$$

where a is age in years and n is the maximum age. Production estimates were generated for all species that accounted for greater than one percent of the total catch and included Lake Trout, Arctic Char, Round Whitefish, and Burbot (excluding the very few Ninespine Stickleback that were captured). Total production was based on the sum of production of Arctic Char, Lake Trout, Round Whitefish, and Burbot.

Following the statistical summary of catch and abundance data in Azimuth (2009) and North/South (2011), the steps of the production model involved:

- estimation of abundance and biomass per age cohort for each species and fish out event
- estimation of instantaneous somatic growth rate (G*a*) per species and fish-out event:

$$G_a = \ln(w_{a+1}) - \ln(w_a) \quad \text{Equation 3}$$

- estimation of total annual production (see Equation 2)

The application of the above equations are summarized in detail in Golder (2020). For the Northwest Arm, Second Portage Lake, the estimated foregone annual production was 242.76 kg/yr based on the catch data. Estimated production per hectare per year was 1.978 kg/ha/yr. The ratio of total annual production (P) (242.76 kg/yr) to standing stock biomass (B) (1,123 kg) from the fish-out of the Northwest Arm of Second Portage Lake was equivalent to 0.216:1.

For the Bay-Goose Basin of Third Portage Lake, the total estimated annual production was 78.73 kg/yr based on the catch data. Estimated fish production on a per hectare basis was 0.772 kg/ha/yr. The resulting P:B ratio of total annual production (78.73 kg/yr) to standing stock biomass (273 kg) from the fish-out of Bay-Goose Basin of Third Portage Lake was 0.288:1.

Of the two lake areas, estimated forgone fish production was highest in the Northwest Arm, and therefore, that estimate (1.978 kg/ha/yr) was used in the equivalency analysis as conservative assessment of losses at the Meliadine Extension Project.

Ponds

Predictions for annual fish biomass production loss for 'small waterbodies' (i.e., ponds) at the Meliadine Extension Project were based on i) fish-out data from five ponds at the Meliadine Mine as part of the development of the Tiriganiaq pits (Pond B33, B33a, A40, A9, and A38), and ii) the P:B ratio for Ninespine Stickleback populations in Randall and Minns (2000). General methods followed WSP Golder (2022).

Based on the fish-out dataset provided to WSP Golder by Agnico Eagle, 7.807 kg of fish (all Ninespine Stickleback) were removed from the five small ponds during the fish-out (WSP Golder 2022). Using the P:B ratio for Ninespine Stickleback populations in Randall and Minns (2000), foregone annual fish production was estimated as the product of a 2.73 P:B ratio multiplied by a standing stock biomass of 7.807 kg. This calculation estimated a fish production loss of 21.313 kg/yr. Based on a combined pond area of 4.1 ha, estimated foregone fish production on a per hectare basis for ponds was 5.198 kg/ha/yr.

Streams

Existing electrofishing survey data from streams and rivers, aggregated in the Randall et al. (2017) study by fishery management areas and zones across Canada, was used to determine a benchmark of fish productivity at the Meliadine Extension Project. Specifically, the foregone fish production estimate for streams was based on the lower range of estimates in Randall et al. (2017), specifically electrofishing data collected from Rose Blanch, Newfoundland and Labrador, where production was calculated as 15 kg/ha/yr. The application of a production estimated derived from Newfoundland and Labrador was assumed to be a conservation approach in calculating losses of stream habitat in the Arctic eco-region of the Meliadine Extension Project.

3.1.2 Results

The estimated habitat loss, measured in area, for waterbodies and watercourses incurred by the footprint includes 385.28 ha for lakes, 50.71 ha for ponds that support only Ninespine Stickleback, 17.23 ha for others ponds that either do not have records of fish presence or are multi-species ponds that provide connecting habitat between lakes, and 11.55 ha for streams (Table 4). Total loss incurred by the Project footprint is 464.77 ha.

To calculate the potential losses measured in biomass production (i.e., forgone annual biomass measured in kg/yr), previously derived biomass production values per waterbody type were multiplied by the total area per waterbody type (Table 4). The sum of the product per waterbody type is 1,233.03 kg/yr.

Table 4: Summary of Predicted Losses of Fish Habitat for the Meliadine Extension Project

Waterbody Type	n	Lost Waterbody Area (ha)	Applied Production Rate (kg/ha/yr)	Foregone Total Production (kg/yr)
Lake	10	385.28	1.978	762.08
NSSB Pond	34	50.71	5.198	263.59
Other Ponds	9	17.23	1.978	34.08
Stream	51	11.55	15	173.27
Total	104	464.77	-	1233.03

3.2 Gains Versus Losses

Assuming an offsetting target that is two-times the estimated losses, the resulting biomass target is equivalent to 2,466 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.

4.0 UNCERTAINTY

4.1 Potential Changes on the Pistol Bay Freshwater Fish Community

Barrier modification and/or removal to promote the recruitment of migratory fishes has become a relatively common practice in North America to increase the abundance and spatial distribution of a species (Pess et al. 2014; Kiffney et al. 2008). Despite this, understanding the response of the resident community following colonization is not well understood (Kiffney et al. 2008; Bernhardt et al. 2007). Evidence suggests colonizers might displace residents, particularly when there is a discrepancy in size, leading to broadscale changes to the distribution, abundance, and composition of the existing fish community (Kiffney et al. 2008; Baxter et al. 2004). This, however, can be to the benefit of the resident populations who may take advantage of additional resources the colonizers provide. For example, during spawning, eggs and emerging fry provide a high-density energy and nutrient source for numerous aquatic and terrestrial species (Schindler et al. 2003).

Increasing Arctic Char run sizes by modifying the current barrier at Pistol Bay Falls and improving the migration success for overwintering and spawning fish is predicted to significantly increase the abundance of Arctic Char in the system in a relatively short period of time. The effects of this increase and potential change to the ecology of the upstream system, however, is currently unknown. Ultimately the growth in abundance of Arctic Char following barrier modification has the potential to have ecological consequences on the abundance and composition of the existing community by increasing competition for habitat and resources. Intraspecific interactions could be limited, however, where life histories are different for species that are known to populate the Pistol Bay system. For example, Arctic Char spawn on large gravel beds or shoals in large lakes and rivers, while Arctic Grayling spawn in a variety of habitats including mainstem rivers, large and small tributaries to streams and lakes, and along lake shores at the mouths of inlets (Stamford et al. 2017). As such, this variation in behaviour has the potential to minimize intraspecific competition for spawning habitat.

Overall, we predict the relative benefits of increasing migratory success and, thus, the abundance of Arctic Char in the Pistol Bay system, both to Inuit fishers and the overall productive capacity of the habitat, outweigh the potential negative effects on the ecology of the current fish community.

Signature Page

WSP Canada Inc.

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APPENDIX G • ARCTIC CHAR RUN – 2023 FIELD PRORGRAM

REPORT

Baseline Study on Pistol Bay Arctic Char Run - 2023 Results

Meliadine Expansion Offsetting Plan

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December 2023

Distribution List

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1.0 INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is proposing to expand the Meliadine Mine (the Expansion Project) by adding five deposits, extending the life of the mine up to 11 years. The Expansion Project is expected to require a *Fisheries Act Authorization* as the harmful alteration, disruption or destruction (HADD) of fish habitat cannot be mitigated. As such, an offsetting plan is required to compensate for the loss of fish habitat associated with the works. Conceptual offsetting options were proposed including an option to improve sea-run Arctic Char (*Salvelinus alpinus*) access through natural barriers, which would increase access to upstream areas for spawning and overwintering habitat (Golder 2014). The falls at Pistol Bay were identified for possible barrier improvements and were surveyed to determine the nature of the barrier and the feasibility of improvements. To assess the effectiveness of modifying this barrier, the current "passability" (i.e., the proportion of fish that are able to pass through the falls while migrating upstream) needed to be examined to prove the efficacy of the enhancement.

At present, the current Arctic Char run size at Pistol Bay Falls is unknown. Estimations based on data from the nearby Meliadine watershed were provided in the Expansion Project Offsetting Plan. The projected abundance for both current baseline conditions and post-enhancement conditions following modification to the barrier at the falls were modelled as part of the equivalency analysis conducted by WSP (2023a). The objectives of the 2023 offsetting study (The Project) were to assess current Arctic Char run sizes and to quantify the passability of the natural barrier at Pistol Bay Falls, which can be used to confirm the modelling inputs for equivalency analysis for the Expansion Project Offsetting Plan. The works addressed the following main monitoring objectives of the conceptual Meliadine Extension Project Offsetting Plan (Golder 2014):

1) Monitor the timing and size of the annual adult upstream (lake-bound) migratory char run at Pistol Bay Falls using a two-way fyke net (trap) during the predicted migration period; while the trap is installed, collect opportunistic data to describe the timing and size of the annual smolt downstream outmigration at Pistol Bay.

2) Examine rates of movement and successful upstream passage above Pistol Bay Falls and headwater lakes during the open water season using Passive Integrated Transponder (PIT) tag methods. The movement data complement data on the size of the run by providing a direct measurement of Arctic Char that successfully ascend Pistol Bay Falls and reach overwintering habitat.

