ᓄᓇᕘᒥ ᐊᕙᑎᓕᓂᔨᒃᑯᑦ ᑲᑎᒪᔨᖏᑦᑎᒍᑦ ᑐᒃᓯᖅᑑᑦ ᕿᒥᕐᕈᔭᒃᓴᖅ #125359

Stream occupancy of young-of-year arctic grayling (Thymallus arcticus) and the associated impact from the wastewater treatment facility in Baker Lake

ᑐᒃᓯᖅᑑᑕᐅᔪᖅ ᖃᓄᐃᑦᑑᓂᖓ:	New
ᐱᓕᕆᐊᓕᔭᐅᔪᒪᔫᑉ ᖃᓄᐃᑦᑑᓂᖓ:	Scientific Research
ᐅᓪᓗᖓ ᑐᒃᓯᖅᑑᑎᓕᐊᕕᓂᐅᑉ:	6/19/2018 4:24:47 PM
Period of operation:	from 0001-01-01 to 0001-01-01
ᑲᔪᓯᒃᑲᐃᕈᐅᓂᐊᕋᓯᒥᔭᐅᔪᑦ:	from 0001-01-01 to 0001-01-01
ᐱᓕᕆᐊᖃᕈᒪᔪᖅ:	Jared Ellenor Univeristy of Waterloo ESC-222B 200 University Avenue West Waterloo Ontario N2L 3G1 Canada ᐅᖄᓚᐅᑎᑦ: 6042408269, ᓱᑲᔪᒃᑯᑦ:

ᑐᓴᐅᒪᔭᒃᓴᑦ

ᖃᓄᐃᑦᑑᑎᓂᒃ ᐱᓕᕆᐊᖃᕐᓂᐊᓕᐊᕐᒪᓐᓂᒃ

ᖃᓪᓗᓈᑎᑐᑦ: Stream occupancy of young-of-year arctic grayling (Thymallus arcticus) and the associated impact from the wastewater treatment facility in Baker Laker, NunavutCurrently, the Hamlet of Baker Lake uses a passive wastewater treatment system, where wastewater is released through a series of tundra ponds/lakes and into Baker Lake. This type of system, which is common in Northern communities, takes advantage of natural biological processes and is only capable of providing primary treatment. As a result, relatively high levels of nutrients are released into the system, which can ultimately affect fish and fish habitat. Based on significant positive feedback from the community, an upgraded wastewater treatment facility is anticipated to be constructed in Baker Lake in 2020. These upgrades should improve the quality of water released to downstream systems. A research study is being initiated to study the ecosystems that receive wastewater effluence both before and after wastewater treatment upgrades. Results will help: i) assess current impacts of wastewater on water quality, fish, and fish habitat; ii) determine improvements brought about by treatment upgrades; and, iii) aid in developing a long-term monitoring program. This project proposed here is a component of the larger wastewater treatment study that focuses on recently hatched (young-of-year) Arctic Grayling (Thymallus arcticus). We will:•Compare streams within the wastewater treatment system to reference streams in the region, looking at habitat use of young-of-year arctic grayling, as well as differences in habitat quality and quantity;•Compare fish presence/absence in the wastewater system streams both before and after facility upgrades to assess what impact facility upgrades have on fish habitat; and•Define suitable stream habitat for juvenile arctic grayling, identifying key variables that influence fish presence (e.g., cover, velocity, turbidity, distance to lake habitat, etc.).Research activities will take place in streams within the wastewater treatment system and in suitable reference streams in the region. Within the wastewater system, streams to be sampled include those within the catchment of Lagoon Lake, Finger Lake, and Airplane Lake, as well as the stream connecting Airplane Lake to Baker Lake, as identified on the project map. Reference streams in the surrounding region will be selected based on both suitability and ease of access. It is anticipated that most sites will be within proximity to the all-weather road between Baker Lake and Amaruq. Surveys for young-of-year Arctic Grayling will involve streamside visual observation. These surveys are strictly visual, and no fish are captured. Stream habitat data are collected following each fish presence survey. Variables to be collected include: stream velocity, stream depth, stream width, water temperature, substrate, percentage of in-stream and overhanging vegetation, etc. These variables may affect whether Arctic grayling young-of-year inhabit the stream and/or affect the observers' ability to detect them. No materials will be moved or removed.These activities, which are completed by a team of two, are anticipated to take approximately 15 days in the field each year, from 2018 to 2021. Transportation will vary among sites, and will include a pick-up truck, helicopter, and/or boat, as appropriate.This research will help characterize the current impact of the wastewater treatment facility on fish, and allow us to monitor changes after treatment upgrades. Results will be highly relevant to other Northern communities as they consider upgrading their passive wastewater treatment facilities.

