NIRB Uuktuutinga Ihivriuqhikhamut #125746

Landfarm, Solid Waste Non-Hazardous Facility, Water and Sewage Treatment Infrastructure Upgrades, Temporary Camp and Amendment of Water Licence, for the Eureka High Arctic Weather Station

Uuktuutinga Qanurittuq:	New
Havaap Qanurittunia:	Scientific Research
Uuktuutinga Ublua:	12/14/2022 4:11:59 PM
Period of operation:	from 0001-01-01 to 0001-01-01
Piumayaat Angirutinga:	from 0001-01-01 to 0001-01-01
Havauhikhaq Ikayuqtinga:	Leslie Coe AECOM Canada Ltd. Fourth Floor, 3292 Production Way Burnaby BC V5A 4R4 Canada Hivayautit Nampanga:: 6043478242, Kayumiktukkut Nampanga::

QANURITTUT

Tukihiannaqtunik havaariyauyumayumik uqauhiuyun

Qablunaatitut: The Nunavut Planning Commission and Nunavut Impact and Review Board approved the construction of the raw water storage basin (reservoir) and the activity to fill it under NPC Amendment 149617 and NIRB file No. 21XN012. This activity was also approved by Nunavut Water Board Type B Water Licence No. 8BC-EUR2131. Originally, filling of the reservoir was estimated to require 299m3/day, however it has now been determined that 2000 m3/day will be required over 10 days from Station Creek at peak freshet flow. Station Creek is an ephemeral watercourse (flowing June to September) and is not considered fish bearing. For context, Station Creek flow rate during freshet ranges between 0.9 m3/s to 5.1 m3/s. The estimated volume passing the HAWS over a period of 30 days would therefore range between 2.4 million to 13.3 million m3. Therefore, the proposed pump rate of 2000m3/day represents only 0.45% to 2.57% of the 30-day creek volume. Filling of the reservoir will be a one-time event in 2024 during freshet and highwater and will not be needed in future years. The purpose of this amendment is to identify the water use increase to fill the reservoir which will require Nunavut Water Board Type A Licence processing.

Uiviititut: La Commission d’aménagement du Nunavut (CAN) et la Commission du Nunavut chargée de l’examen des répercussions (CNER) ont approuvé la construction du bassin d’accumulation d’eau brute (réservoir) et l’activité visant à le remplir en vertu de la modification no 149617 de la CAN et du dossier no 21XN012 de la CNER. Cette activité a également été approuvée par le permis d’utilisation des eaux de type B no 8BC-EUR2131 de l’Office des eaux du Nunavut. Initialement, il était estimé qu’il faudrait 299 m3/j pour remplir le réservoir, mais il est à présent déterminé qu’il faudra tirer 2 000 m3/j du ruisseau Station pendant 10 jours, au moment du débit de pointe de la crue nivale. Le ruisseau Station est un cours d’eau saisonnier (s’écoulant de juin à septembre) qui n’est pas considéré comme abritant du poisson. Pour mettre les choses en contexte, son débit en période de crue nivale varie de 0,9 m3/s à 5,1 m3/s. En 30 jours, la SMEA serait ainsi traversée par un volume estimatif de 2,4 Mm3 à 13,3 Mm3. Par conséquent, le taux de pompage proposé de 2 000 m3/j ne représente que 0,45 % à 2,57 % du volume du ruisseau en 30 jours. Le remplissage du réservoir ne se fera qu’une fois en 2024, pendant la période de crue nivale et de hautes eaux, et ne sera pas nécessaire ultérieurement. L’objet de la présente modification est d’indiquer l’augmentation de l’utilisation d’eau requise pour remplir le réservoir qui nécessitera un processus de permis de type A de l’Office des eaux du Nunavut.

Inuktitut: ᓄᓇᕗᒻᒥ ᐸᕐᓇᐃᔩᒃᑯᑦ ᐊᒻᒪᓗ ᐊᕙᑎᓕᕆᔩᒃᑯᑦ ᓈᒻᒪᒋᓚᐅᖅᑕᖓᑦ ᓴᓇᔭᐅᕙᓪᓕᐊᓂᖓ ᐃᒪᖅ ᐊᑐᖅᑕᐅᓯᒪᙱᑦᑐᒥᒃ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᒃ (ᐃᒪᖅᑲᐅᓯᕝᕕᒃ) ᐊᒻᒪᓗ ᐃᒻᒥᖅᑐᖅᑕᐅᓂᖓ ᒪᓕᒃᓗᒍ ᓄᓇᕗᒻᒥ ᐸᕐᓇᐃᔩᒃᑯᑦ ᐋᖅᑭᒋᐊᖅᓯᓂᕐᒧᑦ ᓈᓴᐅᑎ 149617 ᐊᒻᒪᓗ ᐊᕙᑎᓕᕆᔩᒃᑯᑦ ᑎᑎᖅᑲᐅᑎᖓᑦ 21XN012. ᐱᓕᕆᓂᖅ ᓈᒻᒪᒋᔭᐅᓚᐅᖅᑐᖅ ᓄᓇᕗᒻᒥ ᐃᒪᓕᕆᔩᒃᑯᑦ Type B ᐃᒪᕐᒧᑦ ᓚᐃᓴᓐᓯᒃᑯᑦ ᓈᓴᐅᑎ 8BC-EUR2131. ᐃᒻᒥᖅᑐᖅᑕᐅᓂᖓ ᓇᓚᐅᑦᑖᖅᑕᐅᖅᑲᐅᑕᐅᓚᐅᖅᑐᖅ 299m3/ᖃᐅᑕᒦᖕᒍᓂᐊᕐᓂᖓᓄᑦ, ᑭᓯᐊᓂ ᖃᐅᔨᔭᐅᓯᒪᓕᖅᑐᖅ 2000 m3/ᖃᐅᑕᒦᖕᒍᓂᐊᕐᓂᖓᓄᑦ ᐊᒻᒪᓗ ᖁᓕᑦ ᐅᓪᓗᐃᑦ ᐅᖓᑖᓄᑦ ᓯᑏᓴᓐ ᑰᒐᓛᕐᒥᑦ (Station Creek) ᐊᐅᒃᐸᓪᓕᐊᓕᓵᖅᑎᓪᓗᒍ. ᓯᑏᓴᓐ ᑰᒐᓛᖅ (Station Creek) ᐃᓚᖓᓂᑦ ᐅᐸᓗᕐᓂᑦ ᑯᕕᓂᖅᑲᖅᑲᑦᑕᖅᑐᖅ (ᒪᓐᓃᑦ-ᒥᑦ (ᔫᓂ) ᐊᒥᕿᐃᔭᖅᕕᖕᒧᑦ (ᓯᑎᐱᕆ)) ᐊᒻᒪᓗ ᐃᓱᒪᒋᔭᐅᕗᖅ ᐃᖃᓗᒃᑕᖅᙱᓐᓂᖓᓄᑦ. ᑕᑯᕙᖕᓇᕐᓂᐊᕐᓗᒍ, ᓯᑏᓴᓐ ᑰᒐᓛᕐᒥᑦ (Station Creek) ᑯᕕᓂᐅᑉ ᐊᖏᑎᒋᓂᖓ ᐊᐅᒃᐸᓪᓕᐊᑎᓪᓗᒍ ᐊᑯᓐᓂᖓᓃᑦᑐᖅ 0.9 m3/s-ᒥᑦ 5.1 m3/s-ᒧᑦ. ᓇᓚᐅᑦᑖᖅᑕᐅᔪᖅ ᐊᓂᒎᑎᓂᖓᓄᑦ HAWS 30 ᐅᓪᓗᓄᑦ ᐊᑯᓐᓂᖕᒥᓐᓂᐅᓇᔭᖅᑐᖅ 2.4 ᒥᓕᔭᓐᓂᑦ 13.3 ᒥᓕᔭᓐᓄᑦ m3. ᑕᐃᒪᓐᓇᓗᑦ ᑯᕕᖅᑕᐃᓂᐅᔪᒪᔪᖅ 2000 m3/ᖃᐅᑕᒥᒃᑯᑦ 0.45%-ᒥᑦ 2.57%-ᒧᑦᖕᒍᔪᖅ 30 ᐅᓪᓗᓂᑦ ᑰᒐᓛᕐᒥᑦ ᐊᖏᑎᒋᓂᖓ. ᐃᒻᒥᖅᑐᖅᑕᐅᓂᖓ ᐃᒪᖅᑲᐅᓯᕝᕕᒃ ᐊᑕᐅᓰᖅᑕᐅᓂᐊᖅᑐᖅ 2024-ᒥᑦ ᐊᐅᒃᐸᓪᓕᐊᑎᓪᓗᒍ ᐊᒻᒪᓗ ᐊᖏᓛᒃᑯᑦ ᐃᒻᒥᖅᑕᐅᓗᓂ ᐊᒻᒪᓗ ᐊᑐᖅᑕᐅᔭᕆᐊᖃᕐᓂᐊᕐᒥᑦᑐᖅ ᐅᑭᐅᓂᑦ ᓯᕗᓂᒃᓴᒥᑦ. ᐱᔾᔪᑎᒋᔭᖓ ᐋᖅᑭᒋᐊᖅᓯᓂᐅᑉ ᖃᐅᔨᓂᐊᕐᓗᒍ ᐃᒪᖅ ᐊᑐᖅᑕᐅᔪᖅ ᐊᖏᓪᓕᒋᐊᕐᓂᖓ ᐃᒻᒥᖅᑕᐅᓂᐊᕐᓗᓂ ᐃᒪᖅᑲᐅᓯᕝᕕᒃ ᓄᓇᕗᒻᒥ ᐃᒪᓕᕆᔩᒃᑯᓐᓂᑦ Type A ᐃᒪᕐᒧᑦ ᓚᐃᓴᓐᓯᓕᕆᓂᖃᕆᐊᖃᕐᓂᐊᖅᑐᓂ.