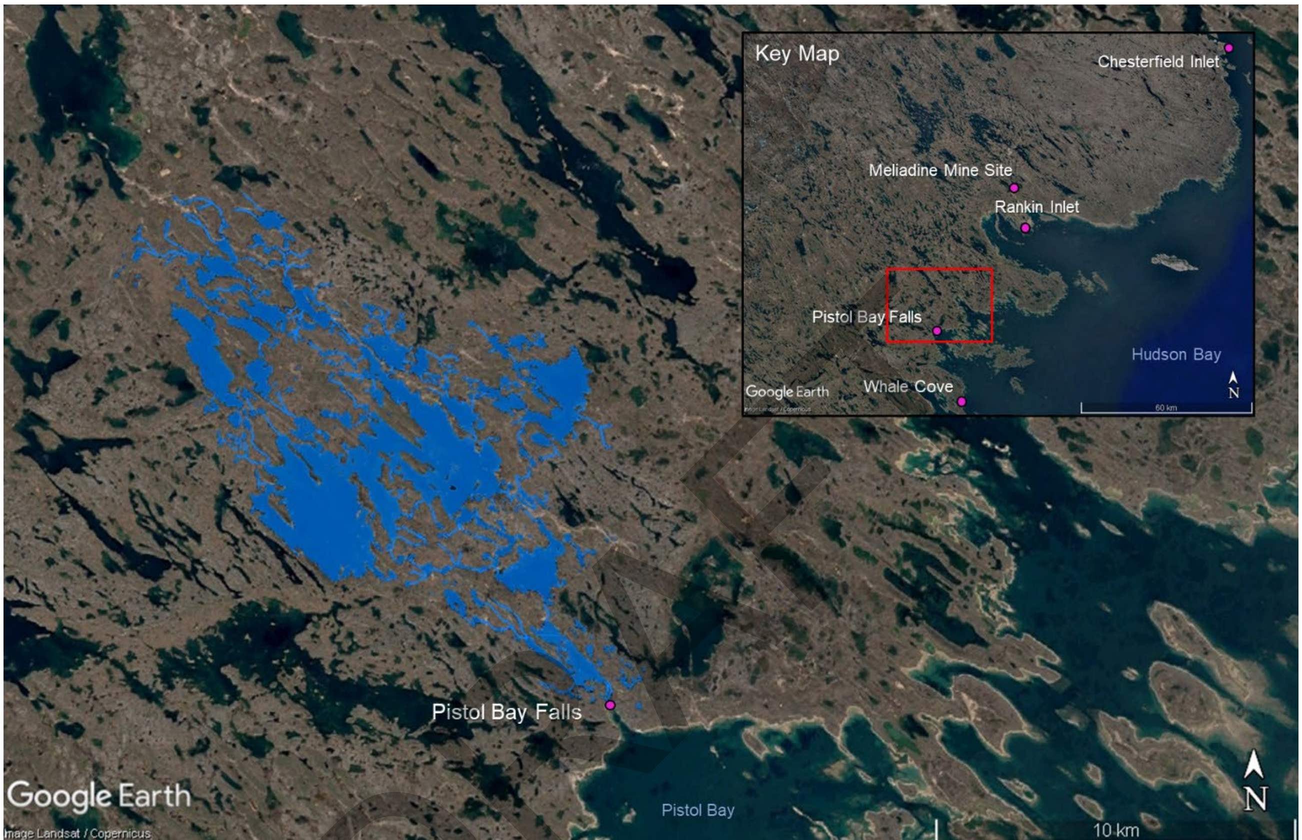
3) Collect otoliths from a subsample of migrating Arctic char at Pistol Bay Falls and from char caught in headwater lakes above the falls to age fish and assess anadromy/lake residency and frequency of migrations via Laser Ablation Inductively Coupled Plasma-Mass Spectrometry (LA ICP-MS). Understanding lake residency will aid with understanding how modifying the falls may influence population dynamics in the freshwater environment.

4) Collect supporting fish habitat data for the creek including identification of barriers and description of the connectivity of habitat above Pistol Bay Falls, including hydrological surveys.

1.1 Study Area

Pistol Bay Falls is located 50 km south from the hamlet of Rankin Inlet, Nunavut, along the northwest coast of Hudson Bay (Figure 1). The Project site is about 20 minutes travel time by helicopter from the Meliadine mine site. Upstream of the falls, the Pistol Bay watershed encompasses an area of 9,710 ha containing 432 waterbodies including a series of larger lakes greater than 50 ha (Golder 2014). An additional 45 lakes that are greater than 5 ha account for 4,054 ha of potential overwintering habitat for fish. Aerial surveys identified hydraulic connectivity for fish between the lakes consisting of meandering braided streams and stream-like corridors with shallow ponds (Golder 2014).

Based on Canadian climate normal station data for Arviat (1991-2020), mean total precipitation is approximately 326 mm, of which 161 mm falls during June, July, August, and September (Government of Canada, 2023). Daily maximum temperatures, on average, are above 0°C for April through November, peaking in July at 22.5°C and below 0°C for the remainder of the year.



Source: 2023 Google Earth Satellite Imagery

Figure 1: Overview map of the study area with the Pistol Bay Watershed

Pistol Bay Falls is 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), outlet flow conditions can vary during the open water season, decline through the summer, vary annually in response to precipitation accumulation, and differ throughout the day at the freshwater-marine interface as tides fluctuate. It is assumed that the dynamic nature of the flow conditions significantly affects the navigability of the falls for anadromous Arctic Char such that the passability of the falls is reduced under low flow conditions. As well, migration conditions are exacerbated when the downstream estuary is at low tide. Therefore, it has been assumed that Pistol Bay Falls represents both a partial barrier and temporary barrier to upstream passage of fish. 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, which has significant impacts on survival through elevated energetic costs, predation risk, and disruption of key life cycle events (Kemp and O'Haney 2010; Thorstad et al. 2008).

The effects of tides on the height of the 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. High tide inundates the lower step of the falls by approximately 1 m depending on the magnitude of the tide (Photo 1). At high water (i.e., during spring freshet) the falls and upper chutes 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). The length of the upper chutes run the riverbanks, ranging from 3 to 5 m in fluvial length. 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. Under low flows, passability of the falls would be reduced because of the effects of the vertical drop and shallow water on jumping ability of migrating fish.

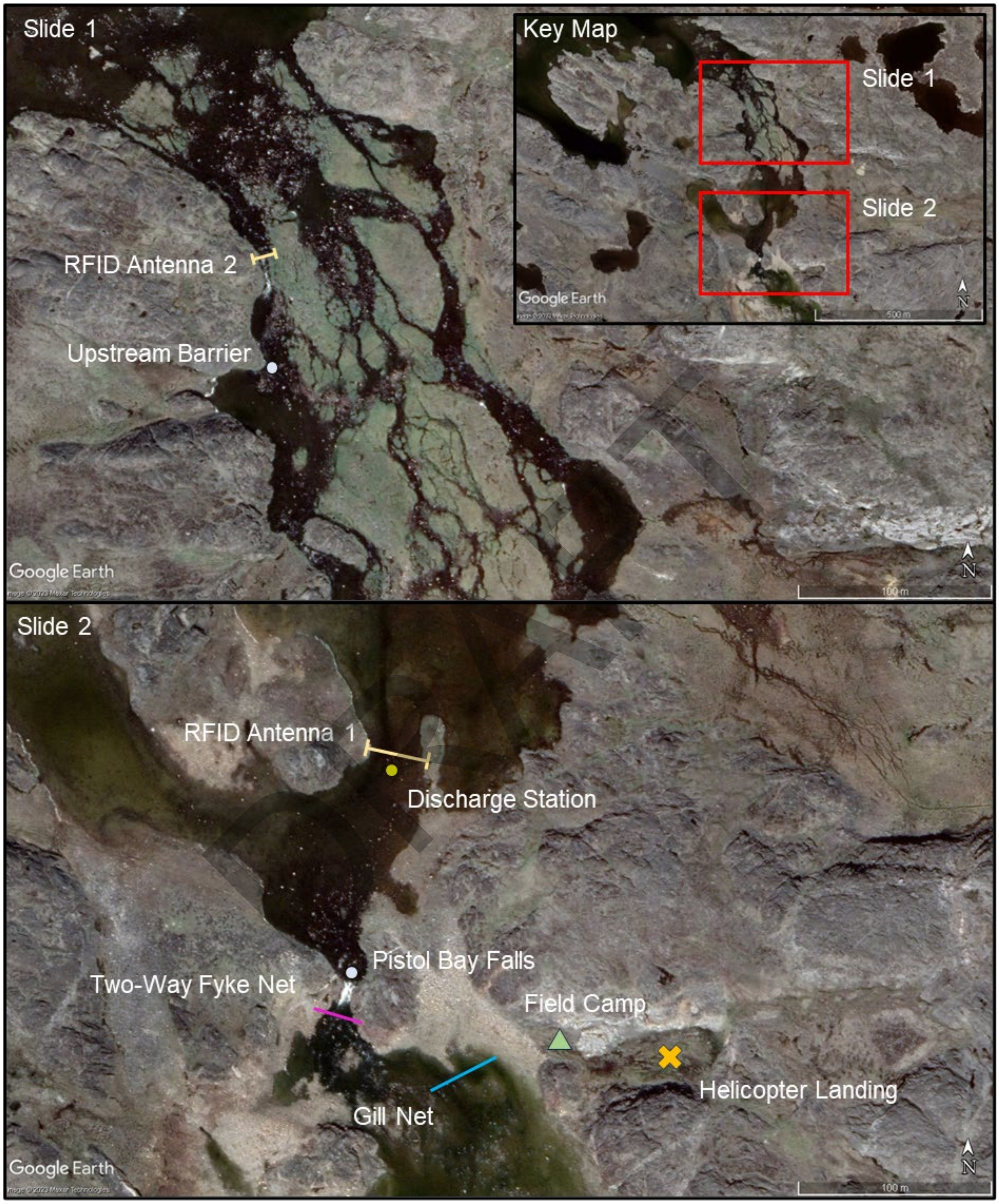
Photo 1: Pistol Bay Falls Under Low Tide Conditions on 19 August 2023

2.0 METHODS

The field program at Pistol Bay Falls occurred from 18 August to 29 August 2023. The timing of the program was chosen to capture the bulk of the upstream migration for sea-run Arctic Char in the region. The field crew comprised of fisheries biologists with support from the Agnico Eagle permitting team and a local HTO personnel (Table 1). The program consisted of the setup of a two-way fyke net (trap) below the falls, gill net and angling efforts, and fish movement monitoring using RFID antenna arrays (Figure 2). As well, headwater lakes above the falls were fished using angling and gillnetting techniques to assess lake residency of Arctic Char in this region via otolith microchemistry analyses.

Table 1: Field Personnel Involved in the 2023 Pistol Bay Falls Study

Name	Role
Alison Loeppky	WSP, Aquatic Biologist
Greg Hill	WSP, Aquatic Biologist
Nick Moore	Kilgour and Associates, Aquatic Biologist
Sam Gordon	Agnico Eagle Mines Limited, Permitting Specialist
Edward Malindzak	Agnico Eagle Mines Limited, Permitting Specialist
Gordon Jr Okalik	HTO Bear Monitor



Source: 2023 Google Earth Satellite Imagery

Figure 2: Overview Maps of the Study Area with the Location of the Two-Way Fyke Net, RFID Antenna Arrays, Discharge Station, Upstream Barrier, Field Camp, and Helicopter Landing Site. Map Source 2023 Google Earth

2.1 Temperature, Velocity and Discharge Measurements

A detailed description of the temperature measurements is provided in the 2023 Hydrology Field Summary Memo (WSP 2023b). Monitoring stations were established at five locations including above and below Pistol Bay Falls and in the upstream headwater lakes. Solonist Leveloggers deployed at each monitoring station from 18 June 2023 to 30 August 2023 recorded the depth, atmospheric pressure, air and water temperature. Historical air temperature comparisons were made using Canadian normal station data collected at Arviat from 2012 to 2022. Daily discharge was calculated using flow and depth measurements collected in 0.5 m increments across the channel approximately 140 m upstream of Pistol Bay Falls using a Marsh McBirney flowmeter. Comparisons to monthly discharge for two-year median and 10-year dry projections were made using preliminary models as described in the 2023 Hydrology Memo (WSP 2023b).

2.2 Fish Capture and Sampling

2.2.1 Fyke Net

Fish were captured below Pistol Bay Falls at the outlet to Hudson Bay using a two-way fyke net (trap) system installed directly below the falls (Photo 2). Tidal inundations were significant and suitable areas for setting the trap were limited. The chosen location was selected based on the best feasibility for extending the wings of the net entirely across the outlet, while also ensuring the funnels and baskets of the nets remained underwater during low tide. This meant that only fish that came in and staged directly below the falls were directed into the nets (

Photo 3; Photo 4). The fyke net was installed on 20 August 2023 and operated until 27 August 2023. The fyke net was installed in the deepest part of the channel where the main flow from the falls ran into the bay such that fish moving in or out of the staging area were directed into the 1.6 m by 1.6 m openings. Once fish entered the trap, they were directed through a series of funnels totalling 6.4 m in length to a holding basket at the end of the 6.35 mm mesh nets.

Char were observed holding in the deeper pool directly below the falls, but above the fyke net location during the set-up of the trap system, as such, it was decided that the trap should be set overnight to capture staging fish should they attempt to leave the falls at night. Given the constant flow of fresh water over the falls, which provided significant mixing and oxygenation, as well as confidence in where the holding baskets were set in the deeper channel, the risk of fish being stranded or stressed due to poor conditions overnight was minimal. Some larger boulders were placed within the holding basket to provide breaks in the flow and shelter for smaller fish to hold while the nets were closed. Once all char that had been corralled below the falls had been caught and tagged, only the upstream basket was left closed overnight to capture Arctic Char coming to the falls to stage while allowing any fish that washed over the falls the ability to swim through the net and into Pistol Bay. The nets were checked several times daily and fish were removed and processed according to the methods approved under the DFO Licence to Fish for Scientific Purposes (licence #S-23/24-1013-NU) and the DFO Animal Use Protocol application (protocol #OPA-ACC-2023-37).

Photo 2: Aerial Photo of the Two-Way Fyke Net Below Pistol Bay Falls at High Tide on 21 August 2023

Photo 3: Downstream View of the Two-Way Fyke Net at High Tide on 21 August 2023

Photo 4: Downstream View of the Two-Way Fyke Net at Low Tide on 19 August 2023

2.2.2 Gill Nets

Given the location of the fyke net and the proximity to the base of the falls, gill-net sets were used to catch Arctic Char that would enter the bay at high tide. The gill net consisted of two 45’ by 6’ panels of 2.5’’ single mesh nets. The gill net was typically set from shore during low tide stretching across a pool where Arctic Char were observed swimming during high tide (Photo 5). The net was monitored from shore constantly so that if a fish was visibly caught in the net it would be retrieved and processed as soon as possible to reduce stress. If no fish were visually observed, the net was physically checked once every hour. The gill nets were soaked until the tide receded, with a maximum soaking time of 4 hours (soak time range 0.6 to 4 hours).

In the upstream lakes, the gill net was set in various locations both near- and offshore, targeting shoals or areas where fish were likely to travel through (Figure 3; Appendix A). The net was checked every hour and allowed to soak for 2 hours before being pulled and reset in a different location. If many non-target species were caught during the first check, the net was immediately pulled and moved to a new location to avoid by-catch.

Photo 5: Gill Net Set at Low Tide on 24 August 2023

Source: 2023 Google Earth Satellite Imagery

Figure 3: Locations of Gill Net (Yellow Circles) and Angling (Pink Circles) Efforts; Note: Some Efforts not Visible Due to Overlap

2.2.3 Angling

Angling efforts were conducted in between checks at the fyke net and gill net sets, and were conducted both above and below Pistol Bay Falls (Figure 3; Appendix A). Shore-based angling efforts were conducted at the outlet to Pistol Bay where Arctic Char were visually observed swimming but could not move upstream towards the falls due to the shallow channels during low tide. A combination of non-baited casting and fly techniques were used to attempt to catch the char. Upstream of Pistol Bay Falls, similar shore- and boat-based angling efforts were conducted in the headwater lakes to assess lake resident Arctic Char populations. Should char have been caught, they were to be lethally sampled for otolith collection. Non-target species were identified to species, enumerated, and live-released near the point of capture.

2.2.4 Biometric Measurements and Tagging

Arctic Char captured in the fyke net or a gill net were placed in holding buckets supplied with marine water from the bay. Additional water was added to the buckets as needed to ensure water quality parameters were maintained. Individual char were removed from the holding bucket and placed in a perforated fish cradle then weighed using a spring scale (g). The fish was then transferred to a cylindrical fish measuring board that had holes in it and held partially in water while total length (mm) and fork length (mm) measurements were taken (Photo 6).

Adult char were then rotated ventral side facing up on the fish board and implanted with a uniquely coded half duplex (HDX) PIT tag (23 mm length, 3.7 mm diameter, 0.6 g weight) in the abdomen. The needle penetrated the fish's ventrum between the posterior tip of the pectoral fin and the anterior point of the pelvic girdle, 1 to 2 mm lateral from the mid-ventral line. The bevel of the needle was oriented toward the ventral surface at a 20 degrees angle to minimize the chance of contact with internal organs. Vetbond was then applied to the injection location to seal the wound and prevent infection. The fish was then rotated again and a Floy tag with an individual identifier number was implanted in the dorsal muscle at the anterior end of the dorsal fin. The PIT and Floy tag injectors were disinfected prior to, and between, each implantation using a 1 to 10 dilution of betadine solution (10 water: 1 betadine). Once the tags were implanted, char were immediately released in a natural side pool that had been sectioned off from the outlet channel for recovery (Photo 7). Char were observed for at least 30 minutes to make sure they were able to maintain an upright position and swim freely before removing the barrier and releasing the fish.

All fish that were tagged fully recovered quickly after being placed into the holding pool. This was attributed to the quick processing protocol that had the fish at least partially submerged in water while biometric measurements were taken, and tags were injected. In total, the fish were only out of water completely for approximately 10 seconds while their weight was being recorded.

Photo 6: Female Arctic Char Being Processed while Being Partially Submerged in Water on 23 August 2023.

Photo 7: Natural Side Pool Holding Area Where Tagged Char Were Allowed to Recover Post Injection on 23 August 2023

2.2.5 RFID Antenna Arrays

Antenna arrays were installed at two locations upstream of Pistol Bay Falls. RFID Antenna Array 1 (Array 1) was located approximately 140 m upstream of the falls to evaluate the proportion of char that were able to successfully ascend the falls and determine the current passability of the falls (Figure 2; Photo 8; Photo 9). RFID Antenna Array 2 (Array 2) was installed approximately 500 m upstream of the falls, above a secondary barrier that was anecdotally identified as a seasonal impasse when flow conditions are low to evaluate whether migrating fish that successfully ascend the falls reach the large inland lakes to overwinter and spawn (Figure 2; Photo 10; Photo 11).

Each antenna array set up consisted of two antenna loops to be able to assess the direction of movement of each fish that migrated upstream. At Array 1, the downstream antenna loop was oriented vertically to increase PIT tag reception range. The bottom of the antenna loop was embedded in the creek substrate and the top of the loop was suspended approximately 5 cm above the water surface. This configuration ensured that char passed through the loop perpendicular to the antenna field. Due to low water depths (<15 cm), the upstream antenna loop was orientated horizontally whereby both the top and bottom of the antenna loop was embedded in the creek substrate so that char passed parallel to the antenna field. At Array 2, both the upstream and downstream antenna loops were installed vertically given the nature of stream bed at this location.

Antenna loops at both array locations were connected to individual tuner boxes and HDX-PIT tag reader boxes located on the banks. The arrays were powered by deep-cycle marine batteries which were continually charged using solar panels. Both antenna arrays were operated from 20 August 2023 to 20 September 2023.