ᐅᐃᖀᑎᑐᑦ: N/A

ᐃᓄᒃᑎᑐᑦ: ᑯᖕᓂᐅᔪᑦ ᐊᑐᖅᑕᒐᐃ ᐅᑭᐅᑭᑦᑐᑦ ᐅᑭᐅᖅᑕᖅᑐᒻᒥ ᓱᓗᒃᐸᐅᒐᐃᑦ (Thymallusarcticus) ᐊᒃᑐᐃᔪᑕᐅᓂᐊᖅᑐᓪᓗ ᐃᒥᐅᑉ ᐊᑐᖅᑕᐅᓂᖓᓂᑦ ᖃᒪᓂ'ᑐᐊᕐᒥ, ᓄᓇᕗᒻᒥ ᒫᓇᐅᔪᖅ, ᖃᒪᓂ'ᑐᐊᑉ Hᐊᒻᓚᖓᑦ ᐃᒥᕐᒥᒃ ᐊᑐᖅᐸᒃᐳᖅ ᓴᓗᒻᒪᖅᓴᖅᑕᐅᓯᒪᔪᒥᒃ ᓄᓇᒻᒥᑦ ᑯᖕᓂᑦ ᑕᓯᕐᓂᓪᓗ. ᑎᐊᓐᓇ ᐊᑐᖅᑕᕐᓂᖓᑦ ᐃᓄᐃᑦ ᓄᓇᖓᓐᓂ ᐊᑐᒐᐅᓯᕐᒪᑦ ᓄᓇᐅᑉ ᐃᓚᕐᑯᑎᖏᓐᓂᒃ ᐊᒃᑐᐃᕚᒃᐳᖅ ᓄᓇᕋᕐᓂᒃ, ᓴᓗᒻᒪᖅᓴᖅᑕᐅᔭᔭᕆᐊᖃᓪᓕᕐᓗᓐᓂ. ᑎᐊᓐᓇ ᐱᑎᓪᓗᒥᑦ ᐊᒥᓯᓂᒃ ᐃᓚᕐᑯᑎᓂᒃ ᓴᕿᑐᕐᑲᖅᐸᒃᐳᖅ ᑕᒪᑯᐊᓗ ᐊᒃᑐᐃᕚᒃᓗᑎᒃ ᐃᖃᓗᖕᓂᒃ ᓂᕿᖏᓐᓂᒃᓗ. ᓇᒻᒪᒃᑐᓂᒃ ᐅᖃᕕᐅᑕᖅᑎᓪᓗᑕ ᓄᓇᓕᖕᒥᐅᓂᑦ ᐊᕿᒥᐊᖁᔨᔪᓂᒃ ᐃᒥᕐᒥᒃ ᓴᓇᔭᐅᔪᖃᕐᓂᐊᖅᐳᖅ ᖃᒪᓂ'ᑐᐊᕐᒥ ᐊᑐᓕᖅᐸᑦ 2020. ᑕᒪᑯᐊ ᐊᕿᒥᐊᕿᑕᐅᓂᐊᖅᑐᑦ ᐃᒥᕐᒥᒃ ᐱᐅᓯᑎᑦᓯᓇᔭᖅᐳᑦ ᑯᖕᒥᑦ ᐃᒥᖅᑕᒐᐅᑦᑕᖅᑐᒥᒃ. ᖃᐅᔨᓴᕐᓂᑯᑦ ᐱᒋᐊᖅᑐᖅᑲᐅᖅᐳᖅ ᓄᓇᐅᑉ ᐊᒃᑐᐃᓂᖏᓐᓂᒃ ᐃᒥᐅᑉ ᑯᒃᑕᐅᓂᖓᓄᑦ ᓴᓗᒻᒪᖅᑕᐅᓯᒪᔪᑉ. ᐅᑯᐊ ᖃᐅᔨᓴᕐᓂᑯᑦ ᑐᑭᓯᓐᓇᕋᔭᖅᐳᑦ: i) ᖃᐅᔨᔪᕐᓇᕐᓂᖅ ᐊᒃᑐᐃᓂᖏᓐᓂᒃ

