AECOM Canada Ltd.
101-18817 Stony Plain Road NW
Edmonton, AB T5S 0C2
Canada

T: 780.486.7000
F: 780.486.7070
aecom.com

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INAC Reference
CIDM# 1227672

NWB Reference
#1BR-KEI1722

Our Reference
60579368 (400)

Dele Morakinyo
Project Manager, Contaminated Sites Program (NRO)
Crown-Indigeneous Relations and Northern Affairs Canada
Water Resources
Government of Canada
25 Eddy Street, 10th Floor
Gatineau, Quebec K1A 0H4

Crown-Indigenous Relations and Northern Affairs Canada – Water Resources Division Technical Review of Type 'B' Licence for CAM-E Keith Bay Remediation Project 1BR-KEI1722 - Contaminated Sites Division with Crown-Indigenous Relations and Northern Affairs Canada

Dear Mr. Morakinyo:

This letter is provided in response to the comments and recommendations provided for the Water Board's consideration for the above-mentioned water licence. The water licence was originally issued on January 17, 2017 and modifications and amendments to the original water licence were applied for and approved between the date of issue and February 2019. The work associated with the CAM-E site, including mobilization, remediation of impacted soil, containerization of waste material, construction and closure of a Non-Hazardous Waste Landfill and a Tier II Landfill, and demobilization to Kugaaruk, NU has been completed. Activities remaining are final demobilization from Kugaaruk, NU and disposal and destruction of waste material. The following provides responses to the recommendations provided in the above-mentioned water licence review memorandum.

1. Total Water Use

a. Recommendation:

CIRNAC calculates the total volume of potable water to be used per year over the Project (maximum of 420 days man days, excluding post-closure monitoring) to be estimated at 1,472 m^3/year, inclusive of 1,341 m^3 from the on-site Freshwater Lake and 131 m^3 along the winter access trail route.

The licensee states that water will also be used for cleaning/rinsing of on-site equipment and drums. Water from the Freshwater Lake will be obtained in the same way as the potable water, being pumped and transferred into clean water tanks. An estimated 118,000 L (approximately 20 L per drum, by 5,900 drums; or 118 m^3) and as well as an estimated total of 604,800 litres (L; 605 m^3) of water will be withdrawn from the Freshwater Lake for the purposes of dust suppression over the Project.

The estimated amount of water used for the remediation of the project exceeds the quantity of water being asked for in the water licence application.

CIRNAC water resource division requests clarification on the total amount of water to be used per year for the project.

b. Response:

On average, 23 people were present on-site during both the 2017 and 2018 construction seasons. The 2017 construction season lasted approximately 92 days and the 2018 construction season lasted approximately 114 days. The original Water Licence, #1BR-KEI1722, had an allowable withdraw of 14 m^3/day (5 m^3/day for potable water and 9 m^3/day for construction use), which was amended in November 2017 to an allowable withdraw to 40 m^3/day (5 m^3/day for potable water and 35 m^3/day for construction use). The following table summarizes the total and daily season average water withdraw during the 2017 and 2018 construction seasons.

Table 1: CAM-E Water Use

	2017 Construction Season	Original Water Licence	2018 Construction Season	Amended Water Licence
Potable Water Season Total Daily Average	 422 m^3 4.6 m^3/day	 N/A 5 m^3/day	 283 m^3 2.5 m^3/day	 N/A 5 m^3/day
Construction Use Season Total Daily Average	 610 m^3 6.6 m^3/day	 N/A 9 m^3/day	 1,268 m^3 11.1 m^3/day	 N/A 35 m^3/day
Total Consumption Season Total Daily Average	 1,032 m^3 11.2 m^3/day	 N/A 14 m^3/day	 1,551 m^3 13.6 m^3/day	 N/A 40 m^3/day

As shown in the table, the average daily withdraw rates were below the daily allowable withdraw rates provided in the Water Licence, as modified and amended during remedial activities.

An overall reduction of water consumption was a result of favourable weather which resulted in no required dust suppression activities and equipment that was able to be dry scraped to remove contaminated soil. Additionally, a further water reduction was obtained by treating and reusing the water used during drum cleaning. The reuse of the treated drum cleaning water resulted in a required withdraw of approximately 10 m^3 of water from Freshwater Lake compared to the estimated 118 m^3 of water listed in the Remedial Action Plan.