Photo 8: Aerial View of the RFID Antenna Array 1 Location on 21 August 2023

Photo 9: RFID Antenna Array 1 From the Right Downstream Bank on 27 August 2023

Photo 10: Aerial View of RFID Antenna Array 2 Location on 21 August 2023

Photo 11: RFID Antenna Array 2 from the Right Downstream Bank on 29 August 2023

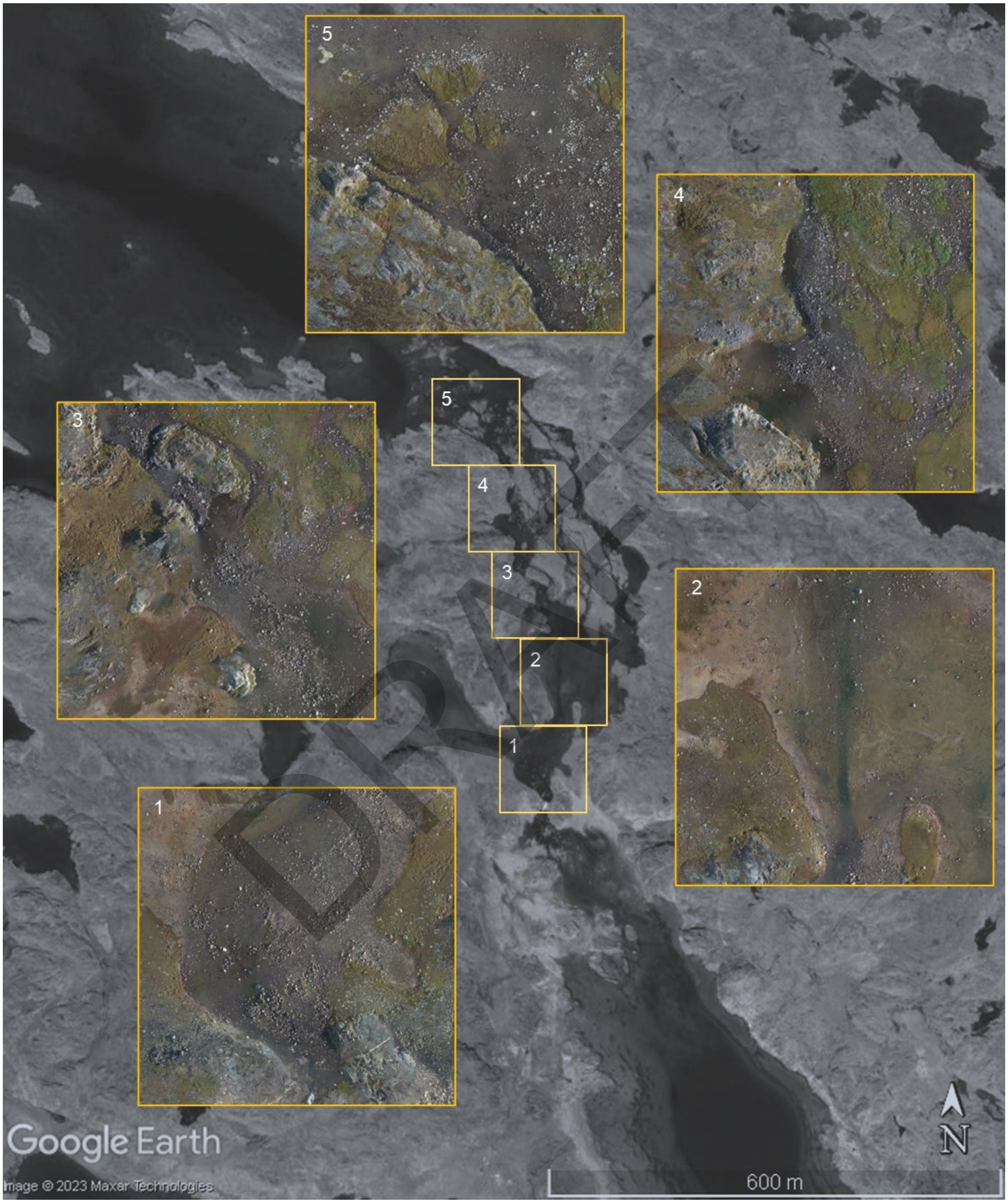
2.2.6 Otolith Collection

To examine the timing of first sea migration, and frequency of subsequent migrations, otoliths were collected from a subset of adult Arctic Char that staged below Pistol Bay Falls. Fish were euthanized via a blow to the head followed by cervical dislocation. Both the left and right sagittal otoliths were removed, rinsed in water, dried, and stored in individually labelled coin envelopes. The otoliths are being prepped for elemental analysis via Laser Ablation Inductively Coupled Plasma Mass-Spectrometry (LA ICP-MS) at the University of Manitoba and are to be scanned in early 2024. Once the results have been received and data analyses conducted, this report will be updated with an addendum that summarizes the laboratory results.

An additional 20 otoliths were intended to be sampled from Arctic Char in headwater lakes upstream of Pistol Bay Falls to assess whether there are freshwater resident fish in the system. Gill netting and angling efforts were conducted in various locations in several upstream lakes; however, no Arctic Char were caught during the 2023 field program.

2.3 Habitat Assessments

Potential char migration barriers were assessed along the entire length of the main creek channel from immediately above Pistol Bay Falls to 560 m upstream of the falls to the outflow of the first headwater lake (Figure 4). After an initial visual assessment from both the helicopter and on the ground, it was determined that the most accessible migration route was located along the west channel (right downstream bank). The focus of the habitat mapping was therefore conducted along this primary west channel. Because of the low water levels, and wide wetted width along some sections of the creek, defining distinct sections of consistent habitat was challenging in the field. As such, habitat assessments were conducted along five creek sections that were each approximately 100 m in length. Assessments of fish passage were made using a combination of field observations and examination of georeferenced drone imagery (Figure 4). The imagery was collected on 29 August 2023 to support the fishway design and related hydraulic modelling (WSP 2023b).



Sources: Base Map 2023 Google Earth Satellite Imagery; Panels WSP Drone Imagery on 29 August 2023

Figure 4: Habitat Mapping in ~100 m Increments from Directly Above Pistol Bay Falls (Panel 1) to the Outflow of the First Headwater Lake (Panel 5) 560 m Upstream of the Falls. Panels Represent Creek Sections 01 to 05.

2.4 Statistical Analyses

Average daily air and water temperatures (± standard error, SE) were calculated for August 2023. Comparisons to historical air temperatures at the nearest Canada climate normal station in Arviat, NU (Government of Canada 2023) were made by averaging daily recorded temperatures in August from 2012 to 2022. Daily discharge was calculated using velocity and depth measurements recorded at the discharge station.

Length and weight regressions were developed for the Arctic Char that were caught below Pistol Bay Falls during the 2023 field program. Length and weight data were fit to a power function and goodness-of-fit was evaluated based on the estimated coefficient of determination (R^2).

3.0 RESULTS AND DISCUSSION

3.1 Environmental Variables

Average air and water temperatures during the 2023 field program (18 August to 28 August 2023) were 11.0°C and 11.4°C, respectively. Historical average daily air temperatures were on average 3.3°C lower (up to 10.1°C on 3 August) for Canadian normal station data for Arviat from 2012 to 2022 compared to the recorded temperatures in 2023 (Figure 5). Daily mean water temperatures ranged from a high of 13.1°C on 19 August 2023 to a low of 7.9°C on 27 August 2023. The warmest recorded temperatures occurred during the beginning days of the study period and did not exceed the thermal stress barrier for salmonids during this time (21°C; McCullough 1999). However, water temperatures did approach this threshold earlier in August, prior to the study program, suggesting Arctic Char were not likely to attempt to migrate upstream when temperatures were warmer.

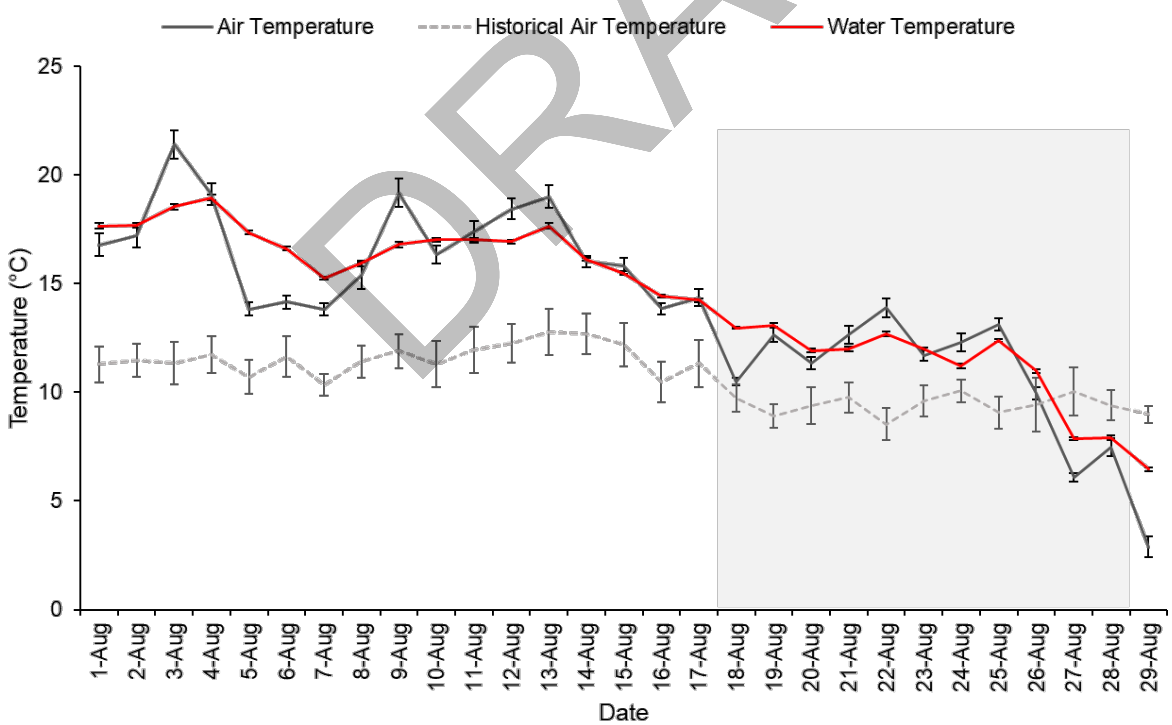


Figure 5: Mean Daily Air (±SE, Grey Solid Line) and Water Temperatures (±SE, Red Solid Line) Recorded in the Study Area in August 2023; Mean Daily Historical Air Temperatures (±SE. Grey Dashed Line) from Canadian Climate Normal Station Data for Arviat from 2012 to 2022 (Government of Canada 2023); Grey Shaded Area Represents the 2023 Field Program