ᐃᒥᐅᑉ ᓴᓗᒻᒪᖅᓴᖅᑕᐅᓂᐊᖅᑐᑉ ᖃᓄᐃᓂᖓᓂᒃ, ᐃᖃᓗᖕᓄᑦ, ᓂᕿᖁᑎᖏᓐᓄᓪᓗ ᓄᓇᖁᑎᖏᓐᓄᑦ; ii) ᐊᕿᒥᐊᕈᑎᒃᓴᓂᒃ ᐃᓱᒪᓕᐅᕐᓗᓐᓂ ᓴᓗᒻᒪᖅᓴᖅᑕᐅᓂᖓᓄᑦ; ᐊᒻᒪ iii) ᐃᑲᔪᕈᖕᓇᕐᓗᓐᓂ ᐅᑭᐅᓐᓄᑦ ᓯᕗᓂᕐᒧᑦ ᐃᖏᕋᓂᖓᑕ ᖃᐅᔨᓴᒐᐅᓂᖓᓂᒃ. ᑕᒪᓇ ᐱᓕᕆᐊᕐᒧᑦ ᑐᒃᓯᕋᐅᑦ ᐃᓚᒋᔭᖓ ᐃᒥᕐᒥᒃ ᐊᑐᑲᓂᕐᓂᕐᒧᑦ ᐱᓕᕆᐊᖑᔪᑉ ᖃᐅᔨᓴᒐᐅᓂᖓᓂᒃ ᐱᔪᑎᖃᕈᑎᒃ ᐃᓄᓴᖅᑐᑦ ᓱᓗᒃᐸᐅᒐᐃᑦ (Thymallusarcticus). ᐅᑯᓂᖓ ᐱᓕᕆᓂᐊᖅᐳᒍᑦ:•ᐊᓯᖏᓐᓂᒃ ᑯᖕᓂᒃ ᖃᐅᔨᓴᕐᓗᓂ ᐊᑐᑲᓂᕈᖕᓇᖅᑎᑦᓯᓂᕐᒥᒃ ᐃᒥᕐᒥᒃ ᓴᓗᒻᒪᖅᓴᐃᓗᓐᓂ ᓄᓇᐅᑉ ᐃᓗᐊᓐᓂ, ᐃᓂᒥᓯᒐᐃᓐᓂᒃ ᓱᓗᒃᐸᐅᒐᐃᑦ ᖃᐅᔨᓴᕐᓗᓐᓂ, ᐊᔨᖏᖏᓂᖏᓐᓂᒃᓗ ᓂᕿᒥᓯᒐᐃᑕ ᓱᓗᒃᐸᐅᒐᐃᑦ ᖃᑉᓯᐅᓂᖏᓐᓂᒃᓗ;•ᖃᐅᔨᓴᕐᓗᒥᑦ ᓱᓗᒃᐸᐅᒐᐃᑦ ᖃᑉᓯᐅᓂᖕᒥᑦ ᓴᓗᒻᒪᖅᓴᕐᕕᖕᒥ ᓯᕗᓂᖓᓂ ᐊᒻᒪ ᓴᓗᒻᒪᖅᓴᐃᒪᓂᒃᑎᓪᓗᒥᑦ ᐊᒃᑐᐃᓂᖕᒥᑦ ᖃᐅᔨᓴᕐᓗᒥᑦ ᓂᕿᖏᓐᓂᒃ; ᐊᒻᒪ •ᑐᑭᖅᑲᓕᖅᑎᓪᓗᒍ ᑯᖕᓂᐅᑉ ᐃᖏᕋᓂᖓ ᓱᓗᒃᐸᐅᒐᓄᑦ ᓇᔪᒐᐅᓯᖅᑐᖅ, ᓱᓇᒧᑦ ᓇᔪᒐᐅᓯᕐᒪᖓᑦ ᖃᐅᔨᓴᕐᓗᓂ (ᑕᓗᖓ, ᓴᖏᓂᖓ, ᐅᖓᓯᖕᓂᖓ ᑕᓯᐅᑉ ᓄᓇᖁᑎᖏᑕ, ᐊᓯᖏᓪᓗ).ᖃᐅᔨᓴᕈᑕᐅᓂᐊᖅᑐᑦ ᑯᖕᒥ ᑭᓯᐊᓂ ᐱᓕᕆᐊᖑᓂᐊᖅᐳᑦ ᐊᑐᑲᓂᕈᖕᓇᕐᓂᐊᖅᑐᖅ ᐃᒥᖅ ᓴᓗᒻᒪᖅᓴᐅᑎᖓᓂ ᓄᓇᓕᐅᑉ ᖃᓂᒋᔭᖓᓐᓂ. ᑯᑉ ᐃᓗᐊᓐᓂ, ᐃᒥᐅᑉ ᖃᐅᔨᓴᒐᐅᓂᖓ ᐃᓚᐅᓂᐊᖅᐳᖅ ᐊᓇᖅᑕᕐᕕᐅᑉ ᐃᒥᖓ, ᕕᓐᑲ ᑕᓯᖓ, ᐃᐊᐸᓕᓐ ᑕᓯᖓ, ᐊᒻᒪ ᑯᒃᑐᖅ ᐃᐅᐳᓕᓐ ᑕᓯᖓᓂᑦ ᓄᓇᓕᖕᒧᑦ, ᓇᓗᓇᐃᖅᑕᐅᓚᐅᖅᑐᖅ ᓄᓇᖑᐊᕐᒥ. ᐊᓯᖏᑦ ᑯᑦ ᐊᑕᐅᓯᕐᒧᑦ ᑯᒃᑐᑦ ᖃᐅᔨᓴᒐᐅᓂᐊᕐᒥᔪᑦ ᐅᕐᓂᒃᑕᐅᔪᖕᓇᕐᓂᖏᑦ ᒪᓕᒃᓗᒥᑦ. ᐃᓱᒪᓇᖅᐳᖅ ᑕᒪᕐᒥᒃ ᖃᐅᔨᓴᒐᐅᓂᐊᖅᑐᖅ ᐊᑉᖁᑎᑉ ᓴᓂᐊᓂᓯᐅᕐᓂᐊᖅᐳᑦ ᐅᔭᕋᒃᑕᓇᐊᑦ ᐊᑉᖁᑎᖓᑕ ᖃᒪᓂ’ᑐᐊᑉ ᐊᒻᒪ ᐊᒪᕈᑉ ᐅᔭᕋᒃᑕᓇᐊᕐᕕᖓᓂ. ᖃᐅᔨᓴᕈᑎᑦ ᐅᑭᐊᖃᓗᐊᖕᒥᑐᓄᑦ ᓱᓗᒃᐸᐅᒐᓄᑦ ᑕᐅᑐᒃᓗᒥᑦ ᑯᖕᒥ ᓯᑐᑎᓪᓗᒥᑦ. ᑕᐅᑐᒃᓯᓇᕐᓗᒥᑦ ᖃᐅᔨᓴᖅᑕᕐᓂᐊᖅᐳᑦ, ᓱᓗᒃᐸᐅᒐᓂᒃᓗ ᐱᑕᓚᖕᒥᕈᑎᒃ. ᑯᖕᒥ ᓂᕿᒥᔭᐅᕙᒃᑐᑦ ᖃᐅᔨᓴᒐᐅᑕᕐᓗᑎᒃ ᐃᖃᓗᐃᑦ ᓱᓗᒃᐸᐅᒐᐃᑦ ᖃᐅᔨᓴᒐᐅᓕᕋᖓᑕ. ᐅᑯᐊ ᖃᐅᔨᓴᕐᓂᐅᑉ ᐃᓗᐊᓂ ᑲᑎᖅᓱᒐᐅᑕᕐᓂᐊᖅᐳᑦ: ᑯᑉ ᓴᖏᓂᖓ, ᑯᑉ ᐃᑎᓂᖓ, ᑯᑉ ᓯᓕᖕᓂᖓ, ᐱᑭᖅᑐᖃᕐᓂᖓ ᑯᑉ ᐊᕙᑕᓐᓂ, ᐊᓯᖏᓪᓗ. ᓱᓗᒃᐸᐅᒐᐃᑦ ᑯᖕᒥ ᐱᑕᖃᐃᓐᓇᔪᖕᒪᖓᑕ ᖃᐅᔨᒪᔪᑕᐅᓂᐊᖅᐳᖅᑦ. ᓱᓇᒥᐊᓂᒃ ᐊᑐᓕᖕᒥᑐᑦ ᐱᖁᑎᓂᒃ.ᑕᒪᑯᐊ ᐱᓕᕆᐊᖑᔪᑦ, ᒪᕈᖕᓄᑦ ᐱᓕᕆᐊᖑᑉᓗᑎᒃ, ᐊᑯᓂᐅᑎᒋᓇᔭᖅᑐᖅ 15 ᐅᑉᓗᑦ ᓄᓇᒥᓯᐅᕐᓗᓐᓂ, ᐱᒋᐊᕐᓗᑎᒃ 2018 ᑎᑭᓪᓗᒍ 2021. ᐃᖏᕋᔪᑎᑦ ᐊᔾᔨᖏᖏᐊᖅᑐᐳᑦ ᓄᓇᒧᑦ, ᐊᒃᓴᓗᐊᓕᖕᒥᒃ ᐊᑐᕐᓂᐊᕈᑎᒃ, Hᐊᓕᑲᑉᑕᒥᒃ, ᖃᔭᕆᐊᕐᒥᒃ ᐊᑐᕆᐊᖃᕐᓂᖅᐸᑦ.ᑕᒪᓇ ᖃᐅᔨᓴᕐᓂᖅ ᐃᑲᔪᕐᓂᐊᖅᐳᖅ ᐊᒃᑐᐃᓂᖓᓂᒃ ᐃᒥᐅᑉ ᓴᓗᒻᒪᖅᓴᐅᑎᖓᑕ ᐃᖃᓗᖕᓂᒃ, ᖃᐅᔨᓴᕈᖕᓇᖅᓯᕐᓗᒥᑦ ᐃᒥᐅᑉ ᓴᓗᒪᖅᓴᐅᑎᖓ ᐊᓯᐊᖑᖅᑕᐅᒃᐸᑦ. ᖃᐅᔨᓴᕐᓂᑯᖕᒥᑦ ᓄᓇᓕᑦ ᐊᓯᖏᓐᓂᑦ ᐊᔨᐅᓇᔭᖅᐳᑦ ᐃᓱᒪᓐᓂᖅᐸᑕ ᐃᒥᐅᑉ ᓴᓗᒻᒪᖅᓴᐅᑎᖓᓂᒃ ᐊᕿᒥᐊᕈᑎᖃᕈᒪᒃᐸᑕ.