Inuinnaqtun: Nunavumi Paknaiyaiyiit ovalo Nunavumi Avatiligiyiit angikhimayait hanatjutikhainik imiktakvikhainik ovalo havaktakhait imiklugit ataanit NPCkut Ihuakhaihimayait 149617 ovalo NIRBkunit naunaiyautaa 21XN012. Hamna havaktakhait angikhimayait Nunavumi Imaligiyiit Kanugitjutainik B Imaligiyiit Laisinsikhait 8BC-EUR2131. Hivulimi, imiktigutait imiktakvikhait hanianut piniaktut 299m3/ubluk tamaat, kihimi naunaiyakhimaliktut 2000 m3/ubluk tamaat piyumaliktut avataanut kulinik (10) ublunik Imiktakvianit kuugauyanit pilaaktut. Kuugaat kuvivaktut ilanganut (kuvivaktut Junemit Septembermue) ovalo ihumayut ikalukhiungititlugit. Ilaa, Imiktakviit Kuugauyait kuviviit auyami pikataktut kitkanit 0.9 m3/smit 5.1 m3/smut. Naunaiyautait angitjutait pivaktait HAWSkuni avataanut 30nik ubluit piyumaniaktut kitkanit 2.4 millionmit 13.3 million m3mut. Taimaimat, uktugumayait papautilugit kayumitjutainik 2000m3/ubluk tamaat ilauyut talvatuak 0.45%mit 2.57%mut 30nik ubluinik kuugauyani. Imiktiklugit imiktakviit atauhiuniaktut ukiumi 2024mi auyami ovalo imikpiagumik ovalo atugumayait hivunikhainik ukiuni. Uktugumayait ihuakhaitjutainik naunaiyaklugit imainik atugutikhait imiklugit imiktkviit piniaktait Nunavumi Imaligiyiit kanugitumik A Laisinsikhait atugutainik.

Personnel

Personnel on site: 30

Days on site: 704

Total Person days: 21120

Operations Phase: from 2024-05-20 to 2025-08-12

Operations Phase: from 2023-01-12 to 2042-10-17

Post-Closure Phase: from to

Hulilukaarutit

Inigiya	Hulilukaarut Qanurittuq	Nunannga Qanurittaakhaanik	Initurlinga qanuritpa	Initurlinga utuqqarnitat unaluuniit Ingilraaqnitat Uyarannguqtut akhuurninnga	Qanitqiyauyuq qanitqiamut nunallaat kitulluuniit ahiruqtailiyainnit nuna
f2021291189053-Eureka_LandReserveBoundary_20210204	Researching	Inuit Owned Surface Lands	The Eureka High Arctic Weather Station (HAWS) is located on the north side of Slidre Fjord, at the northwestern tip of Fosheim Peninsula, Ellesmere Island, NU. Since 1947, Environment & Climate Change Canada has owned and managed the site under Land Reserve #1021. The total area is approximately 2.23 hectares. There are 15 buildings and other facilities at the HAWS. The Eureka runway is located 1.5 km NE of the HAWS and is the primary way by which the HAWS is accessed year-round.	Areas of archaeological, paleontological and cultural significance have been identified throughout the HAWS area. 16 areas of significance were identified, including 12 prehistoric, 3 historic, and one contemporary (most are of high heritage value). To date, no excavations have been required. Sites with potential to be disturbed have been fenced off with appropriate setbacks. The change in withdrawal rate has no potential to impact Archaeological / Paleontological value.	The closest community is the hamlet of Grise Fjord, which has a population of approximately 130(as of the 2011 census), and it is located approximately 400 km south of Eureka, at the southerntip of Ellesmere Island. This Inuit community is the northernmost community in Canada (ParksCanada, 2009b; Statistics Canada, 2012a).The Key Bird Habitat Site – Fosheim Peninsula overlaps the site. The Napaqtulik/Napurtulik Proposed Territorial Park is approximately 50km west of the site.