Average discharge recorded during the study period was 0.082 m^3/sec (Figure 6). This is similar to the 10-year dry modelled discharge of 0.073 m^3/sec for the Pistol Bay watershed and notably lower than the two-year median of 0.235 m^3/sec that was projected using preliminary modelling by WSP in 2022 based on desktop analysis of regional hydrological data (Table 2 in WSP 2023b). The methodology of this modelling is described in section 3.2 of the 2023 hydrology report (WSP 2023b). These values should be considered preliminary for comparison purposes and will be refined as part of the fishway detailed design process. The low flows and low water levels were apparent when observing the upstream creek habitats that exposed several boulder gardens and potential upstream barriers due to minimal water levels.

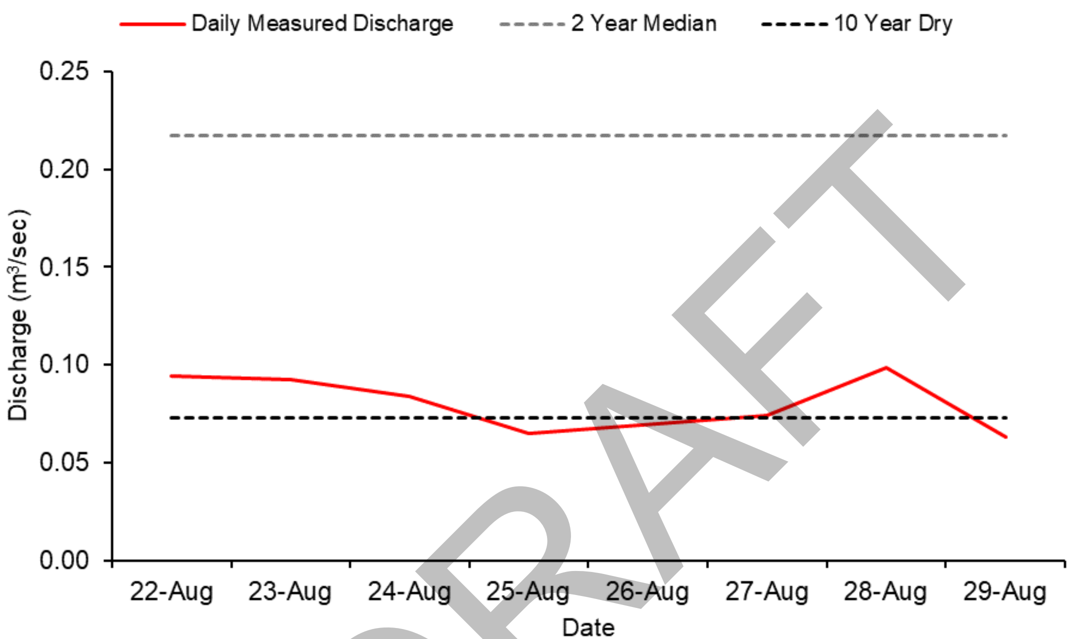


Figure 6: Calculated Discharge Measurements Collected During the 2023 Field Program (Red Line); Modelled Two-Year Median (0.235 m^3/sec, Grey Dashed Line) and 10-Year Dry (0.073 m^3/sec, Black Dashed Line) Discharge for the Pistol Bay Watershed

3.2 Fish Capture and Sampling

Below Pistol Bay Falls, the fyke net was in place for a total of 7 days, beginning the afternoon of 20 August 2023 and ending 27 Aug 2023 (137.3 cumulative trap hours). A total of 39 fish and four species were captured, including recaptures: Arctic Char (n = 8, 20.5%), Juvenile Arctic Grayling (*Thymallus arcticus*; n = 6, 15.4%), Fourhorn Sculpin (*Myoxocephalus quadricornis*; n = 12, 30.8%), and Threespine Stickleback (*Gasterosteus aculeatus*; n = 13, 33.3%;Table 2). No outmigrating Arctic Char (juvenile or adult fish) were caught during the 2023 field program. An additional seven Arctic Char were captured in gill nets below Pistol Bay Falls (n = 15 total; Figure 7). Angling efforts below the falls caught four Fourhorn Sculpin (n = 16 total) and one Greenland Cod (*Gadus ogac*).

In the headwater lakes above Pistol Bay Falls, a total of 35 fish and three species were captured during gill net and angling efforts, including Arctic Grayling (n = 16, 45.7%), Cisco (*Coregonus artedi*; n = 1, 2.9%), and Lake Trout (*Salvelinus namaycush*; n = 17, 48.6%). An additional unknown species was caught while angling but was not landed so could not be identified.

Table 2: Arctic Char Catch Data During 2023 Field Program

Fishing Gear	Date	Fish Species	Total Count	Recap. (Y/N)	Fork Length (mm)	Total Length (mm)	Weight (g)	K	Sex	Stage	Maturity Code	PIT Tag Number	Floy Tag Number	Age Structure
Fyke Net	21-Aug	ARCH	1	N	735	770	4950	1.084	F	A	PR	900209000123550	006	
Fyke Net	21-Aug	ARCH	1	N	712	740			F	A	PR	900209000123551	007	
Fyke Net	21-Aug	ARCH	1	N	849	885			M	A	PR	900209000123533	008	
Fyke Net	21-Aug	ARCH	1	N	709	751			M	A	PR	900209000123507	009	
Fyke Net	22-Aug	ARCH	1	N	584	615	3600	1.548	F	A	PR	900209000123507	010	
Fyke Net	22-Aug	ARCH	1	N	591	626	3100	1.264	F	A	PR	900209000123519	011	
Fyke Net	22-Aug	ARCH	1	Y								900209000123550	006	
Fyke Net	22-Aug	ARCH	1	Y								900209000123507	009	
Gill Net	23-Aug	ARCH	1	N	450	482	1400	1.250	F	A	PR	900209000123546	013	
Gill Net	23-Aug	ARCH	1	N	744	784	4750	0.986	M	A	PR	900209000123520	014	
Gill Net	24-Aug	ARCH	1	N	298	315	300	0.960	M	A	PR			OT
Gill Net	24-Aug	ARCH	1	N	346	368	450	0.903	M	A	MA			OT
Gill Net	24-Aug	ARCH	1	N	410	437	850	1.019	F	J	IM			OT
Gill Net	28-Aug	ARCH	1	N	505	538	1950	1.252	F	A	PR	900209000123580	015	
Gill Net	28-Aug	ARCH	1	N	227	241	125	0.893	M	J	IM			OT

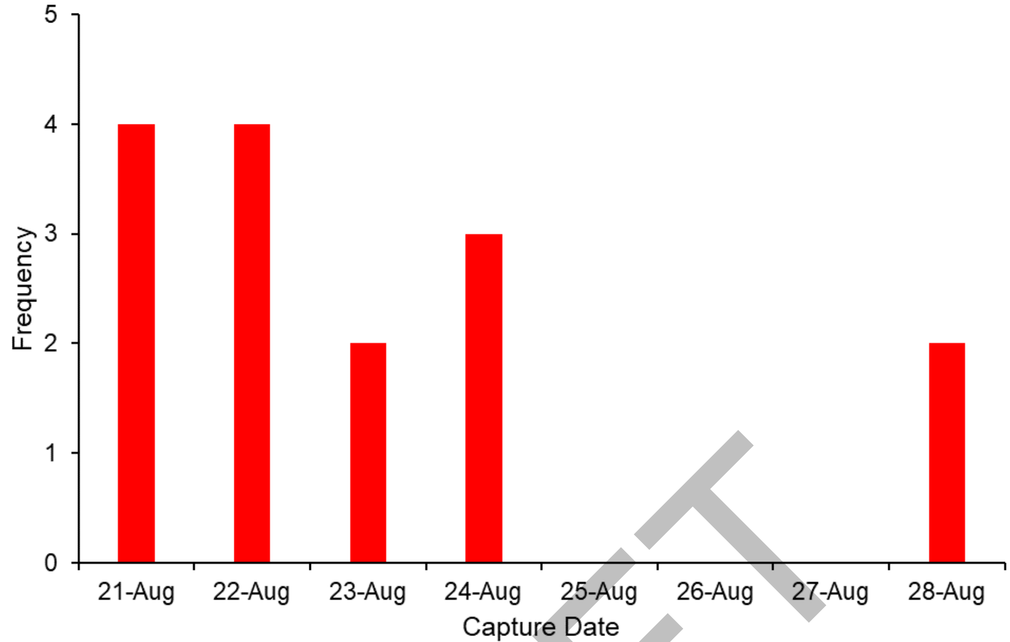


Figure 7: Catch Frequency of Arctic Char Caught in the Fyke Net and Gill Net Below Pistol Bay Falls