Inuinnaqtun: N/A

Personnel

Personnel on site: 2

Days on site: 60

Total Person days: 120

Operations Phase: from 2018-07-01 to 2021-10-01

ᐱᓕᕆᐊᕆᔭᐅᓂᐊᖅᑐᑦ

ᓇᒥ	ᖃᓄᐃᑦᑑᒥᑦ ᐱᓕᕆᐊᖃᕐᓂᐊᖅᐸ	ᑭᒃᑯᑦ ᓄᓇᕐᑰᑖᓂ	ᑐᓴᐅᒪᔭᒃᓴᑦ ᓄᓇᐅᑉ ᖃᓄᖅ ᐊᑐᓚᐅᓚᐅᖅᓯᒪᔭᕆᐊᖓᓂᒃ	ᐃᑦᓴᕐᓂᑕᖃᕐᕕᐅᓛᓚᐅᖅᐸ ᐃᓄᒃᑯᑦ ᓇᔪᖅᑕᐅᖃᑦᑕᕐᓂᑰᓛᒍ ᑕᐃᑦᓯᒪᓂᑐᖃᐅᓕᖅᑐᖅ	ᖃᓂᓐᓂᖅᐹᖅ ᓄᓇᓕᒥᔭᐅᔪᖅ ᐊᒻᒪᓗ ᓴᐳᒻᒥᒃᓲᕕᐅᓛᓗ ᓯᓇᓄᑦ
Region encompassing wastewater system and potential reference systems	Researching	Municipal	N/A	N/A	Wastewater treatment system is in the community of Baker Lake. Research conducted on land ranging in status, and includes municipal, Inuit owned surface and sub-surface, and crown land.

ᓄᓇᓕᐅᑉ ᐃᓚᐅᖃᑕᐅᓂᖓ ᓄᓇᓖᑦᑐ ᐊᕕᒃᑐᖅᓯᒪᐅᕐᓂᖓᓄᑦ ᐃᑲᔪᑕᐅᔪᓐᓇᖅᑐᑦ

ᓄᓇᓕᒥᔭᖅ	ᐊᑏᑦ	ᑳᑦᔾᔭᐊᖃᑎᒌᒥᔭᖅ	ᖃᖓᓗ ᑐᓴᖅᑎᑕᐅᓚᐅᕆᐊᖕᒥᓂᒃ
Information is not available			

ᓚᐃᓴᓐᓯᑦ ᐱᒍᖕᓇᐅᑏ ᐊᖏᖅᑕᐅᓯᒪᔪᑦ

ᓇᒦᕕᐊᖏᓐᓂᒃ ᐱᓕᕆᐊᕆᔾᕕᐅᓂᐊᖅᑐᑦ ᑎᑎᕋᕐᓗᕆᑦ:

Kivalliq

ᓚᐃᓴᓐᓯᑦ ᐱᒍᖕᓇᐅᑏ ᐊᖏᖅᑕᐅᓯᒪᔪᑦ

ᒐᕙᒪᕆᔭᐅᔫᑉ ᐊᕕᒃᑐᖅᓯᒪᐅᕐᓂᖓᓐᓂ ᒪᓕᒐᕐᓅᖓᔪᓂᒃ ᐱᖁᔭᕐᓅᖓᔪᓂᒡᓗ ᑲᒪᔩᑦ ᐱᔪᖕᓇᐅᑎᑖᕈᑎᓂᒃ ᓚᐃᓴᓐᓯᓄᑦᓗ ᑲᔪᓯᒃᑲᐃᔩᑦ	ᖃᓄᐃᑦᑐᓪᓚᕆᐅᑉ ᓚᐃᓴᓐᓯᑖᕈᑕᐅᔪᖅ ᐱᔪᖕᓇᐅᑎᑖᕈᑕᐅᔪᖅ ᐊᖏᖅᑕᐅᔪᕐᓘᓐᓃᑦ	ᒫᓐᓇ ᖃᓄᐃᓕᖓᕙ	ᐅᓪᓗᒥ ᑐᓂᔭᖅ/ ᑐᒃᓯᖅᑑᑕᐅᓚᐅᖅᓯᒪᔪᖅ	ᑭᒡᓕᖃᕐᕕᖓ
ᑭᕙᓪᓕᖅ ᐃᓄᐃᑦ ᑲᑐᔾᔨᖃᑎᒌᒃᑯᖏᑦ	Applied for exemption	Applied, Decision Pending	2018-07-04	