2. Spill Contingency Plan

a. Recommendation:

CIRNAC – Water Resources Division recommends that all fuel and Hazardous materials should be stored in secondary containment to prevent spills and leaks.

b. Response:

During remedial activities, all fuel and hazardous material was stored with secondary containment, including:

- Fuel which was stored in double-walled, registered storage tanks or in fuel drums stored within a containment area constructed of a textured high-density polyethylene liner
- Drums containing hazardous materials collected from the CAM-E site were stored on a textured high-density polyethylene liner

- Other hazardous materials produced or collected at the CAM-E site were stored in lined wooden seacans, metals drums, and marine shipping containers

3. Culvert Installation

a. Recommendation:

CIRNAC water resource division recommends that design reports for the culvert installation and maps of where the culverts will be installed, as well as how many culverts will be installed for the remediation project, be submitted to the board for review and approval.

b. Response:

Following mobilization to the CAM-E site in June 2017 it was determined by the Contractor that there had not been any significant washout along the main road and the installation of a culvert was not required. To maintain trafficability along the main road, the Contractor placed clean fill from a nearby borrow area into the low area of the main road and graded the fill to match the existing road surface.

During demobilization activities in September 2018, the Contractor removed two existing culverts, one located at the junction of the North Airstrip and the road to Freshwater Lake and one located approximately 0.6 kilometres (km) north of Area 2, as shown in Figure 1. Following removal of the culverts, the side slopes of the remaining roadway were graded to approximately 10 horizontal to 1 vertical to provide a stable channel for drainage and allow vehicle passage, as indicated in the Specifications, Section 31 22 15 – Grading, Clause 3.6.5. No existing culvert was identified at the area of the washout approximately 0.8 km north of Area 2.

4. Winter Access Trail

a. Recommendation:

CIRNAC recommends that all proper authorizations and permits be received before issuance of the water licence (i.e. right of way authorizations, CIRNAC land use permits etc.).

As well, CIRNAC recommends that the Spill Contingency Plan be updated to include the winter trail and provisions for spill containment and clean-up.

A spill response kit should be included with any vehicles or machinery proposed to operate along the winter trail and each vehicle or machine should also be equipped with ‘drip pans’ for any prolonged parking to minimize spills.

CIRNAC also recommends that if any water is to be drawn for the purposes of winter trail construction (i.e. re-surfacing), that the Proponent provides source locations in latitude and longitude (i.e. degrees, minutes and seconds) and quantities used in cubic metres, and also include the water amount used to be added to the amount of water used in the water licence application and to be added (m^3) to be included in the annual report submission.

b. Response:

The Contractor was responsible for all proper authorizations and permits for the Winter Access Trail. The Contractor obtained a Land Use Permit, #N2016F0012, in December 2016 valid between September 21, 2016 and September 20, 2021. The Contractor also obtained an Inuit Owned Land Exemption Certificate in September 2016, valid to September 20, 2017, and renewed it in March 2018, valid to September 20, 2019.

CIRNAC obtained a Land Use Permit, #N2016U0009, in August 2016, valid between August 16, 2016, and August 15, 2021; which was amended to include Open-Burning in July 2018, for remedial activities at the CAM-E site. CIRNAC also obtained Quarry Permits for borrow areas at the CAM-E site, which were amended as required during remedial activities, and a Water

Licence, #1BR-KEI1722, which was modified and amended as required during remedial activities.

The Contractor developed Spill Contingency Plans for pre-mobilization and mobilization activities, for activities at the CAM-E site, and for demobilization activities. Within the Spill Contingency Plans, information was included on fuel storage, refuelling, and as spill response and reporting.

During mobilization and demobilization, at least one spill kit was provided for each convoy to be able to contain and clean up any spills. Spill pads were also available to place below any equipment in the event that equipment was parked for any prolonged periods.