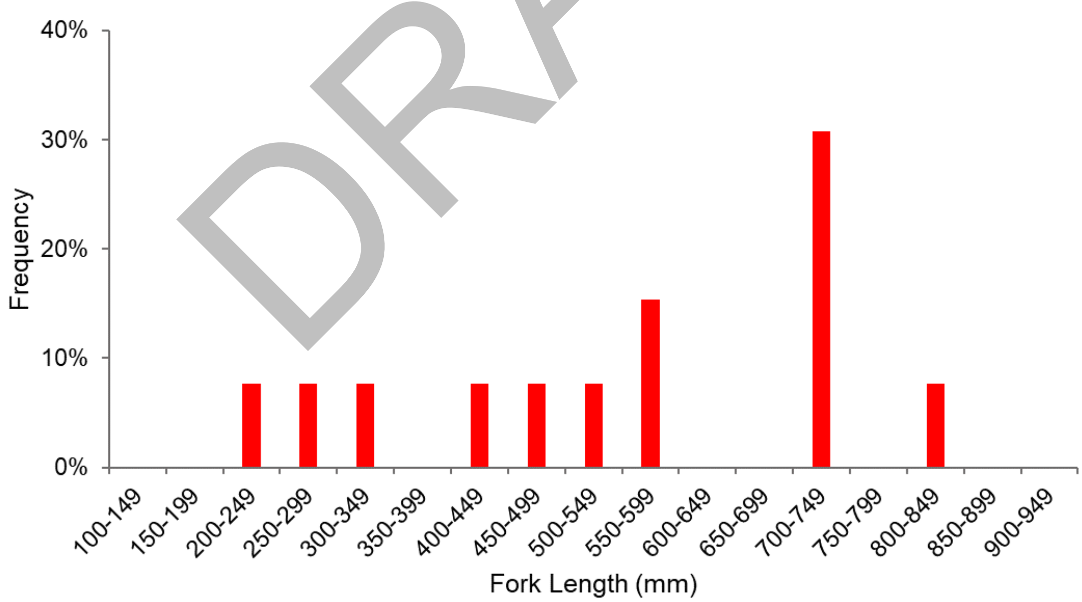


Figure 8: Length-Frequency Capture Rate of Arctic Char Caught Below Pistol Bay Falls 21 August to 28 August 2023.

Captured char had an average size of 581 ± 202 mm (2,148 ± 1,835 g) ranging from 241 mm (125 g) to 885 mm (4,950 g) with a mean condition factor of 1.11 ± 0.21. The majority of Arctic Char captured (31%) were in the 700-749 mm range followed by 15% in the 550-599 mm range (Figure 8). The length and weight relationship of the captured Arctic Char, which is representative of the relative growth condition of the fish, was as follows (Figure 9):

$$W = 1 * 2^{-6} * FL^{3.25}$$

Where W is the weight in grams and FL is the fork-length in millimetres.

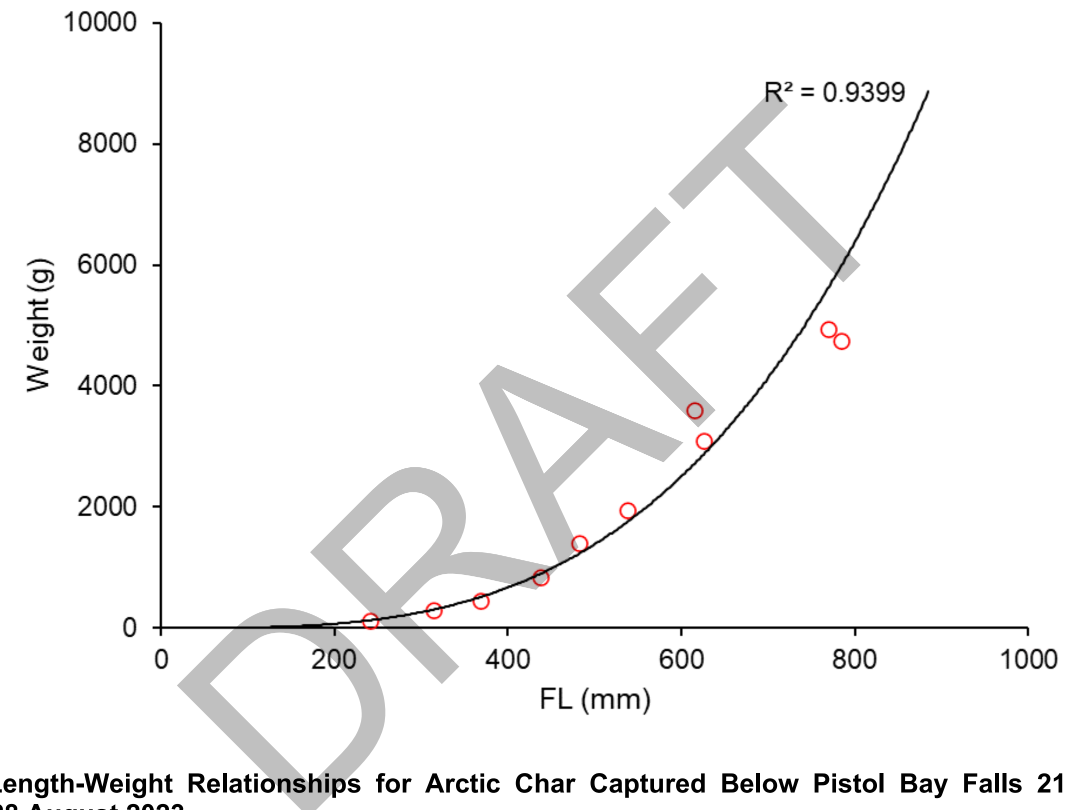


Figure 9: Length-Weight Relationships for Arctic Char Captured Below Pistol Bay Falls 21 August to 28 August 2023.

3.3 Fish Movement

3.3.1 Migration Timing and Success

The run size at Pistol Bay Falls was estimated to be 215 Arctic Char based on usable upstream habitat and population sizes in the nearby Meliadine watershed (WSP 2023a). The timing of the upstream migration for spawning was assumed for this region given the limited information on the Pistol Bay Arctic Char population. In total, 15 char were captured below Pistol Bay Falls during the 2023 field program. It is possible that the main surge in Arctic Char staging below the falls occurred prior to the start of the program, however, given the low water levels and significant barriers above the falls, it can be inferred that the passability of the falls, and subsequent migration upstream, would have been particularly challenging in 2023.

Of the 15 Arctic Char that were captured below Pistol Bay Falls, no fish successfully migrated above the falls. Fish were observed, however, attempting to ascend the falls at high tide on 20 August but were only successful at jumping to the first step (Photo 12). Additionally, on 29 August, an adult female Arctic Char was observed in a pool upstream of the falls directly below a secondary cobble bed barrier that restricted its migration into the headwater lakes (Photo 13). This female was not tagged so was not recorded passing RFID Antenna Array 1. When a crew returned on 20 September 2023 to remove the RFID antenna arrays, the female was no longer observed in the pool. However, two Arctic Char were observed above the cobble bed barrier just below RFID Array 2.

Photo 12: Adult Arctic Char Attempting to Ascend Pistol Bay Falls on 20 August 2023.

Photo 13: Adult Female Arctic Char Observed on 29 August 2023 Upstream of Pistol Bay Falls.

3.4 Habitat Assessment

Habitat mapping conducted along the entire length of the creek from Pistol Bay Falls (Creek Section 01, 0 m) to the outflow of the first headwater lake (Creek Section 05, 560 m) indicated challenging upstream migration conditions for Arctic Char (Figure 4). General habitat descriptions including habitat type, substrate composition, and instream cover within each creek section are described in Table 3.

The maximum depth in the study reach was 0.7 m, recorded in pool habitat that formed along the creek. In the shallower riffles, depths were 0.2 m or less. Limited cover for large-bodied fish was present due to a lack of woody debris and emergent vegetation. Low water levels created many braided channels and exposed several boulder gardens (Photo 14 to Photo 20). A main channel was discernible along the west side of the creek where the primary flow path (thalweg) created a generally passable route for fish from Pistol Bay Falls to the secondary upstream barrier located approximately 440 fluvial metres upstream (Photo 21). This barrier was characterized by a 2.5 m wide by 3.5 m long dry cobble bed with interstitial (subsurface) flow and likely posed a significant barrier to further upstream movement to fish. The adult female Arctic Char that was observed above the falls was holding in the pool just downstream of the barrier. Above the dry cobble bed barrier, a series of shallow cascading step pools were present through a narrow channel to the outflow of the first headwater lake. Several large boulders were present within this sections that may act as partial barriers for upstream migration under current water levels. The secondary channel on the east side of the creek was blocked by a significant boulder garden where the creek divided approximately 275 m upstream of the falls.

Table 3: Results of Habitat Surveys Including Fluvial Start and End Distance from Pistol Bay Falls of Each Creek Section, General Habitat Descriptions, Fish Barrier Presence, and Reference Photos.

Creek Section	Distance from PBF (m)	General Habitat Description	Fish Barrier	Photo No.
01	0-144	Shallow Wide Flat and Boulder Garden with Primarily Cobble, Boulder, and Bedrock Substrate and ~15% Instream Cover for Arctic Char	No	14, 15
02	144-257	Shallow Flat with Boulders and Narrowing Main Channel (Thalweg) Where RFID Antenna 1 was Installed. Primarily Cobble, Boulder, and Bedrock Substrate with ~5% Instream Cover for Arctic Char	No	16, 17
03	257-389	Narrowing Flat with Small Riffles Along Primary Channel with Multiple Small Sheltered Pools Along Right Downstream Bank. Primarily Cobble, Boulder, and Bedrock Substrate with ~25% Instream Cover Along Bank for Arctic Char	No	18, 19
04	389-456	Beginning of Section had Deeper Bedrock and Gravel Pool with ~30% Instream Cover from Steep Banks and Some Submergent Vegetation, Likely Important Resting Point. Immediately Upstream of the Pool is a Significant Cobble Bed Barrier with Interstitial Flow	Yes	20, 21
05	456-560	Shallow Cascading Step Pools Through Narrow Channel Starting Just Below Where RFID Antenna 2 was Installed, Some Sections with Large Boulders That Potentially Act as Barriers During Low Flows. Primarily Cobble and Bedrock Substrate with ~10% Instream Cover for Arctic Char	Potential	22, 23

Cobble = 64-256 mm; Boulder = <256 mm; Bedrock = solid rock.