Nunaliin Ilauyun, Aviktuqhimayuniitunullu Ikayuuhiarunguyun

Nunauyuq	Atia	Timiuyuq	Upluani Uqaqatigiyaungmata
Ausuittuq	Hamlet of Grise Fiord Administrative Officer	Municipal Office of the Hamlet	2022-01-18
Ausuittuq	Members of the Hunters & Trappers Organization	Iviq Hunters & Trappers Organization	2022-01-18

Angiuttauvaktunik

Naunaiqlugu nunanga talvani havauhikhaq ittuq:

North Baffin

Angiuttauvaktunik

Munariniqmut Ayuittiaqtuq	Angirutinga Qanurittuq	Tadja Qanurittaakhaanik	Ublua Tuniyauyuq/Uuktuqtuq	Umikvikhaa Ublua
Nunaqaqqaaqhimayuliriyikkut Ukiuqtaqtumi Pivallianiq Kaanata	Land Use Permit (Amended) N2017N0017	Active	2018-06-18	2024-07-03
Nunaqaqqaaqhimayuliriyikkut Ukiuqtaqtumi Pivallianiq Kaanata	Quarry Permit 2022QP0002	Active	2022-04-06	2024-04-06
Nunaqaqqaaqhimayuliriyikkut Ukiuqtaqtumi Pivallianiq Kaanata	Quarry Permit 2022QP0003	Active	2022-04-06	2024-04-06
Nunavut Imaligiyit Katimayit	Water Licence (Type B)	Active	2021-07-21	2031-07-21
Nunaqaqqaaqhimayuliriyikkut Ukiuqtaqtumi Pivallianiq Kaanata	Quarry Permit 2020QP0002	Active	2020-02-27	2023-02-26

Project transportation types

Transportation Type	Qanuq Atuqtauniarmangaa	Length of Use
Air	Chartered aircraft is used for personnel, food and smaller supplies. Any activities and travel will follow all Territorial, Federal and ECCC Departmental requirements and guidelines regarding COVID-19.	
Water	Sealift used for equipment and larger supplies. Any activities and travel will follow all Territorial, Federal and ECCC Departmental requirements and guidelines regarding COVID-19.	

Project accomodation types

Temporary Camp

Alaanut,

Ihuaqutivaluin Atuqtauyukhan

Hanalrutit atuqtaunahuat (ukuallu ikuutat, pampiutainnik, tingmitinik, akhaluutinik, hunaluuniit)

Hanalrutit Qanurittuq	Qaffiuyut	Aktikkulaanga – Qanurittullu	Qanuq Atuqtauniarmangaa
Grader	tbd	various	Grading of granular material
All Terrain Vehicle (ATV)	tbd	various	Crew Transportation
Side by Sides	tbd	various	Crew Transportation
Pick Up Truck	tbd	various	Crew Transportation
Loader	tbd	various	Excavation of granular material
Excavator	tbd	various	Removal and transportation of granular material
Dump Truck	tbd	various	Transportation of granular material
Bulldozer	tbd	various	Removal and transportation of granular material
Small Loader	tbd	various	Excavation of granular material
Till Handler	tbd	various	Removal of granular material
Bobcat	tbd	various	Transportation of granular material
Backhoe	tbd	various	Excavation/digging of granular material
Generator	tbd	various	Temporary camp operations
Tractor and Trailer	tbd	various	Movement of equipment
Snowblower	tbd	various	Snow Removal
Snowmachine	tbd	various	Crew Transportation

Qanurittuq Urhuqyuaq unalu Qayangnaqtut Hunavaluit Aturninnga

Qanurittuq urhuqyuaq hunavaluit aturninnga:	Urhuqyuaq Qanurittuq	Qaffiuyut qattaryut	Qattaryuk Aktikkulaanga	Atauttimut Qaffiuyut	Ilanga	Qanuq Atuqtauniarmangaa
Gasoline	fuel	13	200	2600	Liters	Fuel for equipment
Gasoline	fuel	95	5000	475000	Liters	Excavation Equipment
Diesel	fuel	8	6000	48000	Liters	For equipment

Imaqmik Aturninnga

Ubluq qanuraaluk (m3)	Aturumayain imavaluin utiqtittagaani qanuq	Atulirumayain imavaluin utiqtittagani humi
2000	Pumping from Station Creek for 10 days in 2024 during freshet to fill reservoir	Station Creek

Iqqakuq

Ikkakunik Munakgiyauyunik

Havauhikhaq Hulilukaarut	Qanurittuq Iqqakut	Ihumagiyauyuq Qanuraaluktut Atuqtait	Qanuq Iqqakuurniarmangaa	Halummaqtirarnirutikhan piyutin
Researching	Other, Waste associated with this project and the Eureka HAWS site is described in the original NIRB application (File #21XN012). This amendment for increasing the withdrawal rate for filling the reservoir does not add any additional waste.	n/a	n/a	n/a

Avatiliriniqmut Ayurhautingit:

Impacts: - Temporary decrease to ambient air quality of the project area, potential increase of dust and greenhouse gas emissions. - Construction activities have the potential to increase ambient noise. - The potential to affect the soil including, material handling (loading and dumping); and the refueling of vehicles/equipment. - Construction activities have the potential to affect the hydrology and water and sediment quality of the site. - Movement of heavy equipment may increase sediment transport during the summer construction period. - Physical damage to vegetation during construction and changes in the soil surface layer, leading to potential impacts to soil and permafrost erosion, changes in surface water hydrology and thermokarst. Fugitive dust may also suppress plant growth within a zone around construction zones. - Construction activities will occur during the summer, the time that nesting and denning occur for many bird and mammal species. For birds and mammals, the interactions include behavioral changes such as avoidance and/or attraction to the site and changes in the dominant species in areas adjacent to the site. Mitigation - Optimize fuel consumption and minimize dust production resulting from vehicle/equipment travel as well as noise. - Employ standard operating procedures for equipment/machinery - Reduce dust resulting from construction activities: Execute work using methods to minimize raising dust from construction activities. - Refueling of vehicles and equipment to occur in designated areas following all applicable regulations. - Effective sediment and erosion control measures will be installed prior to starting work (temporary matting, geotextile silt control filter (curtains) fabric, etc.) - All water intake hoses will be equipped with a screen of an appropriate mesh size to ensure fish are not entrained. - Work will occur in summer months.

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

Once projects are constructed and operational, the temporary camp will be disassembled and sea-lifted from site. Conditions at the temporary camp will be returned to natural conditions as much as possible.