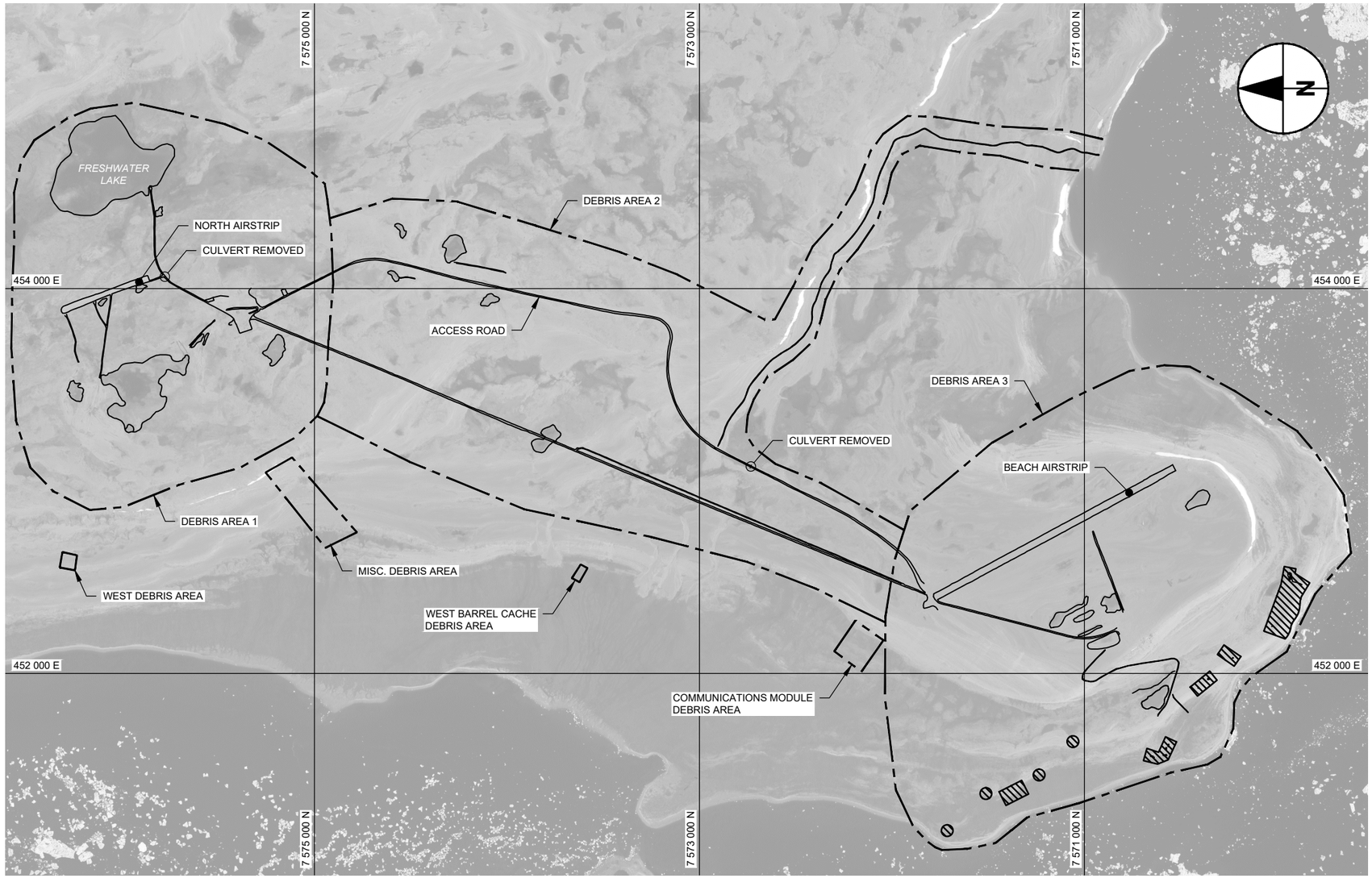
No water was drawn for the purposes of the winter trail construction as the water crossings were of sufficient ice thickness to not require additional water. Trafficability along the winter trail was maintained by grading fallen snow. Water consumed during mobilization and demobilization activities consisted of bottled water obtained in Kugaaruk, NU.

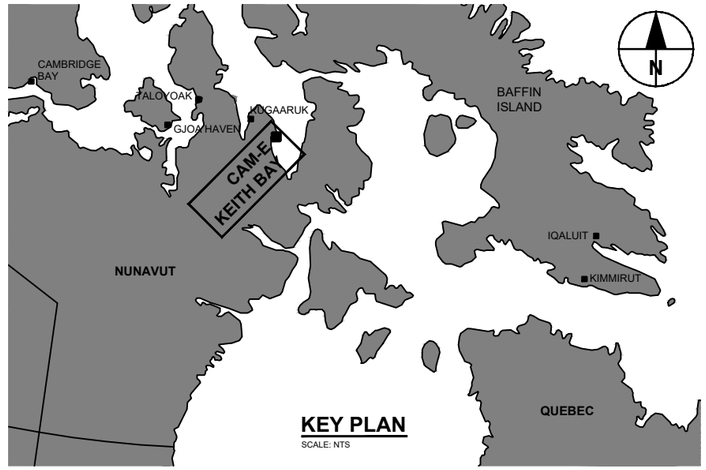
If there are any further questions on the above-mentioned water licence, please do not hesitate to contact Amber Zilinsky at 780-486-7911.

Yours sincerely,

Amber Zilinsky, P.Eng.
Environmental Engineer, CAM-E Departmental Representative
AECOM Canada Ltd.
T: 780.486.7911
E: amber.zilinsky@aecom.com

Attach: Figure 1





KEY PLAN
SCALE: NTS

LEGEND:

- DEBRIS AREA
- GENERAL LOCATION OF HERITAGE SITE (IDENTIFIED IN ARCHAEOLOGICAL IMPACT ASSESSMENT, GOLDER & ASSOCIATES, 2013)

0 625 1250 m

1:25000

Issue Status: FINAL

CAM-E REMEDIATION PROJECT
CIRNAC TECHNICAL REVIEW OF TYPE "B" LICENCE 1BR-KEI1722
Crown-Indigenous Relations and Northern Affairs Canada
Project No.: 60579368 Date: 2019-06-05

OVERALL SITE PLAN

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Figure 1