Project transportation types

Transportation Type	ᓱᓇᒎᑦ ᐊᑐᒐᐅᓂᐊᖅᐸ	Length of Use
Air	Helicopter use will be dependent on site access, and is anticipated to be minimal	
Water	Travel by boat may be required , but is anticipated to be infrequent	
Land	Travel by truck will occur along the Agnico Eagle all weather access road from Baker Lake to Amaruq Camp. Travel by foot is also anticipated.	

Project accomodation types

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ᐊᓯᖕᒐ,

ᐊᑐᒐᐅᓂᐊᖅᑐᖅ

ᐱᕐᑯᑦ ᐊᒃᑭᐊᖅ ᐊᑐᖅᑕᐅᓂᐅᓴᐊᖅ ᐃᓚᖃᓯᐅᑎᓗᒋᑦ ᐃᑰᑕᐃᑦ, ᒥᓪᓗᐊᕈᑏᑦ, ᖄᕆᑕᓲᖅ, ᓄᓇᓯᐅᑦ ᐊᓯᕆᒥᓪᓗ

ᐊᒃᑭᐊᖅ ᐱᕐᑯᑦ ᐊᑐᒐᐅᓂᐊᖅᑐᖅ ᖃᓄᐃᑦᑑᓂᖓ	ᖃᑦᓯᐅᑉᐸᑦ	ᐊᒃᒥᓂᒃᒋᑦ - ᐳᖅᑐᓂᒃᒋᑦ	ᓱᓇᒧᑦ ᐊᑐᒐᐅᓂᐊᖅᐸ
Pick-up Truck	1	6m x 2m x 3m	Travel to site
Boat	1	6m x 2m x 3m	Travel to site
Helicopter	1	11m x 4m x 2m	Travel to site
Flow meter	1	1.5m x 0.25m x 0.25m	Measure stream discharge
Stopwatch	1	0.2m x 0.2m x 0.1m	Measure sampling effort
GPS	1	0.25m x 0.1m x 0.1m	Locate/mark sites
Range Finder	1	0.2m x 0.2m x 0.05m	Measure distances
Tape Measure	1	0.25m x 0.25m x 0.05m	Measure stream properties
Camera	1	0.2m x 0.2m x 0.05m	Record site conditions
In-situ water quality meter	1	0.4m x 0.4m x 0.2m	Record in situ water quality parameters

ᑎᑎᕋᐅᓯᖕᓄᒍ ᐅᖅᓱᒃᓴᐃᑦ ᐊᑦᑕᓇᖅᑐᖅᑖᓪᓗ ᐊᑐᖅᑕᐅᓂᐊᕐᓂᒃᒋᑦ

ᓱᓇᒧᑦ ᐅᖅᓱᒃᓴᒡᒥᐊᖅ ᐊᑐᒐᐅᓂᐊᖅᐸ	ᖃᓄᐃᑦᑐᓪᓚᖏᐅᕙ ᐅᖅᓱᒃᓴᒡᒥᐊᖅ	ᖃᑦᓯᐅᑉᐸᑦ ᐅᖅᓱᒃᓴᖃᐅᑏᑦ	ᐆᒃᓴᐅᒃ ᐃᒪᖃᖅᑎᒋᐊᓐᓇᕐᓂᖓ	ᑲᑎᓪᓗᒍ	ᐆᒃᓴᐃᑦ ᐊᒥᓲᓂᒃᒋᑦ	ᓱᓇᒧᑦ ᐊᑐᒐᐅᓂᐊᖅᐸ
Aviation fuel	fuel	1	42	42	Gallons	Transport to and from sites
Gasoline	fuel	10	120	1200	Liters	Transport to and from site

ᐃᒪᖅ ᐊᑐᖅᑕᐅᐊᒫᖅᑐᖅ

ᐅᓪᓗ ᑕᒫᖅ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᖅ	ᖃᓄᖅ ᐃᒥᖅᑕᖃᑦᑕᕐᓂᐊᖅᐸᑦ	ᓇᑭᑦ ᐃᒥᖅᑕᖃᑦᑕᕐᓂᐊᖅᐸᑦ
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ᐊᑲᑕᔪᑦ