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

Qanurittuq Ittunik Avatinga: Avatingalluanga

Physical EnvironmentEureka is located on Ellesmere Island, Nunavut, which is the northernmost island in the CanadianArctic Archipelago. The Arctic Ocean surrounds the Archipelago to the north and west, withGreenland to the east and the Canadian mainland to the south. Eureka itself is on the westernside of Fosheim Peninsula in northern Ellesmere Island. Eureka is located on the north side ofSlidre Fjord and surrounded to the northeast and northwest by ridges that rise about 600 m abovemean sea level.Eureka's climate is typical for the Canadian Arctic Archipelago. Eureka experiences a long, darkwinter and a short, intense summer with continuous daylight. The winter conditions promote astrong surface-based temperature inversion. The transition to summer occurs with a rapidwarming and the breakdown of the Arctic winter vortex.Atmospheric EnvironmentIn an effort to characterize the existing air quality and noise environment within the Project area,a monitoring program was completed in August 2015. Details and results of the monitoringprogram as well as a description of climate and meteorology in the Project area are provided inthe following sections.The weather station at Eureka (WMO ID no. 71917; latitude 79.98°N, longitude 85.93°W) hasbeen operated by the Metrological Service of Canada since 1947. The hourly surface observationrecord begins on 1 January 1953 at 01:00 LST (06:00 UTC) and observations are recorded at analtitude of 10.4 m above mean sea level. Upper-air observation data from radiosondes areavailable starting in 1961. Lesins et al. (2010) provide a comprehensive summary of weather observations made at Eureka from 1953 to 2007, which is briefly discussed in the following sections. Lesins et al. (2010) define the winter months as the three coldest months of the year (January,February, and March) and summer as the three warmest months (June, July, and August).Somewhat unconventionally, autumn is defined to comprise the period of September toDecember, which is based on the fact that the stable winter boundary layer is not fully formed untilJanuary. Spring comprises the rapidly warming months of April and May.Over the 54 year record, the average temperature at Eureka is -19.1°C, with the highest andlowest observed temperatures of 20.0°C and -54.6°C recorded 22 July 2007 and 15 February1979, respectively. Trends in temperature across the entire observing record can be summarizedas follows:•A cooling trend from the early 1950s to early 1970s;•A warming period from the early 1970s to early 1980s;•A brief cooling period in the mid-1980s; and•A warming trend up to the present day.Eureka is typified by a polar desert climate. Annual precipitation averages only 79.1 mm per year,with the majority (60.3 mm on average) falling as snow in the autumn and winter months. Rain istypically confined to the months of July and August, where rainfall events can be intense. Themaximum recorded daily precipitation events observed at Eureka in July and August were20.8 mm (27 July 1997) and 41.7 mm (17 August 1953), respectively.Surface wind speeds at Eureka are greatest in the summer months, averaging about 17 km/hacross the period from 1954 to 2007. Wind speeds in autumn, winter and spring are reduced,ranging between approximately 8 and 11 km/h over the same period. Lesins et al. (2010),however, note that the observations show a weakening trend of approximately -0.6 km/h perdecade over the period from 1954 to 2007, which persists despite the slight weakening of thesurface-based temperature inversion over the same period. Surface winds are primarily out of thewest in the late spring and summer (May to August), switching to the east and southeast for theremainder of the year.Although variable, Lesins et al. (2010) note that there has been no significant change in upper airwind speeds at the 500 mb level.Air QualitySpot measurements of ambient dust were made at seven pre-defined monitoring locations underexisting conditions. The seven monitoring locations are summarized below:•NM-1 – West of the main station•NM-2 – South end of the main station at the sealift unloading location•NM-3 – Northwest of the powerhouse within the main station•NM-4 – North of the existing sewage lagoon within the main station•NM-5 – North end of the main station at the dead line•NM-6 – North of the west end of the runway at the DND facilities•NM7 – South of the west end of the runway at Fort EurekaAmbient particulate matter (PM) data was collected using a DustTrak dust monitor (model DRX8533) in August 2015. Calibration of the dust monitor was completed in the field at test conditionsbefore and after each measurement campaign with a zero filter. Calibration was valid during theperiod of monitoring.Spot measurements of ambient dust (i.e., particulate) levels were completed through multiple1-minute DustTrak logs at each monitoring location at various observation periods. Levels of totalPM, as well as PM less than 10 and 2.5 microns (μm) in diameter (PM10 and PM2.5) weremeasured. The dust monitoring data are summarized in Table 4.3 for total PM, PM10 and PM2.5.At the time of monitoring, construction of the new multipurpose building project was underway.The ongoing activity included clearing and excavation of the footprint for the building foundation.For the purposes of establishing ambient particulate levels in the project area, the minimumrecorded particulate levels are considered to represent the true ambient dust levels and themaximum recorded particulate levels are considered to represent the ambient dust levels asinfluenced by the ongoing project work and other operations within the Project area.Based on the monitoring results, NM-5 would be most reflective of true background and indicativeof a remote wilderness environment where particulate levels are low and influenced by windinduced dust.The monitoring data shows that levels of PM2.5 are high in comparison to total PM, which suggeststhat the PM is primarily influenced by the exhaust of passing vehicles. The fact that the lowestmonitored levels of PM were observed at the monitoring location farthest from an adjacentroadway (i.e., NM-5) supports this conclusion. A comparison of the maximum monitored levels in close proximity to the ongoing activity at NM-3 to the maximum monitored levels at NM-5 shows that the effects of ongoing activity are limited to within 300 metres. If activity level is similar for future project work, local effects are expected to be kept within 300 to 500 metres.A review of an air quality effects assessment submitted to the NIRB for a nearby project (MaryRiver Project, Baffin Island) was completed to characterize ambient air quality in a similarenvironment. The Mary River Project is located approximately 1,000 km south of the HAWS in acomparable setting.The assessment of background air quality for the Mary River Project described in Air QualityBaseline Study, Baffin Iron Mines Corporation, Mary River Project (RWDI Air Inc., December2008) measured total PM concentrations of 3.0 to 7.0 μg/m3 which "represent low, pristine levelsthat can be viewed as typical of remote Arctic areas". Similarly, PM10 concentrations of 1.5 to3.8 μg/m3 were measured. PM2.5 measurements were not performed for the Air Quality BaselineStudy, Baffin Iron Mines Corporation, Mary River Project (RWDI Air Inc., December 2008) because"based on experience in such pristine environments, where particulate matter levelsIn summary, the ambient particulate levels observed at NM-5 are comparable to the particulatelevels identified during the literature search, which are pristine and typical of remote Arctic areas.NoiseSound level data was collected using a Quest SoundPro DL-2-1/1 sound level meter in August2015. Calibration of the sound level meter was completed in the field at test conditions before andafter each measurement campaign with the QC-10 acoustic calibrator. Calibration was validduring the period of monitoring.Spot measurements of ambient sound levels were completed by observing and recording theminimum and maximum slow response A-weighted sound levels within 5-minute observationperiods. For the purposes of establishing ambient noise levels in the project area, the minimumrecorded sound levels are considered to represent the true ambient sound levels and themaximum recorded sound level are considered to represent the ambient sound levels asinfluenced by the ongoing project work and other operations within the project area.The noise monitoring data are summarized in Table 4.4. The true ambient data are indicative ofa remote wilderness environment where noise levels are relatively low and are strongly influencedby sounds of nature and wind induced noise effects.A review of a noise effects assessment submitted to the NIRB for the Mary River Project wascompleted to identify noise levels in a similar environment. The assessment of ambient noise forthe Mary River Project described in Noise Baseline Study, Baffin Iron Mines Corporation, MaryRiver Project (RWDI Air Inc., November 2008) concluded that "average 24-hour sound exposuresranged from 25 to 30 dBA, depending on location". The baseline monitoring locations mostcomparable to the HAWS environment (i.e., in close proximity to Arctic Ocean waterway inlets)had baseline monitoring results of 29 and 30 dBA.In summary, the minimum uninfluenced ambient sound levels observed in the HAWS area (i.e.,natural sounds of nature at NM-2, NM-5, NM-6 and NM-7) are comparable to the sound levelsidentified during the literature search. With consideration of the above information, a conservativeapproach to establishing background sound levels was applied. An existing noise level of 35 dBAwas selected for 24-hour sound levels and applied as the background value for assessing therelevance of potential changes in sound levels as a result of Project Improvement activities at theHAWS.GeologyThe HAWS is situated in the Eureka Hills Ecoregion, within the Northern Arctic Ecozone. Thetopography in the area is rolling and ridged, and reaches altitudes of no greater than 1000 mabove sea level. Underlying strata include Mesozoic and Tertiary sandstone and shale, whichhave large trenches cut out of them. The trenches form the sinuous, curving drainage that isapparent in the area (Phase I ESA - PWGSC, 2007). The geology of the HAWS site was observedby Columbia/Franz (2010) to be composed of silty clay, with some gravel and cobble.HydrogeologyHydrogeologic information was obtained from Columbia/Franz (2010). Regionally, sinuousdrainage formed by carving of the underlying sandstone is apparent, as well as within the studyarea. Water has formed gullies and seasonal creeks that drain into the Slidre Fjord of the FosheimPeninsula, and subsequently into the Eureka Sound and Arctic Ocean. The main natural sourceof surface fresh water at the HAWS is Station Creek, which is seasonally flowing. It flows in earlyJune on the west side of the main facilities at the HAWS, from north to south. Flow from the creekdischarges into the salt water of Slidre Fjord and ultimately into Eureka Sound and the ArcticOcean. The HAWS is in an area of continuous permafrost. In high, dry locations the active layeris at approximately 0.60 metres below surface and in wet, low areas permafrost is located atapproximately 0.80 metres below surface. On south facing slopes, the active layer can reach adepth of approximately 1.2 metres. The water reservoir is the source of domestic water, which isalso located on the west side of the main facilities. The reservoir is replenished yearly by theseasonal pumping of Station Creek. A sewage lagoon is located at the south end of the site'sfacilities on the shore of Slidre Fjord (Columbia/Franz, 2010).SoilsNegligible chemical weathering and plant action in the arctic environment contribute to poor soilprofile development. Thus, soils at the HAWS are composed mostly of sand/gravel fill, underlainby silty, sandy clays – mainly sands, silts, and clays. Specifically, these soils are composed oflithosols and regosols of the Rawmark Great Soil Group, and are typically 18% sands, 47% silts,and 35% clays. Soils include Regosolic Static Cryosols and Orthic Turbic Cryosols over top ofcolluvial, alluvial and marine deposits (Phase I ESA - PWGSC, 2007).