Photo 14: Main Channel in Creek Section 01 Facing Downstream Towards Pistol Bay Falls on 19 August 2023

Photo 15: Shallow Boulder Garden in Creek Section 01 Facing Upstream from Pistol Bay Falls on 19 August 2023

Photo 16: Shallow Flat Boulder Garden in Creek Section 02 Facing Upstream on 23 August 2023

Photo 17: Narrowing Main Channel in Creek Section 02 at RFID Antenna 1 Facing Downstream on 27 August 2023

Photo 18: Narrowing Flat in Creek Section 03 Along Main Channel on 23 August 2023

Photo 19: Sheltered Pool in Creek Section 03 with Steep Bedrock Shore on Right Downstream Bank on 23 August 2023

Photo 20: Large Resting Pool with Shelter in Creek Section 04 on 20 August 2023

Photo 21: Cobble Bed Barrier with Interstitial Flow in Creek Section 04 on 20 August 2023

Photo 22: Series of Shallow Cascading Step Pools in Creek Section 05 Through Narrow Channel with Potential Barriers on 23 August 2023

Photo 23: Outflow of First Headwater Lake in Creek Section 05 Facing Upstream on 23 August 2023

4.0 SUMMARY

The 2023 field program was characterized by low water levels and flows in the upstream study region. Additionally, air and water temperatures in August 2023 were on average 3.3°C higher compared to historic temperatures in the region. As such, the 2023 run size may not be reflective of the historic population sizes of Arctic Char that migrate above Pistol Bay Falls to overwintering habitats. Further, the low water levels in the stream connecting the first headwater lake to the outflow at Pistol Bay exposed many shallow braided channels through bolder gardens that would make upstream migration challenging. In particular, a significant upstream barrier was observed approximately 440 m upstream of the falls along the main channel whereby a cobble bed with minimal flow would restrict any further upstream movement of fish.

In total, 11 of the 15 Arctic Char that were caught below Pistol Bay Falls were tagged with both PIT and floy tags. None of the 11 tagged fish were recorded passing the upstream RFID antenna arrays indicating they were not successful at ascending the falls nor reaching the upstream overwintering habitats. The remaining four char that were not tagged were euthanized and sampled for otoliths to complete elemental analysis to determine the age at first sea migration as well as frequency of migration from freshwater nursery and overwintering habitats. The results of the otolith microchemistry analyses are forthcoming once the results have been received from the University of Manitoba.

Repeating the movement study during years when upstream water levels and flows are more reflective of historical levels is recommended to gain a more accurate understanding of the Arctic Char run size that uses the Pistol Bay watershed as overwintering habitat. This will provide a better estimation of the current passability of Pistol Bay Falls and can be used to update the equivalency analysis model for predicting gains following modification to the falls. Additionally, installing the fyke net earlier in August and extending the study period may yield a higher catch of Arctic Char below Pistol Bay Falls and increase the number of tagged fish that can be monitored for upstream movements.

Signature Page

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https://golderassociates.sharepoint.com/sites/168667/project files/6 deliverables/06-r-fisheries data summary report/draft_pistol bay arctic char run size baseline investigation_2023 field program report_dec 04 2023.docx

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APPENDIX A

Sampling Locations

Table A-1: Gill Net Sampling Locations

Site	Date	Beginning Location (UTM, Zone 15)		End Location (UTM, Zone 15)	
		Easting	Northing	Easting	Northing
GN01	Aug 23	513675	6928043	513630	6928051
GN02	Aug 24	513634	6928042	513612	6928024
GN03	Aug 25	510984	6931296	511017	6931314
GN04	Aug 25	511028	6931323	511058	6931306
GN05	Aug 25	511885	6932017	511879	6932050
GN06	Aug 25	511887	6932696	511919	6932710
GN07	Aug 27	513819	6927786	516249	6934483
GN08	Aug 27	513671	6928048	513616	6928026
GN09	Aug 28	513640	6928047	515980	6937595

Table A-2: Angling Effort Locations

Site	Date	Sampling Location (UTM, Zone 15)	
		Easting	Northing
AN01	21-Aug	513648	6928049
AN02	22-Aug	513084	6928441
AN03	22-Aug	513084	6928441
AN04	23-Aug	513775	6927818
AN05	23-Aug	513775	6927818
AN06	24-Aug	513064	6928439
AN07	24-Aug	513064	6928439
AN08	24-Aug	513064	6928439
AN09	25-Aug	510921	6931394
AN10	25-Aug	511908	6931989
AN11	25-Aug	513227	6930401
AN12	25-Aug	515483	6930899
AN13	25-Aug	511794	6930912
AN14	26-Aug	510607	6932673
AN15	26-Aug	510465	6932802
AN16	26-Aug	510827	6932459
AN17	26-Aug	510827	6932459
AN18	26-Aug	510485	6931722
AN19	26-Aug	510700	6931321
AN20	26-Aug	513635	6928049
AN21	26-Aug	513689	6927956
AN22	27-Aug	513639	6928049
AN23	28-Aug	511365	6931619
AN24	28-Aug	513876	6927445
AN25	28-Aug	508096	6934925

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APPENDIX H • MELIADINE MINE FISH HABITAT OFFSETTING MONITORING PLAN

AGNICO EAGLE
MELIADINE

Meliadine Mine – Fish Habitat Offsetting Monitoring Plan – Pistol Bay Falls

Executive Summary

This Fish Habitat Offset Monitoring Plan (FHOMP) describes the proposed monitoring methods and criteria for success of the fish habitat offsetting construction at Pistol Bay Falls to improve fish passage and increase fish access to rearing, spawning and overwintering habitat. For the proposed offsetting work, improvements specifically to habitat used by anadromous population of Arctic Char (*Salvelinus alpinus*) are targeted. The offsetting work completed at Pistol Bay Falls is described in the Meliadine Mine Offsetting Plan (Agnico Eagle 2024).

Overall, the monitoring project timeline includes 3 years of pre-construction monitoring to establish a baseline of Arctic Char passage at Pistol Bay Falls, 1 year of passage enhancement construction activities and the possibility of construction-year monitoring to address potential baseline data deficiencies, and a minimum of 3 years of post-construction monitoring (year 1, 2, and 5).

1 Project Overview

1.1 Arctic Char Life History

- Several life-histories exist for Arctic Char. In the Pistol Bay Falls watershed both lake-resident (small form) and anadromous (large form) life histories are present.
- After hatching, anadromous Arctic Char tend to remain in the freshwater in which they hatched for several years (DFO 2010; Johnson 1980).
- Smoltification occurs after roughly 3-8 years, although this varies slightly by population and distribution (DFO 2010; Johnson 1980, 1989; Swanson et al. 2010). At this point, the anadromous char smolts begin their first migration in spring from freshwater to productive marine environments to feed during the summer (DFO 2010; Klemetsen et al. 2003).
- The spring char out-migration to marine environments typically occurs close to ice-break with repeat migrants and larger individuals descending first, and smolts descending slightly after (Klemetsen 2003; DFO 2005; Rescan 2011).
- In the fall, both mature and juvenile (immature) anadromous Arctic Char migrate back to freshwater habitat to spawn and/or overwinter (Klemetsen et al. 2003). Previous literature suggests that spawning fish may show site fidelity (returning to their respective hatching location to spawn), while non-spawning fish may use alternate freshwater systems for overwintering.
- Arctic Char in Nunavut are known to spawn every two years, with some occasionally spawning once every three or four years (Klemetsen et al. 2003; Zhu et al. 2011).
- Migration from freshwater to marine environments before returning in the fall is typically repeated annually for the extent of the char's life.

1.2 Baseline

In 2023 (year -3 of the timeline) an initial monitoring program will be carried out at Pistol Bay Falls to assess the Arctic Char run sizes, timing of the spawning migration, and quantify the 'passability' of a natural barrier at the falls. The collected data will be used to confirm both modelling inputs for the Fish Habitat Offsetting Plan (Agnico Eagle 2023) and to develop a baseline characterization of the Arctic Char migration at Pistol Bay falls. Adults captured below the falls will be tagged with a 'PIT' tag (passive integrated transponder tag), allowing for fish movements to be tracked through radio frequency identification system (RFID) antennae arrays. In addition, otolith microchemistry analysis will be completed to provide information on the age at recruitment and frequency of spawning events. Within the scope of this monitoring plan, recruits are considered to be smolt-aged fish. This process will be repeated in 2024 (year -2) and 2025 (year -1), with modifications. if needed.

The baselines developed from this data collection will inform progress towards achieving offsetting objectives post-construction. Should there be concerns regarding the accuracy of the calculated baselines, additional monitoring effort may be exerted in year 0 (construction).

A complementary hydrology study will be completed in 2023 and 2024to assess the most suitable location and method to implement fish passage improvement measures and will inform the engineering design.