ᐊᑲᑕᔪᓕᓂᐊᕐᓂᖅ

ᐱᓕᓇᐊᓇᔨᐅᔪᒪᔪᒍᑦ ᐱᓕᓇᐊᓇᔨᐅᓂᐊᖅᑐᖅ	ᖃᓄᐃᐅᑦᑐᖅ ᐊᑲᑕᔪᖅ	ᖃᓄᐃᑎᑭ ᐊᑲᑕᔪᑦ ᓴᖅᑭᐊᓂᐊᖅᑐᓇᔨᐅᕐᑦ	ᖃᓄᐃᓂᖅ ᐊᑲᑕᖅᑕᐅᓂᐊᖅᐸ	ᓴᓗᒪᖅᓴᐅᑎᑲᓴᑲᖏᓂᐅᓂᐊᖅᑐᑦ
Researching	ᐊᑲᑕᔪᑦ ᐃᔪᐊᓪᑕᑕᐅᔪᓐᓇᖃᕐᑐᑦ	Minimal	Daily waste (e.g. food and equipment packaging) will be packed out each day and disposed of at Agnico Eagle sites.	N/A

ᐊᓵᑎᒥᐅᑕᓂᑦᑐᑦ ᐊᑲᑐᖅᑕᑕᐅᓱᒪᔪᑦ

No materials are to be moved or removed during this project, so impacts are anticipated to be minimal.

Additional Information

SECTION A1: Project Info

SECTION A2: Allweather Road

SECTION A3: Winter Road

SECTION B1: Project Info

SECTION B2: Exploration Activity

SECTION B3: Geosciences

SECTION B4: Drilling

SECTION B5: Stripping

SECTION B6: Underground Activity

SECTION B7: Waste Rock

SECTION B8: Stockpiles

SECTION B9: Mine Development

SECTION B10: Geology

SECTION B11: Mine

SECTION B12: Mill

SECTION C1: Pits

SECTION D1: Facility

SECTION D2: Facility Construction

SECTION D3: Facility Operation

SECTION D4: Vessel Use

SECTION E1: Offshore Survey

SECTION E2: Nearshore Survey

SECTION E3: Vessel Use

SECTION F1: Site Cleanup

SECTION G1: Well Authorization

SECTION G2: Onland Exploration

SECTION G3: Offshore Exploration

SECTION G4: Rig

SECTION H1: Vessel Use

SECTION H2: Disposal At Sea

SECTION I1: Municipal Development

ᐃᓐᓇ ᐊᕐᑎᐅᕆ ᖃᓄᐃᑦᑐᑦᓯᐅᓂᖓ: ᓄᓇᕆ ᖃᓄᐃᑦᑐᓂᖓ

Please refer to attached supporting document.

ᐃᓐᓇ ᐊᕐᑎᐅᕆ ᖃᓄᐃᑦᑐᑦᓯᐅᓂᖓ: ᐅᒪᔨᖅᑕᖃᖅᖓ

Please refer to attached supporting document.

ᐃᓐᓇ ᐊᕐᑎᐅᕆ ᖃᓄᐃᑦᑐᑦᓯᐅᓂᖓ: ᐃᓄᓕᓴᓂᕐᒧᖏᓐᓄᑦ-ᐱᕐᓕᐊᔨᓴᓂᕐᒧᖏᓐᓄᑦ

Please refer to attached supporting document.