Qanurittuq Ittunik Avatinga: Inuuhimayunut Avatinga

Vegetation Communities and SpeciesThe site is in ecodistrict 21, situated within the Eureka Hills ecoregion of the Northern Arctic ecozone. The ecoregion includes Axel Heiberg and Ellesmere Islands. General descriptions of plant communities include low-growing herbs and shrubs such as purple saxifrage, Dryas spp., arctic willow, sedge and arctic poppy.The extreme environmental conditions have a significant impact on the ecological recovery ofvegetation at disturbed sites at Eureka. Low light levels, extremely low ambient temperatures andlack of moisture and nutrients limit plant productivity. While a precipitation value of 50-150 mmper year has been used for HAWS assessments (PWGSC 2007), the climate conditions listed byAgriculture Canada for the ecodistrict indicates average precipitation at the lower end of this range.Average total precipitation for the ecodistrict is 68 mm/year, 53 mm of which is snow. Due toevaporation of moisture during summer months, the area experiences a deficit of 361 mm ofmoisture annually. There are only 16 effective growing days annually (days above 5°C adjustedfor day length) in the area around Eureka. The area has >90% continuous permafrost, with <20%ground ice.Changes to vegetation are expected in the High Arctic terrestrial ecosystem as a result of warmingambient temperatures. Long-term monitoring programs were established in Quttinirpaaq NationalPark in 1990 using several measures of environmental change (Broll et al. 2003). Changesrecorded between 1990 and 2002 include warming soil temperatures, with an increase in the depthof the active layer. Changes in permafrost caused changes in the hydrological conditions and soilmoisture. A review of climate changes in the Canadian Arctic indicate that the ambienttemperature has increased 1.5 to 3°C between 1953 and 2007, while precipitation has increasedby roughly 10% (Stein et al. 2013). If these trends continue, the plant community will undergochanges in species and numbers in response to the changing environment.Wildlife Communities and SpeciesThe HAWS has been in place since 1947; however, there are no rigorous surveys of the animalcommunity in the area, the species abundance, or other measures of species presence. While some ecological information is available for many species based on studies conducted in the Arctic, further south of Eureka, important site specific data, such as the numbers of nesting sites for breeding birds, or the density of small mammal species, are not available. For example, the number of ground nesting breeding birds during the summers would allow some estimation of the impacts of disturbed ground from borrow sites or new construction. The Arctic Biodiversity Assessment (CAFF, 2013) estimated that the High Arctic portion of the Canadian Archipelago has a very low biodiversity, with roughly 10 resident mammalian species.Wildlife sightings are recorded weekly at the HAWS and provide some site specific information onwildlife species in the area and potential interactions with workers on site. The most commonsightings are for muskox, arctic hare and wolves, with many sightings within the boundary of thesite. Waterfowl, including red-necked loons, have been observed on the Fjord but their nestingsites relative to the station are unknown. Polar bears have been observed in the area but at somedistance from the HAWS.Some data are available from breeding bird surveys at other sites in the High Arctic. Pattie (1977)reported the numbers of regular and occasional breeding birds on Devon Island, a High Arcticecosystem roughly 500 km to the south of Eureka. Most of the bird species were shorebirds,seabirds and colonial waterfowl. The dominant terrestrial birds that were present every year ofthe survey were the rock ptarmigan, the Lapland longspur and the snow bunting, with the ravenand snowy owl less common. Pattie reported a density of 40 birds per km2 in July 1972 at SildreFjord, with 12 species of birds, equivalent to other high Arctic sites. These results correspondedwith a survey reported by Nettleship and Maher (1973) at Hazen