1.3 Pistol Bay Falls Construction

Construction of fish passage infrastructure will increase fish passage at Pistol Bay Falls, beginning in 2026 (year 0). The design is expected to minimize the need for man-made structures and will use materials sourced from the site. Construction is projected to take place mid-summer to avoid the spring and fall char migration patterns, avoid impacts to migrating caribou, and allow delivery of equipment by barge. The design and construction of the proposed offsetting measures will be adjusted based on community, KivIA, and DFO feedback, and will be informed by the preliminary fish passage monitoring and hydrology characterization of the site completed in the summer of 2023 and 2024.

1.4 Project Objectives

The objective of the Pistol Bay Falls offsetting work is to improve fish passage, increasing access to spawning, rearing and overwintering habitat upstream of the falls. Currently, passage rates of spawning fish at Pistol Bay Falls are hypothesized to be 30% and restricted to periods of high flows and only the fittest individuals. Increased fish passage will be observable in the years immediately after construction and barrier alteration (year 0+) as more fish can access the upstream freshwater habitat.

Additionally, the offsetting measure will increase Arctic Char biomass via greater numbers of mature, spawning age fish accessing upstream spawning areas and rearing habitat resulting in increased recruitment of char to the Pistol Bay Falls system. Arctic Char often alternate spawning years, and with 50% reaching maturity in Nunavut at approximately 10 years, determining increases in offset-related Arctic Char biomass are unlikely to be notable in the immediate aftermath of the passage alterations (Zhu et. al. 2021). Therefore, the monitoring of increased Arctic Char productivity is likely to begin showing successful results on a slightly longer time scale (5 years +).

Agnico Eagle has developed its offsetting Key Performance Indicators (KPI) using the SMART strategy of goal setting: Specific, Measurable, Achievable, Realistic, and Timely.

1.4.1 KPI Summary:

1. Higher rate of fish passage (end target of 70% fish passage compared to estimated 30% baseline by year +2 for an assumed carrying capacity of 215 spawning fish).
    a. Annual numbers of Arctic Char successfully migrating upstream of the Pistol Bay Falls barrier during the fall migration will be tracked over time.
    b. Positive increases in Arctic Char biomass should be further supported in monitoring years 5+ using the upstream freshwater habitat as a proxy measurement (as a product of the increased fish passage)
        i. Fish year class (i.e., smolts) will be determined and compared to existing data sets/models of Arctic Char length and weight at age.
        ii. Monitoring year 5 will be adjusted based on results of otolith microchemistry and suggested age of smoltification.
    c. Frequency of tagged fish returning to the Pistol Bay Falls watershed will help to indicate numbers of char showing overwintering and spawning site fidelity, or if additional biomass is migrating in from other locations opportunistically using the Pistol Bay Falls watershed.

2 Monitoring Years -3, -2, -1, 0*, 1, 2, 5, 10*

2.1 Monitoring Frequency/Timing

In offsetting year -3, -2, -1 (baseline assessment), and year 1, 2, 5 and 10* (post-construction; year 10 only required if threshold criteria are not achieved by year 5) Agnico Eagle will perform data collection and monitoring as described in section 2.2, 2.3, 2.4 and 2.5 during the spring and/or fall Arctic Char migration. Additional data collection and monitoring may be completed in year 0 (construction year), as needed. Inspections of the passage structure will be conducted in each monitoring year until year 5 (this includes year 10 if threshold criteria are not met by year 5, per section 2.6).

Modifications to the monitoring plan and the monitored criteria would be considered following discussions with DFO.

2.2 General Study Design

- Bi-directional trap nets to sample migrating fish (all species); trap nets will be used to monitor both the downstream outmigration of smolts and the upstream migration of spawning fish; alternative technologies may be explored including automated fish counters
- Deployment of an RFID antennae array to monitor movements of tagged fish below and above the falls
- Mark-recapture study to determine anadromous Arctic Char population size and passage rate change over time

- Post-freshet measurements of the fishway, compared to the as-built initial drawing to confirm stability and integrity

2.3 Field Data

- Total number of Arctic Char captured in the upstream trap (fish moving upstream) and downstream trap (fish moving downstream)
- Number of tagged, and proportion of tagged Arctic Char accessing the upstream freshwater habitat
- Hydrological characterization of the lower reach of Pistol Bay system during peak migration period (e.g., water depths, velocities, discharge)
- Daily fish catch totals and measures of relative abundance (e.g., CPUE)
- Species and age/size of fish and behavior of fish observed during a visual survey of the lower reach of Pistol Bay sysyem
- Duration of visual survey, number of observers and recorders
- Geo-referenced locations and photographs of survey locations

2.4 Supporting Data

- Fish length and weight measurements of fish captured
- Otolith microchemistry (in year -2, additional years as required) for incidental mortalities and/or a subsample of Arctic Char captured in a Pistol Bay lake or at the trap net location
- Continuous data collection of water temperature, water levels, and river discharge during the ice-off season
- Water Survey of Canada (WSC) data from the nearest WSC station with long-term data for the region
- ECCC climate data from the nearest ECCC station with long-term data for the region
- Incidental observations during monitoring events
- Qualitative analysis of stomach contents and collection of aging structures (i.e., otoliths) from incidental mortalities and sacrificed fish
    - Fin rays will also be taken to assess the effectiveness of fin rays as an aging mechanism compared to otoliths. If they prove to be effective, fin rays may be used as a non-lethal aging mechanism in ensuant years of monitoring to further develop the growth curve.

2.5 Analyses

- Summary of water temperature and flow discharge trends during the ice-off season for the monitoring year and comparison to previous years
- Comparison of fish community structure and Arctic Char population to previously collected and published data (where relevant)
- Growth curve and year class strength determination
- Descriptive statistics (e.g., mean, median, range, variance, standard deviation) and comparisons of year over year fish data (e.g., length, weight, age, condition, stomach contents)
- Length-weight regressions for each migration type of captured Arctic Char

- Conduct analysis of variance of catch data to evaluate environmental factors influencing daily catch of each migration type, including the effects of daily discharge, daily mean temperature, Julian date, tides, etc.
- Descriptive summary of visual observations as supporting evidence for observed trends
- Modeling the probability of migration success before and after the construction of the offset, including an evaluation of the influence of covariates, such as fish size, water temperature, and discharge

2.6 Management Thresholds and Actions

	Criteria 1	Criteria 2	Criteria 3
Year 1 Action Threshold	Compared to baseline estimates for years -1 and -2, fish passage increased post-construction, AND the gains were equal to, or greater than that predicted in the offsetting plan	Compared to baseline estimates for years -1 and -2, fish passage increased post-construction; however, the increase in gains was less than that predicted in the offsetting plan	Compared to baseline estimates for years -1 and -2, fish passage did not increase post-construction
Year 1 Management Actions	Continue as planned for Year 2	Evaluate the effectiveness of the monitoring design and engage with DFO on a review of monitoring methods and equivalency calculations; modify monitoring methods or continue as planned for Year 2	Engage with engineering team and DFO to discuss and identify potential causes of results and develop a plan for remediation or improvements, pending results from Year 2
Year 2 Action Threshold(s)	Second consecutive year demonstrating that fish passage increased post-construction, AND the mean gain derived from two consecutive years of monitoring was equal to, or greater than that predicted in the offsetting plan	One of two monitoring years indicated that migration success did not increase, OR the mean gain derived from two consecutive years of monitoring was less than that predicted in the offsetting plan	Second consecutive year demonstrating that fish passage did not increase post-construction
Year 2 Management Actions	Continue with annual passage structure inspections until Year 5	Engage with DFO on the effectiveness of monitoring methods prior to the next biological monitoring year and conduct a detailed review of equivalency calculations; continue with annual passage structure inspections until year 5	Continue to engage with DFO to identify potential causes of results and implement remediation/improvement plan (e.g., contingencies), as required; implement a follow-up monitoring program at year 3 to determine whether

	Criteria 1	Criteria 2	Criteria 3
			offsetting objectives can be achieved
Year 5 Action Threshold(s)	The mean gain in fish passage derived from three years of monitoring was equal to, or greater than that predicted in the offsetting plan OR Annual gains, based on monitoring, are trending higher such that offsetting objectives will be achieved in the near future	The mean gain in fish passage derived from three consecutive years of monitoring was less than that predicted in the offsetting plan AND Annual gains, based on monitoring, are not trending higher such that offsetting objectives may not be achieved in the near future	Similar to Year 2: monitoring results continue to suggest that fish passage has not increased post-construction
Year 5 Management Actions	Offset monitoring complete	Engage with DFO to identify potential causes of results and implement remediation/improvement plan (e.g., contingencies), as required; implement a follow-up monitoring program (year 10) to determine whether offsetting objectives can be achieved. Engage with DFO on the on the effectiveness of monitoring methods prior to the next biological monitoring year and conduct a detailed review of equivalency calculations.	Implement contingency offsetting plan

3 Structural Monitoring

Inspections of the passage structure will be conducted in years 1,2, and 5 to confirm stability of the constructed features. Following construction, as-built designs will be developed. Ongoing passage structure assessments will be completed through visual surveys by appropriately trained personnel to document condition of the fish passage infrastructure and confirm as-planned functionality.

4 Annual Reporting

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

- Detailed field methods, sampling intensity, and duration
- Maps depicting the locations of each sampling location
- Geo-referenced photos
- A review of quantitative targets for establishing effectiveness / success

- Table(s) summarizing recorded fish and structural data
- Table(s) summarizing data collection of water temperature, water levels, and river discharge
- Table(s) summarizing statistical tests
- Table(s) fish capture information enumerated by location
- Figures demonstrating growth curves and descriptive statistics over time (e.g., Length at weight, growth condition, length at age)
- Estimation of (realized) offset gains
- Discussion of results for fish passage relative to previous years
- Discussion of results for fish biomass increases from recruitment (year +5 onwards)
- Discussion on the effectiveness of monitoring, and the effectiveness of the offsetting measure
- Recommendations for the following monitoring field season

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