Miscellaneous Project Information

N/A

ᓴᓗᓴᐃᖅᑕᐅᓂᕐᒥᑦ ᐊᒃᑐᖅᑕᐅᔪᒪᔨᑦ ᖃᓄᐃᑦᑐᓂᕐᒥᑦ ᕿᓯᐅᒋᐊᕐᔨᖅᑕᐅᓂᐊᖅᓂᕐᒥᓪᓗ

No impacts are anticipated

Cumulative Effects

N/A

Impacts

ᓄᓗᓄᐃᖅᑕᐅᓂᖅᑎᑦ ᐊᕐᑎᑎᒥᐅᑕᓂᑐᑦ ᐊᑲᑐᖅᑕᐅᓯᒪᔪᑦ

	PHYSICAL	Designated environmental areas	Ground stability	Permafrost	Hydrology / Limnology	Water quality	Climate conditions	Eskers and other unique or fragile landscapes	Surface and bedrock geology	Sediment and soil quality	Tidal processes and bathymetry	Air quality	Noise levels	BIOLOGICAL	Vegetation	Wildlife, including habitat and migration patterns	Birds, including habitat and migration patterns	Aquatic species, incl. habitat and migration/spawning	Wildlife protected areas	SOCIO-ECONOMIC	Archaeological and cultural historic sites	Employment	Community wellness	Community infrastructure	Human health
ʕᓄᓂᖅ																									
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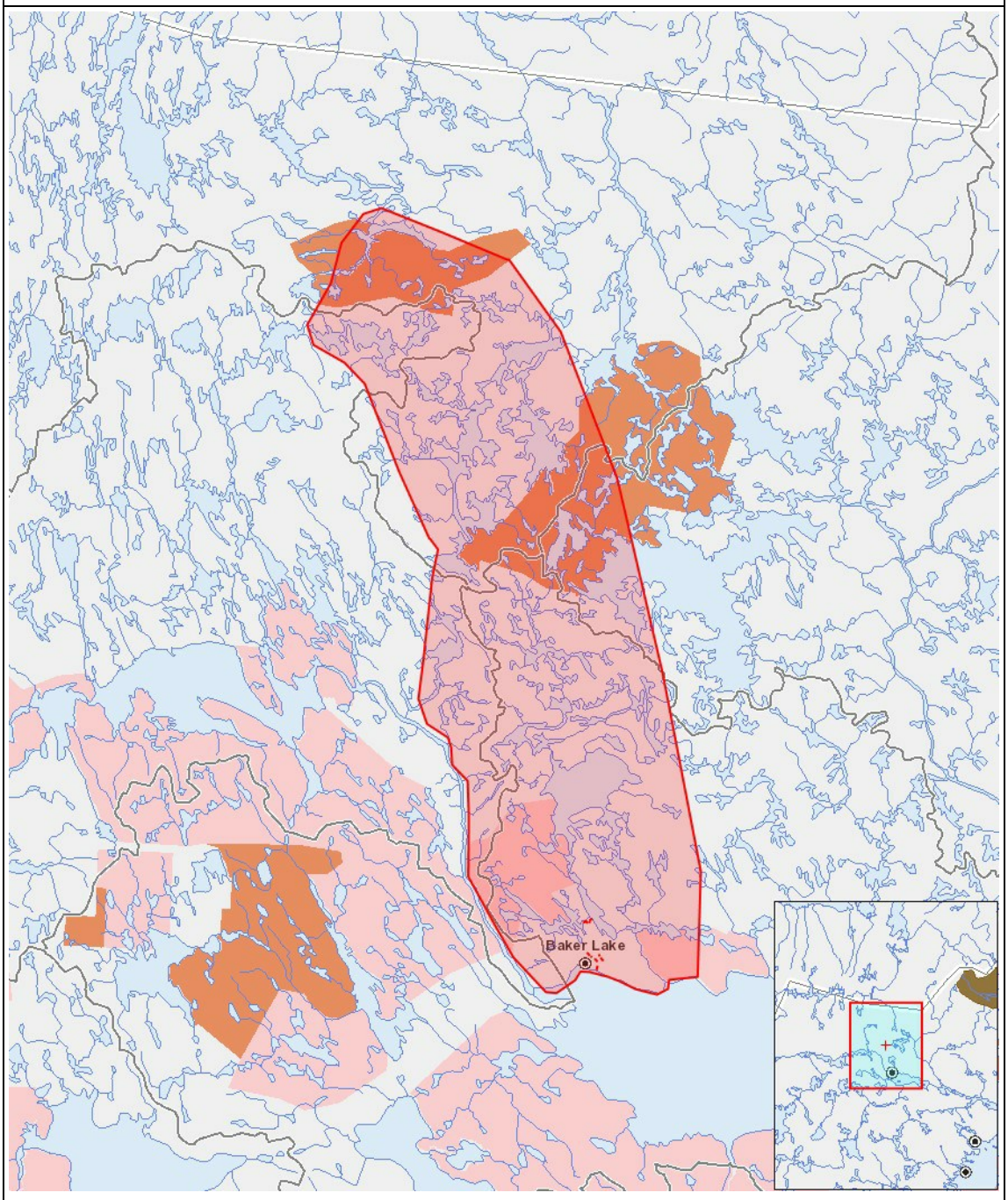
ᐅᔨʕᑲᑦᑕʕᖅ																									
Researching		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	P	-		-	-	-	-	-
ᐃᑐᑦᑎᓇᓂᖅ																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

(P = ᐊᑲᐅᓭᕈᑎᔨᓐᓇᖅᑐᑦ, N = ᐊᑲᐅᖅᑭᔨᔪᑕᐅᔨᓐᓇᖅᑐᑦ ᕿᓚᐅᒥᔨᔪᓂᖅᑐᑦᑕᐅᔨᓐᓇᖅᑭᑎᑐᓴ, M = ᐊᑲᐅᖅᑭᔨᔪᑕᐅᔨᓐᓇᖅᑐᑦ ᕿᓚᐅᒥᔨᔪᓂᖅᑐᑦᑕᐅᔨᓐᓇᖅᑐᓴ, U = ᖃᐅᐅᕆᒪᓐᓇᖅᑭᑎᑐᖅ)

PROJECT MAP



LIST OF PROJECT GEOMETRIES:

1 polygon Region encompassing wastewater system and potential reference systems

2 polyline Wastewater system streams

3 polyline R02 reference stream