Lake, roughly 300 km to thenortheast of Eureka. Trefry et al. (2010) reported several years of breeding bird survey resultsfrom the east coast of Ellesmere Island. Snow buntings, Lapland longspur and Baird's sandpiperwere the most abundant species. The density of snow buntings was 1.0 to 1.5 pairs per km2,while the Lapland longspur reached 1.5 to 2.0 pairs per km2. These results were used to includethe snow bunting as a representative songbird in the selection of Valued Ecosystem Componentsin the current assessment.Parks Canada has conducted periodic surveys of wildlife on north Ellesmere Island to establishwildlife presence and numbers before the establishment of Quttinirpaaq National Park. Data for1989 to 1997, 2002 and 2008 were obtained in spreadsheet form from J.Chisholm, Nunavut Field Unit, Parks Canada, Iqaluit. No detailed methods were included in thedata, although most transects were flown with two observers in small aircraft in early to mid-June.The 1989 to 1997 data set included a number of marine species, including ringed seal, beardedseal and walrus, however the marine transects extended far north of Ellesmere Island and are notrelevant for Eureka. The surveys indicated that the dominant terrestrial mammal is the muskox,with several dozen in the area at any time. Peary caribou are also present althoughtheir numbers were consistently low. The number of arctic hare is variable with only 10 reportedannually for the 10 year span from 1989 to 1997, yet over 3500 in 2008. The arctic hare was oftenobserved in groups of 20-30 animals. Dominant birds include the gyrfalcon and the snowy owl.Snow geese are also reported in fairly large numbers. The attached EIA provides a summary of species reported to be present in the area, as well as the associated Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and/or SARA status.Aquatic EnvironmentThe HAWS is located in an extreme climate with long, very cold winters and short, cool summers. The field season for the completion of construction activities is, understandably, extremely short. It consists of (at most) July, August and the beginning of September. Outside these months, the ground is frozen and there is no water flowing in the water bodies in the Project location area. Remus Creek and West Remus Creek, and the portions in which the Project will be taking place, are temporary, ephemeral watercourses, which are only filled with water during the spring freshet period.Hydrology assessments have been previously conducted at the HAWS for Station Creek and Black Top Creek and some historical data is available. Generally, flow within all watercourses at the site begins in mid June (around June 15) and ends in late August or Early September. Based on a desktop review and on discussions with station staff regarding local conditions and observations relating to fish and fish habitat at Station Creek, and aquatic species and mammal observations during their time at the HAWS site (Environmental Impact Assessments (EIAs) conducted in 2016 and 2018 (Arcadis)), no species listed under the Species at Risk Act (SARA) or assessed under COSEWIC have been identified within the Project area. Furthermore, no species have been identified under the Nunavut Wildlife Act.

Qanurittuq Ittunik Avatinga: Inungit-maniliurutingit Avatinga

While Eureka has no permanent residents, a number of research and operational staff rotatethrough the HAWS facility. The closest Inuit community is the hamlet of Grise Fjord, located400 km south of Eureka at the southern end of Ellesmere Island.Pre-contact HistoryThere are hundreds of archaeological sites located on Ellesmere Island, the majority of which areconcentrated in Quttinirpaaq National Park, located approximately 225 km to the north east ofEureka. About 285 archaeological sites have been documented in the national park (ParksCanada, 2009b). Archaeological evidence unearthed in Quttinirpaaq National Park has revealedthat the park and the surrounding region have been occupied by humans for centuries. Peoplehave resided on Ellesmere Island for thousands of years, beginning with the arrival of the Paleo-Eskimos of the Independence I culture (approximately 2000 – 4000 B.C.). They were named afterthe Independence Fjord in northern Greenland, where the first evidence of these people wasidentified by the Danish archaeologist Count Eigel Knuth. These Paleo-Eskimos arrived aftercrossing the Bering Strait from Siberia. Artifacts such as tent rings and stone tools werediscovered. In addition, remains of their campsites found in the national park, characterized bybox-shaped hearths, reveal that they were few in number and that they were present in the areafor only about 300 – 400 years. In these hearths, they burned willow, grasses, driftwood, andmuskox bones. They were resilient people who hunted muskox and caribou, using whatevermaterial they could find to produce heat during the long, dark arctic winters. They lived in aboveground tents year-round, which were most likely covered in muskox hide (Parks Canada, 2009a;Rast, 2015).For many centuries after the existence of the Paleo-Eskimos, no evidence has been found in thenational park to suggest human occupation. Approximately 3000 years ago, a second wave ofPaleo-Eskimo people of the Independence II culture migrated across the arctic islands andreached Quttinirpaaq (1000 – 500 B.C.). The Dorset people later arrived and remained on theisland until approximately 1000 years ago (A.D. 800 – 1000). The Thule people followed (A.D.1600 – 1850) and became skillful hunters of whales and other marine mammals. The Thule culturesurvived elsewhere in the arctic. However, Ellesmere Island and Quttinirpaaq was abandoned bythe Thule as the climate became colder and harsher, leading up to the Little Ice Age. The Thuleare the ancestors of the modern Inuit (Parks Canada, 2009a). In addition to these relics, those ofhistoric Inuit/Inughuit cultures and of exploratory, scientific, and government activities of thenineteenth and twentieth centuries have also been unearthed (Parks Canada, 2009b). It has beenmentioned that a Thule tent ring had been sighted in an area located approximately 10 km fromthe EC reserve at Eureka, during discussions with the HAWS station manager during the site visitwhich took place in August 2015.Post Contact HistoryNorthern Ellesmere Island was first visited by Europeans in 1875, when the British ArcticExpedition sailed through the Nares Strait and established wintering quarters for the HMSDiscovery off Lady Franklin Bay, in the sheltered harbour. The HMS Alert, the sister ship toDiscovery, wintered 160 km to the north on the shore of the Arctic Ocean. The harbour is now known as Discovery Harbour. Sledging parties departed from the ships in the spring of 1876 toexplore the northern terrain. The expedition was forced to return to England later in 1876 due tothe explorers' becoming ill with scurvy (Parks Canada, 2009b).The United States Army's Lady Franklin Bay Expedition arrived at the same site in 1881, underthe leadership of Lieutenant Adolphus Greely, for one of two expeditions staged by the UnitedStates in contribution to the International Polar Year (an undertaking by twelve countries in aneffort to establish scientific stations in regions bordering the North Pole). The US expeditionestablished a station that they named Fort Conger. When supply ships failed to reach the groupin 1882 and 1883, they retreated and became stranded on Pim Island, located on EllesmereIsland's eastern coast. Only seven out of the 26 men survived.In 1899, Robert Peary, and American explorer, arrived at the abandoned Fort Conger, in hopesof using the Fort as a base station to reach the North Pole. This expedition was accompanied byInughuit guides from northwestern Greenland. Aboriginal traditional knowledge including the useof fur and local food, allowed the expedition to better cope with the harsh conditions. Combiningthe traditional knowledge and European technology, the base camp structures at Fort Congerwere modified so as to function well in the cold arctic climate. Peary operated expeditions in 1900-01, 1905-06, and 1908-09 from the refurbished Fort Conger. The fort later provided shelter toAmerican, Norwegian, Danish, and British/Canadian expeditions in 1915, 1920, 1921, and 1935.The Fort Conger is presently a significant archaeological resource, and it has been designated asClassified Federal Heritage Buildings protected by Quttinirpaaq National Park as important culturalresources (Parks Canada, 2009a).CommunitiesThe closest community is the hamlet of Grise Fjord, which has a population of approximately 130(as of the 2011 census), and it is located approximately 400 km south of Eureka, at the southerntip of Ellesmere Island. This Inuit community is the northernmost community in Canada (ParksCanada, 2009b; Statistics Canada, 2012a).Other communities on Ellesmere Island consist of transient communities conducting scientificresearch, including universities and government agencies, which is a major activity in the nationalpark region, and in Eureka. The Polar Continental Shelf Project (PCSP) (Natural ResourcesCanada (NRCan)), based in Resolute Bay, provides logistical support for these activities

(ParksCanada, 2009b).The residents of Ellesmere Island include the year-round permanent residents of Grise Fjord, themilitary and civilian personnel associated with Canadian Forces Station, Alert (locatedapproximately 480 km northeast of Eureka and 45 km northeast of the national park), the summerbase of operations for the Canadian Department of National Defence at Eureka, the personnel working at the weather station at Eureka, and Parks Canada.

Miscellaneous Project Information

n/a

Naunaiyainiq ukuninnga Ayurhautingit unalu Piumayaat Ikikliyuumiutinahuarutit

Predicted environmental impacts of undertaking and proposed mitigation measures: Air qualityInteractions: Construction activities have the potential to temporarily increase ambient air concentrations of dust (i.e., particulate) and greenhouse gas emissions. Effects: During construction activities, there will be an increase in local airborne particulate (dust) and tailpipe (fuel combustion) emissions from the operation of heavy-duty equipment. The tailpipe emissions will include greenhouse gas emissions and therefore have the potential to contribute to climate change. Mitigation: Optimize fuel consumption and minimize dust production resulting from vehicle/equipment travel: Employ standard operating procedures for equipment/machinery and ensure that regular maintenance is performed in accordance with good engineering practices or as recommended by suppliers such that the equipment is kept in good operating condition. Other activity-specific mitigation measures will include the use of appropriate exhaust emissions controls such as catalytic converters and diesel particulate filters to mitigate fuel combustion emissions from heavy equipment and vehicles. Additionally, the number of equipment/vehicle movements and travel distances will be optimized to reduce fuel consumption and minimize dust and greenhouse gas emissions. Lowering vehicle speeds on unpaved road surfaces, applying water as well as implementing good road maintenance practices will minimize the potential for road dust emissions. All work will be completed by methods that minimize dust generation from operations. Reduce dust resulting from construction activities: Execute work using methods to minimize raising dust from construction activities. Implement and maintain dust and particulate control measures as determined necessary by applicable regulations and standards during quarry expansion and in accordance with applicable authorities. The use of oil for dust control is prohibited. Prevent dust from spreading to beyond the immediate work area. A Departmental Representative or designate may stop work at any time when Contractor's control of dusts and particulates is inadequate for worker exposure, or when air quality monitoring indicates that release of fugitive dusts and particulates into the work area equals or exceeds specified levels. If Contractor's dust and particulate control is not sufficient for controlling dusts and particulates into atmosphere, work must be stopped immediately. Contractor must then discuss and implement procedures to resolve the problem. Make all necessary changes to operations prior to resuming work that may cause release of dusts or particulates. Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures. Cover or wet down dry materials to prevent blowing dust and debris. Provide dust control for temporary roads.NoiseInteractions: Construction activities have the potential to temporarily increase ambient noise. Effects: During construction, there will be an increase in noise emissions from heavy-duty construction equipment operation and construction activities. These effects are typical of a construction site, localized, and of a temporary nature. The physiological and ecological impacts of noise on wildlife needs to be considered, acutely loud noises can cause hearing loss in wildlife. Behavior patterns of wildlife may differ from their natural suite of behaviors. Mitigation: The Project will employ standard operating procedures for equipment/machinery and ensure that regular maintenance is performed. As well, personnel will adhere to conditions outlined in all permits, authorizations and/or approvals.Sediment and soil qualityInteractions: Construction may have the potential to affect the soil, through material handling (loading and dumping); and the refueling of vehicles/equipment.Effects: During construction activities, soil quality is most likely affected as a result of fuel spills and leaks from equipment refueling efforts or otherwise, and from compounds located inside the materials of existing infrastructure. Conduct a complete on-site evaluation of the area to determine exact measures to be taken to protect permafrost.Mitigation: Prevention of fuel spills/leaks: Refueling of vehicles and equipment to occur in designated areas following all applicable regulations. Sediment, erosion and drainage control: Effective sediment and erosion control measures will be installed prior to starting work to prevent entry of sediment into watercourses and waterbodies. These measures will be inspected daily and repaired if damaged by construction, precipitation or snowmelt. Sufficient supplies for erosion, sediment and drainage control will be available on site to keep in compliance with federal and territorial fisheries and environmental protection legislation. Aquatic EnvironmentInteractions: Construction activities have the potential to affect the hydrology and water and sediment quality of the site. These activities include, pumping water from Station Creek to fill the reservoir, material handling (loading and dumping); and the refueling of vehicles/equipment.Effects: Concerns about changes in hydrology of water bodies is important to address. Surface water contamination could potentially occur due to leaks/spills that may occur during the re-fuelling of vehicles and construction machinery on site. Mitigation: Pumping of water from Station Creek to fill the reservoir will be completed at peak freshet flow to mitigate potential effects to hydrology. Suitable erosion and sediment suppression measures will be implemented to prevent sediment from entering Black Top Creek, Station Creek, or other water bodies. Erosion control structures (temporary matting, geotextile silt control filter (curtains) fabric, etc.) are to be used. Vehicles/machinery are to be checked for leakage of lubricants or fuel and are maintained in good working order. Re-fueling should occur in designated areas only. Basic petroleum spill clean-up equipment will be kept on-site. Barriers will be required during extraction of contaminated soils to prevent material from entering surface water, Station Creek or the reservoir.Aquatic CommunityInteractions: Filling of the raw water storage basin (reservoir) will involve pumping water from Station Creek. Station Creek is an ephemeral watercourse and is not considered fish bearing.Effects: Concerns about sediment loading and potential change to hydrology of Station Creek are important to address. Mitigation: Best practice is to mirror aquatic environment mitigations. When pumping water from Station Creek, do so during the freshet period. Despite the lack of reported fish species in Station Creek, mitigation measures for construction activity are to be implemented as a precaution to prevent physical disturbance to the stream beds or margins including adherence to DFO Fish and Fish Habitat Policy Statement. For instance, should any fish be detected, ensure that all in-water activities, or associated in-water structures, do not interfere with fish passage, constrict the channel width, or reduce flows, or result in the stranding or death of fish. It is very unlikely that any Species At Risk are in the creeks at any time. All water intake hoses will be equipped with a screen of an appropriate mesh size to ensure fish are not entrained. Water will be withdrawn at a rate such that fish will not become impinged on the screen. Sediment and erosion control measures will be implemented prior to and maintained during water intake operations to prevent entry of sediment into the water.Vegetation Communities and SpeciesInteractions: Physical damage to vegetation during construction and changes in the soil surface layer, leading to potential soil and permafrost erosion, changes in surface water hydrology and thermokarst. Fugitive dust may also suppress plant growth within a zone around construction zones.Effects: Vegetation impacts will be equal to the footprint of the reservoir and other infrastructure.Mitigation: Due to the extreme conditions at Eureka, construction will be conducted during the brief summer months. Damage can be reduced by covering the ground, possibly using matting, prior to construction to reduce physical disruption of the soil. Fugitive dust can be suppressed at its source. Additionally, vehicles will remain on pre-established roads/trails. Workers are to be advised of sensitivity of environment and limits of equipment travel will be determined.Wildlife Communities and SpeciesInteractions: Construction activities will occur during the summer, the time that nesting and denning occur for many bird and mammal species. For birds and mammals, the interactions include behavioral changes such as avoidance and/or attraction to the site and changes in the dominant species in areas adjacent to the site.Effects: Effects are unlikely as construction activities will keep to areas of existing buildings and established roads, or will be in areas that have already been previously disturbed. However, minimization of impacts is important as the area in general has the potential for sensitive species migration. Mitigation: The Wildlife and Wildlife Habitat Management Plan (SLR, 2018) will be followed.Temporary workers will be informed of station protocols for the control and disposal of food and refuse to ensure that local wildlife is not attracted to the site.Temporary workers involved with construction activities will be trained to avoid contact with all wildlife and their nests (particularly with species at risk) and to report sightings to a central authority (i.e., supervisors) immediately. Movements of workers in off-hours should also be restricted to ensure nesting sites and denning areas are not disturbed.Site personnel will use trained wildlife monitors prior to, and during construction to ensure a coordinated, appropriate response to wildlife sightings and to ensure protection of local species during construction.In the event that Species At Risk Act listed birds or mammals are located in the area, construction crews will be prepared to modify, or delay, activity that might harm the protected species. For example, if nests with eggs are located for a protected species, activity in the area might be delayed until after hatching.Note: Source of above information is from the EIA and Specification Documents

Tamatkiumayunik Ihuikgutivaktunik

There are no adverse residual project effects to be considered in a cumulative effects assessment. That thereare no identified adverse residual project effects is not surprising for a construction project suchas this, where the works and activities are very limited in geographic extent and time.

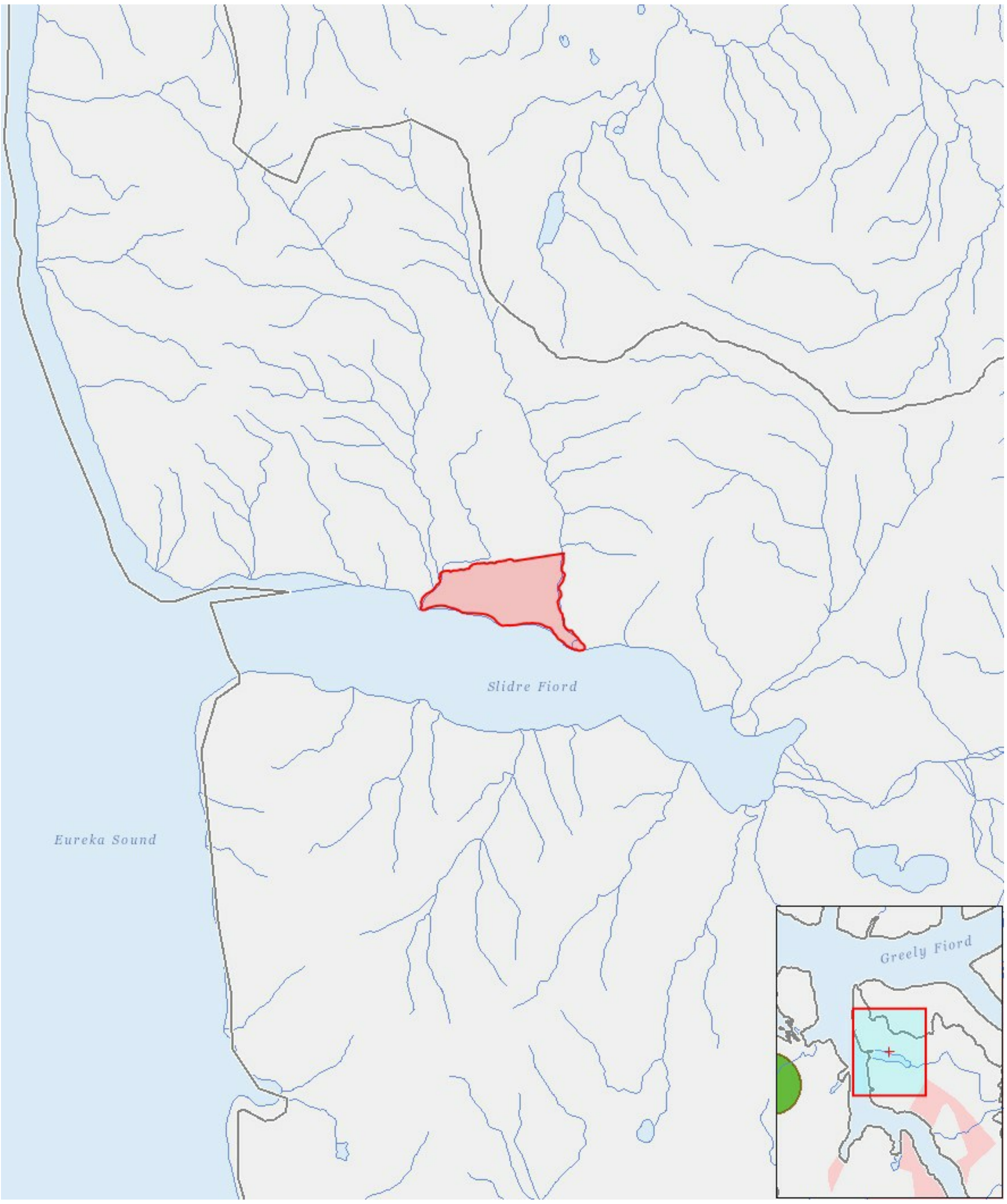
Impacts

Ilitariyauniq Avatiliriniqmut Ayurhautingit

	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
Havakvinga																									
Researching		-	-	M	-	M	-	-	-	M	-	M	M		M	-	-	M	-		-	-	-	-	-
Aulapkaininnga																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-
Piiqtauniq																									
-		-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-		-	-	-	-	-

(P = Nakuuyuq, N = Nakuungittut unalu mikhilimaittuq, M = Nakuungittut unalu mikhittaaqtuq, U = Naluyauyuq)

Havaariyauyukhamut Nayugaa



List of Project Geometries

1	polygon	f2021291189053-Eureka_LandReserveBoundary_20210204